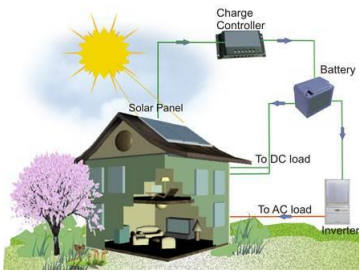
Project on Accelerating renewable energy development and strengthening climate resilience for enhanced human security and sustainable growth in Viet Nam

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (ESIA)



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LIST OF ABBREVIATIONS

EM	Ethnic Minorities
ESIA	Environmental and Social Impact Assessment (ESIA)
ESMP	Environmental and Social Management Plan (ESMP)
GRM	Grievance Redress Mechanism (GRM)
JETP	Just Energy Transition Partnership (JETP)
SES	Social and Environmental Standards (SES)
UNDP	United Nations Development Programme (UNDP)
EHS	Environment, Health and Safety (EHS)
BESS	Battery Energy Storage System (BESS)
YTCC	Public Health

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EXECUTIVE SUMMARY

The Project "Accelerating renewable energy development and strengthening climate resilience for enhanced human security and sustainable growth in Viet Nam" aims to support the advancement of renewable energy development in Viet Nam, with a particular focus on offshore wind power and solar photovoltaic systems integrated with battery energy storage systems (BESS). The Project seeks to foster a just, inclusive, and sustainable energy transition, while scaling up effective models for climate change adaptation, disaster risk reduction, capacity enhancement, and resilience building. In particular, the Project prioritizes strengthening human security, with a focus on women and vulnerable groups in climate-sensitive areas.

The Project is expected to directly benefit approximately 2,836 people, of whom half are women, and indirectly support around 64,000 people, also ensuring that women represent 50 percent of beneficiaries. Over a 20-year period (equivalent to the operational life cycle of the solar PV systems), the Project is estimated to contribute to the reduction of 92 tons of CO_2 emissions and substitute the demand for 1,111 tons of coal. The Project objectives will be achieved through the following two key outputs:

Output 1:	**Finalization of policies to support solar photovoltaic systems integrated with battery energy storage systems (BESS) and the development of offshore wind power, with the aim of advancing the Just Energy Transition Partnership (JETP) in Viet Nam.**
Result 1.1: Propose national policies and legal frameworks to accelerate the development of solar photovoltaic systems integrated with battery energy storage systems (BESS).	
Result 1.2: Provide gender-responsive recommendations on integrating offshore wind power development into national policies to accelerate deployment, while supplying data inputs for the Nationally Determined Contribution (NDC) update in 2025.	
Output 2:	**Strengthening capacity and infrastructure for Disaster Risk Reduction (DRR), as well as the monitoring and evaluation system of the National Action Plan, to promote human security and enhance resilience.**
Result 2.1: Completion of a gender-responsive Environmental and Social Impact Assessment (ESIA) on the installation of solar photovoltaic systems with battery energy storage systems (BESS) and Johkasou package wastewater treatment plants (PWTP) at district health centers, as well as storm- and flood-resilient infrastructure.	
Result 2.2: Installation of 08 solar photovoltaic systems with BESS at 08 health facilities in selected provinces.	
Result 2.3: Installation of one Johkasou package wastewater treatment plant (PWTP), certified by the Government of Japan, at a selected district health center.	
Result 2.4: Construction of 40 storm- and flood-resilient houses in vulnerable coastal provinces, with priority given to female-headed households and households with persons with disabilities.	
Result 2.5: Organization of multi-hazard disaster preparedness drills for students, teachers, and education administrators.	
Result 2.6: Development of an online monitoring and evaluation system within the National Adaptation Plan (NAP) Portal at both national and subnational levels.	

The Project is implemented by the United Nations Development Programme (UNDP) in Viet Nam, with support from the Government of Japan. The implementing partners include the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Industry and Trade (MOIT), which are responsible for capacity-building activities and policy recommendations. The People's Committee of Binh Dinh Province serves as the implementing partner for infrastructure components, including storm- and flood-resilient housing, solar photovoltaic systems with battery energy storage systems (BESS), and Johkasou package wastewater treatment plants (PWTP). International partners include the Japan International Cooperation Agency (JICA), civil society organizations, and the private sector.

This Environmental and Social Impact Assessment (ESIA) focuses on a detailed evaluation of the impacts associated with key infrastructure components (Results 2.2, 2.3, and 2.4), which will be

implemented in Binh Dinh Province. The scope and content of the activities are summarized in the table below:

No.	Activity Title	Main Activity Description
1	Installation of solar photovoltaic systems with battery energy storage systems (BESS) at 08 health facilities in Binh Dinh Province (now Gia Lai Province).	Installation of 08 solar photovoltaic systems with battery energy storage systems (BESS) at 08 commune health stations in coastal areas of Binh Dinh Province, specifically: - One solar photovoltaic system with a capacity of 30 kW, integrated with a 20 kWh BESS, installed at the Department of Disease Control and HIV/AIDS, Preventive Medicine, Nutrition, and Food Safety – Phu My District Health Center. - Seven solar photovoltaic systems, each with a capacity of 6 kW, integrated with a 10 kWh BESS, installed at the health centers of My Cat, My Tai, My Tho, My Chau, My Duc, My Thang, and My Chanh communes. The main technical components of the systems include: solar panels and mounting structures, inverter system, BESS, lightning protection system, fire prevention and firefighting equipment, panel cleaning system, and monitoring system.
2	Installation of a Johkasou package wastewater treatment plant at Phu My District Health Center.	Installation of one Johkasou package wastewater treatment plant at Phu My District Health Center – with a capacity of 30 m^3/day-night. The design consists of a combined tank system with two modules operating in parallel, each with a capacity of 15 m^3/day-night. Wastewater will be pumped into the treatment tank through two newly installed submersible pumps located in the existing wastewater collection pit. The effluent quality will comply with QCVN 28:2010/BTNMT – Column B (K = 1.2).
3	Construction of 40 storm- and flood-resilient houses in Phu Cat District and Hoai Nhon Town, with priority given to female-headed households or households with persons with disabilities, requiring detailed assessment of environmental and social impacts, including gender aspects.	The Project supports the construction of low-cost storm- and flood-resilient houses for vulnerable households, with priority given to female-headed households, persons with disabilities, and poor and near-poor households. The construction sites are located in Phu Cat District and Hoai Nhon Town (covering newly established communes/wards within these areas following the operationalization of local authorities at two levels), Binh Dinh Province (now Gia Lai Province). The houses supported by the Project shall ensure the following criteria: Built at an elevation higher than the highest recorded flood level at the construction site; Minimum floor area of 10 m^2; Main structural components such as foundation, frame, floor, and roof equivalent to those of permanent housing. Permanent housing is defined as having the following components: reinforced concrete/brick/stone foundation; columns and walls made of reinforced concrete, brick/stone, or durable steel/wood; floors made of reinforced concrete or durable wood. For areas frequently affected by typhoons, roofs shall be constructed of reinforced concrete or high-quality materials capable of withstanding storm impacts.

The Environmental and Social Impact Assessment (ESIA) has been conducted in compliance with the environmental and social protection requirements of the Government of Viet Nam and UNDP.

Legal and Institutional Framework for Environmental and Social Protection in Viet Nam

Construction and installation activities for key infrastructure components have been reviewed for environmental and social impacts throughout project preparation, design, construction, and operation to ensure that activities do not cause adverse impacts, and comply with the following requirements: the Law on Environmental Protection (2020), the Law on Fire Prevention, Firefighting, and Rescue (2024), the Land Law (2024), the Law on Water Resources (2023), the Law on Occupational Safety and Hygiene (2015), the Law on People's Health Protection (1989), as well as related Decrees, Circulars guiding the implementation of the Laws, Vietnamese National Technical Regulations (QCVN), and Vietnamese Standards (TCVN) on air quality, surface water quality, noise, and vibration.

According to the compliance review against Viet Nam's regulations, Decree No. 05/2025/ND-CP dated 06 January 2025, amending Clauses 5 and 6 of Decree No. 08/2022/ND-CP dated 10 January 2022 on detailing the implementation of certain provisions of the Law on Environmental Protection, stipulates that activities generating domestic wastewater with a total flow of 20 m³/day or more are required to obtain an environmental permit, approved by the Provincial Department of Agriculture and Environment (Clause 5, Article 74). Accordingly, the installation of the Johkasou package wastewater treatment plant will require the preparation and submission of an environmental permit prior to operation. The ESIA consultant and the technical-economic feasibility study consultant will support Phu My District Health Center in Binh Dinh Province (now Gia Lai Province) in preparing the documentation and submitting it to the Provincial Department of Agriculture and Environment for approval.

UNDP Environmental and Social Standards Framework

The UNDP Social and Environmental Standards (SES), updated in 2021, commit to mainstreaming environmental and social sustainability into all UNDP programmes and projects to support sustainable development. The implementation of project activities will comply with UNDP SES policies and procedures, including screening for potential adverse impacts, formulating mitigation measures, and ensuring management plans are in place to control and minimize environmental and social risks.

Baseline Environmental and Social Conditions in the Project Area in Binh Dinh Province

The project's infrastructure development activities are carried out in communes of Phu My District, communes of Phu Cat District, and Hoai Nhon Town in Binh Dinh Province. Field surveys conducted from 9 to 13 June 2025 confirmed that project activities will take place within or adjacent to existing built-up areas. No biodiversity-sensitive areas or significant cultural heritage sites were identified. The project area does not include ethnic minority communities, with only Kinh households residing in the area.

Potentially affected groups during construction include staff and patients at the Infectious Diseases Department and Infection Control Department (located approximately 150 m and 100 m, respectively, from the site of the Johkasou package wastewater treatment plant), and the Department of Disease Control and HIV/AIDS, Preventive Medicine, Nutrition, and Food Safety (where the solar PV–BESS will be installed), as well as commune health centers (where solar PV–BESS systems will also be installed).

The quality of Da Bac stream, the receiving body for treated wastewater from Phu My District Health Center, may be impacted if the wastewater treatment system is not properly operated. Da Bac stream does not serve as a source of domestic water supply; it functions mainly as a receiving water body for domestic and agricultural wastewater in the project area and contributes to the landscape of Phu My District.

Potential Environmental and Social Risks and Impacts

The Project categorizes environmental and social risks in line with the UNDP SES, which defines four levels: High, Substantial, Moderate, and Low. The review, assessment, and consultation processes have identified and classified the environmental and social impacts of the project's key infrastructure components implemented in Binh Dinh Province, as summarized in the table below:

Work	Type of risk	Risk level	Impact analysis	Impact management measures
Installation of BESS combined solar	Labor safety & public health	Medium	Risk of injury, risk of fire or explosion from storage batteries if installed or operated improperly.	Install properly; use standard materials; collect and dispose of expired batteries according to regulations.

Work	Type of risk	Risk level	Impact analysis	Impact management measures
battery system	Lack of community consultation	Medium	The community may misunderstand the project's objectives, leading to opposition or lack of cooperation; affecting the progress and results of implementation.	Organize communication, provide clear documents and information.
	Poor operation and maintenance	Medium	Without regular maintenance, batteries and solar panels can degrade rapidly, reducing power generation efficiency and increasing the risk of damage, fire or electrical leakage.	Have training plan, operation transfer; periodic maintenance.
	Dust, noise, vibration	Short	Short-term, small-scale construction generates very low levels of dust, noise and vibration.	Apply appropriate mitigation measures if impacts arise.
	Impact on biodiversity and resources	Short	No use of natural resources; indirect impact if materials or equipment are not of clear origin.	Equipment and materials must have certificate of origin; purchased according to project procedures.
Installation of Johkasou integrated wastewater treatment system	Biodiversity & Resources	Short	Small impact on resources due to small scale of construction; mainly related to mining of construction materials;	Select construction materials with clear origin; purchase according to project procedures
	Public health and safety	Medium	Risks to workers and residents if safety regulations are not followed; odors or wastewater leaks may affect public health	Comply with labor safety; maintain proper procedures; ensure a safe distance of 500-800m from functional areas
	Air environmental impact	Medium	Construction takes about 20 days; may generate emissions from machinery and equipment; location 50–150m from functional areas helps limit impact.	Use compact equipment; reasonable construction management
	Noise – vibration	Short	Use small machinery such as welding machines; limited noise and vibration; short construction time.	Use compact equipment; reasonable construction management
	Solid & hazardous waste	Medium	Generation of sludge, packaging materials, domestic waste and hazardous waste from the installation and operation process; if not handled properly, will cause soil and water pollution.	Collected and processed by competent units: Hau Sanh Trading and Environment Company Limited (hazardous waste), Phu My Public Service Management Board (solid and domestic waste).
	Water quality	Medium	During construction, 0.8-1 m^3 of water is used per day for 20 days; during operation, if not handled properly, it will affect the water quality of Da Bac stream.	Maintain proper operating procedures and technical instructions to ensure wastewater quality meets standards.
	Lack of communication	Short	People who do not understand Johkasou technology may not cooperate or doubt the system's effectiveness.	Community meeting, introduction to Johkasou technology.
	Poor operation and maintenance	Medium	The system can degrade and reduce its efficiency if there is a lack of specialized personnel or regular maintenance.	Arrangement of specialized personnel; training and technology transfer.
Building flood-	Lack of community consultation	Medium	Failure to consult early can lead to conflicts or misunderstandings about	Consultation throughout; public disclosure of criteria; establishment of a grievance

Work	Type of risk	Risk level	Impact analysis	Impact management measures
resistant houses			household selection criteria; reducing transparency and community support.	mechanism (GRM); multi-channel communication; ensuring equal participation of vulnerable groups.
	Gender & Land Rights Risk	Medium	Risk of disadvantaged groups not having equitable access; land disputes may arise if usage rights are unclear.	Coordinate with the Commune People's Committee; prioritize vulnerable groups; provide legal support; publicize the list of beneficiary households.
	Design risk	Medium	Housing does not meet real needs or conditions if the design is rigid; it can waste resources if the household has to make many adjustments themselves.	Publicize house models; allow households to add items from their own sources or borrow capital.
	Environmental impact (construction)	Short	Limited impact, mainly from material transport, foundation excavation and construction; small scale so short term impact.	Apply appropriate mitigation measures if impacts arise.
	Poor operation and maintenance	Medium	Houses deteriorate quickly if not checked and maintained regularly; affecting their ability to withstand storms and floods.	Check the quality of the material.
	Gender mainstreaming monitoring	-	Without integration, it is difficult to ensure that vulnerable groups benefit and have their rights protected when property or land disputes arise.	Integrating gender monitoring across the life cycle; providing legal support; providing safety information from the beginning

Institutional Arrangements for Environmental and Social Risk Mitigation

The mitigation of social and environmental risks under the Project, in compliance with the UNDP SES procedures, is intended to ensure transparency, equity in benefit-sharing, and to serve as a core element of the strategy for sustainable development and climate change adaptation.

In the UNDP-supported activities in Binh Dinh Province, the Department of Finance, the Department of Health, together with representatives of the leadership of Phu My and Phu Cat Districts and Hoai Nhon Town, as well as representatives of participating health units, contributed a wide range of ideas for environmental and social risk mitigation solutions.

A consultation workshop was held on 12 June 2025 at Phu My Health Center to reconfirm potential environmental and social risks arising from project activities, and to discuss measures to mitigate negative impacts from the installation of solar PV–BESS systems and Johkasou package wastewater treatment systems. Two additional consultation workshops were organized in Phu Cat District and Hoai Nhon Town on 11 June 2025 to ensure that beneficiary households are equitably supported and that the construction of storm- and flood-resilient housing does not generate adverse impacts on the environment and the surrounding communities.

Proposed measures for environmental and social risk management were designed to align with the technical characteristics of the activities implemented in Binh Dinh Province (now Gia Lai Province) during both construction and operation phases. These measures ensure that project activities do not cause adverse impacts on local communities, while optimizing the project's benefits in strengthening community capacity and resilience to natural disasters in coastal areas. Details of the identified impacts are summarized in Table 11 of this report.

An Environmental and Social Management and Monitoring Program has been proposed, based on the consolidated assessment of impacts and mitigation measures, and is presented in Table 12, which also defines the responsibilities of relevant stakeholders for implementation.

Gender mainstreaming is integrated throughout the entire project life cycle—from planning, beneficiary selection, to operation and maintenance of constructed facilities. Gender mainstreaming requires the active participation of both women and men in all project stages and activities, starting from project preparation, consultation and planning, through implementation, and post-investment monitoring. Special attention is required to include representatives of poor and vulnerable women-headed

households in consultation activities, ensuring their access to project information. A legal support system is also to be established to address potential land and property disputes involving these households, should they arise. Furthermore, the provision of information on technology and safety must be carried out at the outset for health staff, local residents, and vulnerable groups, in close coordination with local authorities and women's unions.

A Stakeholder Engagement Plan has been developed to ensure that the Project complies with the Social and Environmental Standards (SES) in a transparent, equitable, and effective manner.

A Project-level Grievance Redress Mechanism (GRM) has also been established. The procedure includes three steps: Step 1: Clarifying the responsibility of the Project Coordinator to review and resolve grievances or inquiries raised by local people; Step 2: Outlining the primary responsibility of the Department of Health and the Department of Finance (Project Management Unit); Step 3: Defining the role of the UNDP Project Manager in grievance resolution.

This three-step GRM will ensure that community concerns and grievances are addressed promptly at the project level, without requiring complex administrative procedures under state mechanisms.

Recommendations for Stakeholders in Project Implementation

Based on the forecast of environmental and social impacts, risk analysis, and the development of the ESMP, the responsibilities of stakeholders within the environmental and social management system are proposed as follows:

United Nations Development Programme (UNDP):

- UNDP will manage project financing, technical support activities, monitoring and evaluation, and ensure the resources required for ESMP implementation.
- UNDP will ensure that project activities and outputs meet international and Vietnamese standards, as well as sustainable development and environmental and social safety objectives.
- UNDP will coordinate with implementing units to ensure that field-level project activities are carried out in compliance with applicable regulations.

People's Committee of Binh Dinh Province (now Gia Lai Province):

- Responsible for overall management and supervision of the progress of infrastructure components within the province, and for directing relevant provincial departments and agencies to coordinate with UNDP in implementing project activities, ensuring timely progress and achievement of project results.

Department of Health of Binh Dinh Province (now Gia Lai Department of Health):

- Direct health facilities to coordinate with local authorities (Commune/Ward People's Committees, Women's Union, and Fatherland Front) to provide full and transparent community-level information about project activities under its supervision and support.
- Supervise contractors in preparing and implementing the contractors' Occupational Health and Safety (OHS) Management Plans on-site.
- Coordinate with contractors to provide complete technical and operational training on installed equipment for health staff at the eight health facilities.
- Publicize the GRM mechanism, record and respond to public feedback, and address inquiries/complaints (if any).

Seven Health Facilities Participating in Project Implementation:

- Coordinate with local authorities (Commune/Ward People's Committees, Women's Union, and Fatherland Front) to provide clear, accessible, complete, and transparent information about project activities.
- In coordination with the Department of Health, monitor contractors/suppliers on-site and ensure their compliance with the approved OHS Management Plans throughout construction.
- In collaboration with the Department of Health, participate with contractors/suppliers in developing operation manuals and training for the Solar PV and wastewater treatment systems.

Phu My Health Center:

- Coordinate with the ESIA consultant to finalize the draft environmental permit and submit it to the Department of Agriculture and Environment for approval.
- In cooperation with the Department of Health, supervise contractors/suppliers during equipment installation to ensure that construction activities do not cause adverse impacts on staff, patients, or the surrounding community of Phu My Health Center.
- Monitor contractor compliance with their OHS Management Plans.
- Conduct periodic wastewater quality monitoring every six months. Treated wastewater must comply with QCVN 28:2010/BTNMT, Column B (National Technical Regulation on Medical Wastewater) prior to discharge into the receiving source. Monitoring results shall be reported to the competent agencies responsible for regulating wastewater discharge and environmental quality (Department of Agriculture and Environment).

Department of Finance of Binh Dinh Province (now Gia Lai Department of Finance):

- Implement activities related to the construction of storm- and flood-resilient housing in selected communes of Binh Dinh (now Gia Lai).
- Develop beneficiary selection criteria, coordinate with local authorities to identify eligible households, and submit the beneficiary list for approval by the Provincial People's Committee. The selection criteria and any special priorities must be discussed with local authorities and communities. The beneficiary selection process must be transparent, with oversight and verification by stakeholders, and publicly disclosed at community meetings or displayed at accessible public locations once approved by the Provincial People's Committee.
- Coordinate with local authorities (Commune/Ward People's Committees, Women's Union, and Fatherland Front) to provide clear, accessible, complete, and transparent information on project activities.
- Manage project finances, including disbursements to beneficiary households, and monitor housing construction activities within the province.
- Publicize the GRM mechanism, record and respond to community feedback, and address grievances.
- Ensure that women from poor households and persons with disabilities are invited to participate equally in consultations and have access to project information.
- Conduct consultations and beneficiary group meetings to disclose project-supported activities, explain housing construction items outside the scope of project support (requiring contributions from households or other local support sources as recommended by the PMU).
- Facilitate consultations and beneficiary group meetings during the selection of housing designs to ensure that houses built under the project are appropriate to household needs..

ESIA and Technical Support Consultants

- Conduct environmental and social impact assessments (ESIA) of the project and develop necessary risk management plans to ensure project activities are implemented in compliance with UNDP environmental and social safeguard policies and in line with the regulatory framework of the Government of Viet Nam.
- Ensure appropriate consultation processes during the finalization of the ESIA report, provide guidance on the GRM mechanism, and prepare the ESMP for the project's construction components.
- Provide guidance on compliance procedures for environmental permitting requirements and support the preparation of draft dossiers for environmental permit applications for the Johkasou integrated wastewater treatment system installation.

Contractors/Equipment Suppliers

- Prepare and submit the Contractor's Environmental and Social Management Plan (C-ESMP) to the Department of Health and Department of Finance for approval prior to commencing construction, and implement the approved C-ESMP during construction.
- Undertake all necessary measures to manage activities that may pose risks to the environment, society, and occupational health and safety.

- Maintain communication with health facilities and local communities to manage potential social disruptions during construction.
- Disseminate the C-ESMP and provide occupational health and safety (OHS) training to all staff and on-site workers to ensure they fully understand their responsibilities in implementing the C-ESMP.
- Report to the Department of Finance and Department of Health on any implementation difficulties and propose remedial measures and support as necessary.
- Immediately report any environmental incidents to local authorities, health facilities, the Department of Finance, and the Department of Health, and coordinate with relevant agencies and stakeholders to resolve such incidents.
- Develop operation and maintenance (O&M) manuals and conduct technical training and operational guidance for the equipment installed by the contractor.

Other Social Organizations/Community Volunteers

Organizations such as the Fatherland Front, the Commune-level Women's Union, and other social organizations:

- Represent community voices, support consultations, and facilitate access to vulnerable groups, ensuring their participation.
- Support consultation activities and monitoring carried out by the Department of Health and the Department of Finance/Project Management Unit.

This ESIA Report consists of 7 Chapters[1]

Chapter 1. Introduction and Project Description

Chapter 2. Legal and Institutional Framework on Environment and Society

Chapter 3. Socio-Economic and Natural Conditions of the Project Area

Chapter 4. Assessment and Forecast of Environmental and Social Impacts

Chapter 5. Measures for Environmental and Social Pollution Prevention and Mitigation

Chapter 6. Environmental and Social Management and Monitoring Program

Chapter 7. Conclusions and Recommendations

The Report comprises 8 Annexes providing detailed information on socio-economic conditions of districts/communes participating in the project area, medical examination and treatment data at Phu My District Health Center, community consultation contents, provincial-level administrative units, and the list of commune-level localities with updated names participating in the project. Specifically:

Appendix 1. Socio-economic conditions of districts/communes benefiting from the installation of solar power systems and wastewater treatment systems

Appendix 2. Data on health staff and patient visits at Phu My District Health Center (2023–2024)

Appendix 3. Community Consultations

Appendix 4. Photos of Community Consultations

Appendix 5. Information on grievance/complaint reception units and participation in grievance resolution

Appendix 6. Templates for grievance receipt and processing (GRM)

Appendix 7. FPIC under UNDP Standard 6

Appendix 8. Provincial-level administrative units and list of commune-level localities with updated names participating in the project

[1] The implementation of the Environmental and Social Impact Assessment (ESIA) was carried out prior to July 1, 2025; therefore, the project scope and the boundaries of the environmental and social impact assessment are based on the communes, districts, and provinces as defined before July 1, 2025.

CHAPTER 1. INTRODUCTION AND PROJECT DESCRIPTION

1.1. Project Introduction

With a history of rapid economic growth heavily dependent on fossil fuels, Viet Nam has become one of the fastest-growing per capita greenhouse gas (GHG) emitters and is among the top 20 coal-dependent countries globally. At COP26, Viet Nam committed to achieving net zero emissions by 2050 and endorsed the Global Coal to Clean Power Transition Statement.

To support these ambitious national targets, on 14 December 2022, the Government of Viet Nam and the International Partners Group (IPG), including Japan, established the Just Energy Transition Partnership (JETP). The JETP aims to promote long-term cooperation in supporting Viet Nam's transition towards a low-emission, climate-resilient development pathway. Furthermore, on 19 November 2024, the Government approved the National Climate Change Adaptation Plan (NAP) for 2021–2030, with a vision to 2050. The NAP sets out specific objectives to strengthen resilience and adaptive capacity of natural, economic, and social systems; ensure sustainable livelihoods; minimize disaster risks, damages, and losses from natural disasters and extreme climate events; and improve institutional frameworks and mobilize national resources to effectively adapt to climate change.

The project "Accelerating renewable energy development and strengthening climate resilience for enhanced human security and sustainable growth in Viet Nam" implemented by UNDP Viet Nam with financial support from the Government of Japan, has the overall objective of enhancing enabling policy frameworks for JETP implementation while strengthening the capacity and resilience of vulnerable communities.

The project is expected to directly benefit approximately 2,836 individuals, half of whom are women, and indirectly benefit about 64,000 people, also ensuring a 50% share of women beneficiaries. Over a 20-year period (equivalent to the lifecycle of solar photovoltaic (PV) systems), the project is estimated to reduce 92 tons of CO_2 emissions and substitute for 1,111 tons of coal consumption. The project is designed under two main programmatic components, corresponding to two outputs:

Output 1: Strengthening enabling policies for solar PV systems with integrated battery energy storage systems (BESS) and offshore wind power development to advance JETP in Viet Nam.

This output will provide technical assistance to prepare two comprehensive assessment reports identifying gaps and needs, and to develop policy recommendations for scaling up solar PV systems with integrated BESS and offshore wind power development (OWP). These activities will be conducted in collaboration with the Ministry of Industry and Trade (MOIT) and relevant regulatory bodies, including the Electricity and Renewable Energy Authority, the Electricity Regulatory Authority of Viet Nam, the Institute of Energy, and Viet Nam Electricity (EVN). The objective is to strengthen policy and regulatory frameworks, thereby promoting renewable energy investment, particularly in OWP and solar PV-BESS.

Key deliverables of Output 1 include:

- *Outcome 1.1: National policy and legal framework recommendations to accelerate deployment of solar PV with BESS;*
- *Outcome 1.2: Gender-responsive recommendations for integrating OWP development into national policies, supporting accelerated OWP deployment, and providing data inputs for the NDC update in 2025.*

Output 2: Enhancing disaster risk reduction capacity and infrastructure, and strengthening the Monitoring and Evaluation (M&E) system for the NAP to improve human security and resilience.

Climate resilience will be enhanced by improving the functionality of 08 local health facilities through installation of solar PV-BESS systems, ensuring uninterrupted healthcare services during power supply disruptions. In addition, one district health center will pilot a Johkasou package wastewater treatment system to improve sanitation and prevent disease outbreaks. Disaster preparedness will also be strengthened through tsunami drills in schools and construction of climate-resilient storm- and flood-proof housing for vulnerable communities. Key deliverables of Output 2 include:

- *Outcome 2.1: Gender-responsive Environmental and Social Impact Assessment (ESIA) for solar PV-BESS and Johkasou wastewater treatment system at district health centers, and storm- and flood-resilient infrastructure;*

- *Outcome 2.2: Installation of 08 solar PV-BESS systems at 08 selected coastal commune/ward health facilities in Binh Dinh Province;*
- *Outcome 2.3: Installation of one Johkasou package wastewater treatment system at a selected district health center, certified by the Government of Japan;*
- *Outcome 2.4: Construction of 40 storm- and flood-resilient houses in vulnerable coastal provinces, prioritizing female-headed households and households with persons with disabilities;*
- *Outcome 2.5: Training and disaster preparedness drills for students, teachers, and education administrators;*
- *Outcome 2.6: Establishment of an online M&E system integrated into the NAP Portal at both national and subnational levels.*

Outcomes 1.1, 1.2, 2.1, 2.5, and 2.6 involve policy development, enhancement of national policy frameworks, disaster preparedness training, and establishment of online M&E systems. As these activities do not involve construction or infrastructure installation, they are not expected to cause adverse environmental impacts. Instead, they are anticipated to generate positive environmental and social outcomes by contributing to national policies and legal frameworks on solar PV-BESS deployment; strengthening community disaster preparedness (students, teachers, education administrators); and improving the online M&E system for the NAP at national and local levels.

Accordingly, this report focuses on the environmental and social impact assessment for Outcomes 2.2, 2.3, and 2.4, which involve critical infrastructure construction activities to be implemented by the Provincial People's Committee of Binh Dinh Province (currently Gia Lai Province).

The UNDP Social and Environmental Standards (SES, 2021 update) commit to integrating environmental and social sustainability into programmes and projects in support of sustainable development. Project implementation will comply with UNDP SES policies and procedures through screening, impact assessment, development of mitigation measures, and preparation of management plans to control and minimize adverse environmental and social impacts.

1.2. Objectives and Scope of the Environmental and Social Impact Assessment

1.2.1. Objectives

The Environmental and Social Impact Assessment (ESIA) has been prepared to identify and assess environmental and social risks and impacts associated with the project's infrastructure construction activities, in accordance with the UNDP Social and Environmental Standards (SES) and the environmental protection requirements of the Government of Viet Nam. The ESIA report includes the following key components: i) assessment of environmental and social impacts, risks, and management measures; ii) the Grievance Redress Mechanism (GRM); and iii) the Environmental and Social Management Plan (ESMP).

The ESIA also integrates gender considerations and provides recommendations to promote women's participation in project implementation.

Field surveys and stakeholder consultations with local authorities and communities were conducted during the preparation of this ESIA.

1.2.2. Scope and Locations

The ESIA has been conducted in detail for three infrastructure subprojects to be implemented in Binh Dinh Province (currently Gia Lai Province), specifically:

(i) Installation of 08 solar PV systems with integrated battery energy storage systems (BESS) at 08 health facilities, including 07 commune health stations (My Cat, My Tai, My Tho, My Chau, My Duc, My Thang, My Chanh) and Phu My District Health Center;

(ii) Installation of a Johkasou package wastewater treatment system at Phu My District Health Center;

(iii) Construction/rehabilitation of 40 storm- and flood-resilient houses in vulnerable coastal areas, prioritizing female-headed households and households with persons with disabilities in Phu Cat District and Hoai Nhon Town.

As the ESIA was prepared before 1 July 2025, the project boundaries and the geographical scope of environmental and social assessment are based on the administrative divisions in place before the changes in national administrative boundaries took effect (from 1 July 2025).

1.2.3. Donor and Partners

- ***Donor:***

United Nations Development Programme (UNDP) Viet Nam, with financial support from the Government of Japan.

- ***International partners:***

Japanese entities, including NGOs, private sector stakeholders, and JICA.

Close coordination with the Japan International Cooperation Agency (JICA) will ensure complementarity and avoid duplication with JICA's projects, particularly to strengthen collaboration in the implementation of the JETP.

Cooperation with the Japanese private sector, including technology providers and suppliers of goods and materials. Potential areas of cooperation include decentralized wastewater treatment technologies (Johkasou), solar photovoltaic systems, and battery energy storage solutions.

- ***National partners:***

Key domestic partners include:

Ministry of Agriculture and Environment (MAE): Collaborating to strengthen national policy frameworks and capacities for climate change adaptation and disaster risk reduction. MAE will also participate in consultations to ensure project support aligns with national priorities and needs.

Ministry of Industry and Trade (MOIT): Collaborating in activities to strengthen national policy frameworks related to JETP implementation. MOIT will participate in consultations to ensure project support is consistent with Government requirements.

Binh Dinh Provincial People's Committee (currently Gia Lai Province): Acting as the implementing partner for infrastructure activities, including resilient housing, solar PV-BESS systems, and Johkasou wastewater treatment system. The Provincial People's Committee will advise on specific locations, propose priority vulnerable groups as direct beneficiaries, and coordinate during implementation.

1.2.4. Infrastructure Subprojects in Binh Dinh Province

As defined under the ESIA scope in Section 1.2.2, this assessment focuses on infrastructure construction activities under Outputs 2.2, 2.3, and 2.4, to be implemented in Phu My District, Phu Cat District, and Hoai Nhon Town, Binh Dinh Province. The main technical features of these activities are summarized as follows:

1.2.4.1. Subproject 1 (Output 2.2): Installation of Solar PV Systems with Battery Energy Storage Systems (BESS)

Installation of solar PV systems integrated with BESS at 08 health facilities, comprising:

- 01 solar PV system with a capacity of 30 kW integrated with a 20 kWh BESS at Phu My District Health Center;
- 07 solar PV systems with a capacity of 6 kW each, integrated with 10 kWh BESS, at 07 commune health stations: My Cat, My Tai, My Tho, My Chau, My Duc, My Thang, My Chanh.

The main technical components of the systems include: solar panels and supporting structures, grid-tied inverters, battery energy storage systems, lightning protection system, fire prevention and firefighting equipment, panel cleaning system, and monitoring system. The maximum installed capacity and the specific locations of the 08 health facilities are as follows:

No.	Medical facilities	Maximum capacity	Location

1	Phu My Medical Center	33kWp PV + 30 kW Inverter + 20 kWh BESS	244 Quang Trung, Phu My commune, Gia Lai province https://maps.app.goo.gl/XCrUFYwRja3xxoAF9
2	My Duc Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	Hoa Tan village, My Duc Commune, Gia Lai province https://maps.app.goo.gl/EaFqMbJDo5mbXd3m7
3	My Chau Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	Van An village, My Chau commune, Gia Lai province https://maps.app.goo.gl/bMUNp5yTKui1jMdM7
4	My Tai Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	My Tai commune, Gia Lai province https://maps.app.goo.gl/zDZ5oY9gZ9RREzek6
5	My Thang Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	10 village, My Thang commune, Gia Lai province https://maps.app.goo.gl/XFE1YFEbR8HVuw858
6	My Tho Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	Chanh Truc village, My Tho commune, Gia Lai province https://maps.app.goo.gl/bTX72zumuDPcwqoA6
7	My Cat Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	Long Khanh village, My Cat commune, Gia Lai province https://maps.app.goo.gl/TkygKs6iqZbpq2PR9
8	My Chanh Medical Station	6.6 kWp PV + 6 kW Inverter + 10 kWh BESS	An Luong village, My Chanh Tay commune, Gia Lai province. https://maps.app.goo.gl/FC9jkVm8NxoAnQDK7

Principle of the Solar PV System Integrated with Battery Energy Storage System (BESS):

The Solar PV–BESS system is a hybrid configuration combining photovoltaic (PV) panels, an inverter, a battery energy storage unit, and a zero-export monitoring system to ensure a stable, cost-effective, and reliable electricity supply with backup capacity for critical loads. The basic operating principle is as follows:

Daytime (when sunlight is available):

- PV panels capture solar energy → generate direct current (DC).

The inverter converts DC into alternating current (AC):

- Priority is given to supplying onsite loads (electrical equipment in use).
- Any surplus electricity → charges the battery storage system.
- Once the battery is fully charged → excess generation is curtailed via Zero-Export mode.

If PV generation is insufficient → the inverter draws electricity from both the grid and the battery to ensure uninterrupted supply.

Nighttime (no sunlight):

- Electricity stored in the battery is discharged to supply loads.
- Once the battery is depleted → the system automatically switches to grid electricity.

In case of grid outage:

- The system activates island/off-grid mode:
- The battery provides power to critical loads (e.g., medical equipment, lighting).

- During daytime, PV panels continue to generate electricity to supply loads and simultaneously recharge the battery.

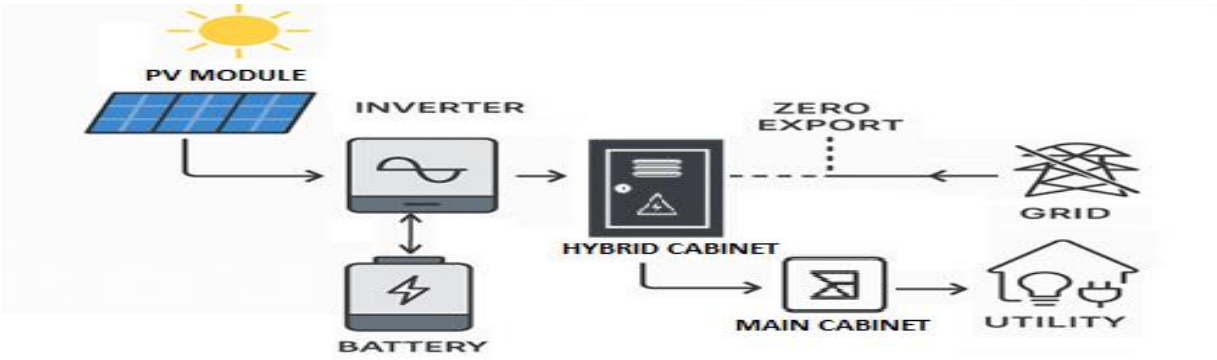


Figure 1: Illustration of the System Diagram

Solar panels (PV modules)	Captures sunlight and converts it into direct current (DC).
Hybrid Inverter	Convert DC power from solar panels and storage batteries into alternating current (AC) to supply the load; and control the charge/discharge current from the storage.
Battery	Store excess electricity from solar panels for use at night or during power outages.
Zero Export Monitoring System	Limit the amount of electricity generated to the national grid; ensure all electricity is used internally only.

Technical Specifications of the Solar Photovoltaic System with BESS are as follows:

Table 1: Technical Specifications of the Solar Photovoltaic System with BESS

TT	Category	Technical standards	
		33kWp PV system + 30 kW Inverter + 20 kWh BESS	**System6.6 kWp PV + 6 kW Inverter + 10 kWh BESS**
I. INVERTER			
1.1	Device code	SigenStor EC 30 TP or equivalent	Sigen Hybrid 6 SP2 or equivalent
1.2	Applicable standards	IEC/EN 62109-1, IEC/EN 62109-2, IEC/EN 61000-6-1, IEC/EN 61000-6-2	IEC/EN 62109-1, IEC/EN 62109-2, IEC/EN 61000-6-1, IEC/EN 61000-6-2
1.3	DC/DC Input Specifications		
	Maximum DC power (cosϴ=1	48,000Wp	≥ 12,000 Wp
	Maximum input voltage	1100V	≥ 600 V
	Rated input voltage	600V	350 V
	Starting voltage	180V	100V
	Operating voltage range	160V – 1000V	50V – 550V
	Number of MPPTs	4	≥ 2
	Maximum current per MPPT	16A	≥ 16 A
1.4	AC Output Specifications		
	AC rated power	30,000W	≥ 6,000 W
	Suitable for 1P+N grid	3W + N + PE	W + N + PE
	Rated AC voltage	380/400V	220/230/240 V
	Working voltage range	0.8Uac … 1.2Uac (Uac = 400V)	0.8Uac … 1.2Uac (Uac = 230V)
	Rated frequency	50 Hz	50 Hz
	Operating frequency range	45 Hz – 55 Hz	45 Hz – 55 Hz
	Maximum AC output current	50A	16 A

TT	Category	Technical standards	
		33kWp PV system + 30 kW Inverter + 20 kWh BESS	**System6.6 kWp PV + 6 kW Inverter + 10 kWh BESS**
	AC peak power (10s)	36,000W	≥ 9000 W
1.5	Switching time	≤ 5 ms	≤ 5 ms
1.6	Efficiency	98.30%	98.30%
1.7	*Operating voltage range*	150V – 264VAC	160V – 264V AC
1.8	*Frequency range maintained*	*45 Hz – 55 Hz*	45 Hz – 55 Hz
1.9	*Phase-reversed component*	*≤ 5%*	*≤ 5%*
1.10	*Total harmonic distortion*	*< 2%*	*< 2%*
1.11	*DC inrush current*	*≤ 0.5%*	*≤ 0.5%*
1.12	*Ability to combine*	Synchronized with Inverter	Synchronized with Inverter
1.14	*Working temperature*	–30°C ~ +60°C	–30°C ~ +60°C
1.14	Protection level	IP66	IP66
II. ENERGY STORAGE BATTERY			
2.1	Device code	Sigenstor Bat 10 or equivalent	Sigenstor Bat 10 or equivalent
2.2	Total Battery Capacity	≥ 9 kWh	≥ 9 kWh
2.3	Battery standard	LiFePO4	LiFePO4
2.4	Life expectancy	≥ 10,000 cycles	≥ 10,000 cycles
2.5	Operating voltage	≥ 300VDC	≥ 300 VDC
2.6	Charge/discharge capacity	≥ 4600W	≥ 4600 W
2.7	DOD	≥ 95%	≥ 95%
2.8	Protection level	IP66	IP66
2.9	Performance Warranty	10 years with efficiency > 70%	10 years with efficiency > 70%
III.	**SOLAR PANEL – SOLAR PANEL**		
3.1	Capacity	≥ 550 W	≥ 550 W
3.2	Quantity	60 panels or depending on PV capacity	12 panels/system or depending on PV capacity
3.3	Battery type	Mono-crystalline, Half-cut (144 cells: 72 x 2)	Mono-crystalline, Half-cut (144 cells: 72 x 2)
3.4	Module performance	21.29%	21.29%
3.5	Voc – Open circuit voltage	≥ 49.90V	≥ 49.90 V
3.6	Isc – Short circuit current	≤ 20 A	≤ 20 A
3.7	Vmp-Voltage at maximum power	≥ 41.96V	≥ 41.96 V
3.8	Imp – Current at maximum power	≤ 16A	≤ 16 A

1.2.4.2. Activity 2 (Output 2.3): Installation of Johkasou Compact Wastewater Treatment System at Phu My District Health Center

Scale: 01 Johkasou compact wastewater treatment system at Phu My District Health Center – designed capacity: **30 m³/day-night**.

Main Wastewater Sources

The characteristic wastewater streams include domestic wastewater; wastewater from the hospital kitchen and canteen; and infectious wastewater from the Departments of Disease Control and HIV/AIDS, Preventive Medicine, Nutrition and Food Safety, Pharmacy, Surgery, Traditional Medicine, Infectious Diseases, Pediatrics, Emergency and Intensive Care, Outpatient, Operating Theater, Nutrition, and Infection Control.

a. Domestic wastewater stream: This stream accounts for the largest proportion of the hospital's total wastewater. It originates from sanitation and bathing activities of patients, caregivers, visitors, doctors, and health staff. It has the basic characteristics of domestic wastewater but requires particular attention to the nitrogen content. After passing through septic tanks in each area, this wastewater is collected into the drainage system and discharged to the central WWTP's screening tank.

b. Wastewater stream from the hospital kitchen and canteen: This wastewater, after passing through grease traps, is conveyed to the hospital's central wastewater treatment system. It is estimated to account for about 2.5% of the total wastewater flow. The grease trap is designed at the kitchen and sink area to maximize grease collection and prevent pipeline blockage. The grease trap, made of SUS 304 material, is divided into three chambers with a trash basket at the inlet.

c. Infectious wastewater stream: This wastewater originates from washing of laboratory instruments, surgical tools, wastewater from operating rooms and laboratories. It contains blood, pus, fluids, bacteria, viruses, and has a high risk of infection. It is collected via a separate piping system to a collection pit, where it is disinfected with Presept 2.5g (4 tablets/5 liters of water) for 20 minutes before being conveyed to the hospital's central WWTP, thereby eliminating infection risk before entering the equalization tank. At the central WWTP, this stream undergoes additional pretreatment using chlorine to further kill bacteria.

Key Pollutants in Hospital Wastewater. The main environmental pollutants in hospital wastewater include: Organic matter, Nutrients: Nitrogen (N) and Phosphorus (P), Suspended solids (SS). Pathogenic microorganisms from medical activities (surgery wastewater containing blood and specimens, laboratory wastewater containing pathogens). Other harmful substances such as fungi and toxic chemicals from patients' bodies.

Water Demand and Wastewater Discharge at Phu My District Health Center

Phu My District Health Center has infrastructure capacity for 300 hospital beds, 197 medical staff, and treats approximately 9,700 inpatients annually (see Annex 2). Based on water demand standards per hospital bed, staff water demand, caregivers' needs, and landscaping, combined with actual water use and extraction from wells, the total water demand and wastewater discharge are summarized as follows:

Table 2: Summary of Water Demand and Wastewater Discharge of Phu My District Health Center According to Water Supply Standards

Water source	Minimum (m3/day)	Average (m3/day)	Maximum (m3/day)
Amount of water used	27.85	34.35	40.85
Amount of wastewater discharged	27.85	34.35	40.85

According to calculations, the maximum wastewater flow generated at Phu My District Health Center is 40.85 m³/day-night. The majority of this volume is domestic wastewater. All wastewater is currently being collected and conveyed to the centralized wastewater treatment system.

At present, the existing wastewater treatment system of Phu My District Health Center has deteriorated and can no longer meet the treatment requirements of the facility. Therefore, it is necessary to construct an additional wastewater treatment system with a capacity of 30 m³/day-night.

General Technological Requirements

The technological process applied for the wastewater treatment system is a combination of treatment units in which wastewater is cleaned step by step, based on the following factors:

- Wastewater flow and its characteristics;
- Required treatment standards;
- Available land area and construction scale;
- Initial investment costs and operation & maintenance (O&M) costs.

Proposed Wastewater Treatment Technology

The Health Center is currently operating a wastewater collection system that conveys wastewater from generation points to the centralized treatment area. Wastewater will then be pumped into the Johkasou compact wastewater treatment system. The treatment steps are as follows:

- Primary treatment: Separation of solid matter from the wastewater.
- Secondary treatment: Biological decomposition of organic substances by microorganisms and removal of suspended solids.

Wastewater Treatment Technology Flow Diagram

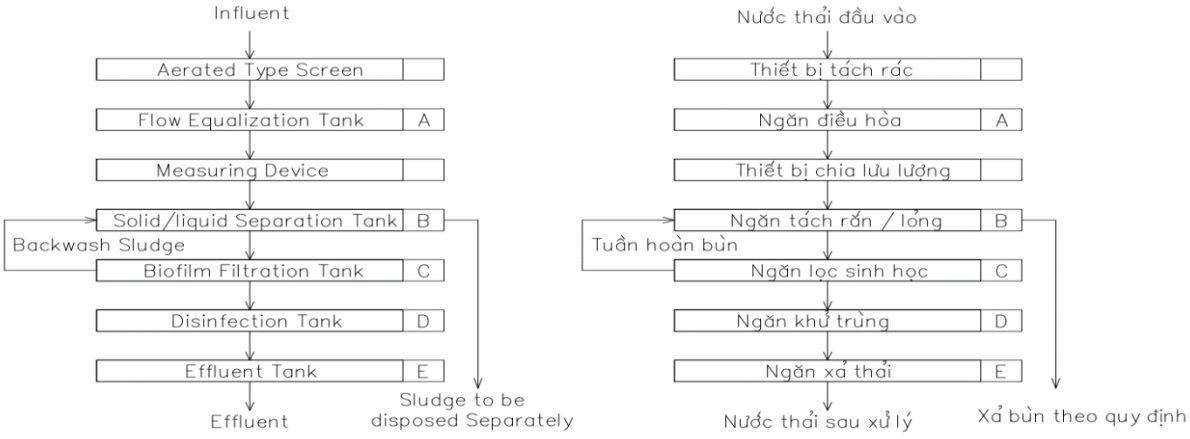


Figure 2: Technological Process Diagram of the Johkasou Compact Wastewater Treatment System

After treatment in the Johkasou unit, the pollutant concentrations in the effluent are approximately as follows: BOD_5: 100–450 → 20 mg/L; TN: 60–80 → 40 mg/L; and SS: 160 → 10 mg/L. The treated effluent meets Column B of QCVN 28:2010/BTNMT – National Technical Regulation on Medical Wastewater (Table 3).

Table 3: Treated Effluent Parameters Meeting QCVN 28:2010/BTNMT – Column B (K=1.2)

TT	Parameter	Unit	Input	Output *(QCVN 28:2010/BTNMT – Column B) K=1.2*
1	pH	-	6.5–8.5	**6.5 – 8.5**
2	BOD5 (20oC)	mg/l	100 ÷ 450	**60**
3	COD	mg/l	-	**120**
4	Total suspended solids (TSS)	mg/l	200	**120**
5	Sulfide (calculated as H2S)	mg/l	-	**4.8**
6	Ammonium (as N)	mg/l	60 - 80	**12**
7	Nitrate (as N)	mg/l	-	**60**
8	Phosphate (as P)	mg/l	15	**12**
9	Animal and vegetable fats	mg/l	-	**24**
10	Total coliforms	MPN/100ml	2x105	**5000**
11	Salmonella	Bacteria/100 ml	-	**KPH**
12	Shigella	Bacteria/100ml	-	**KPH**
13	**Vibrio cholerae**	**Bacteria/100ml**	**-**	**KPH**

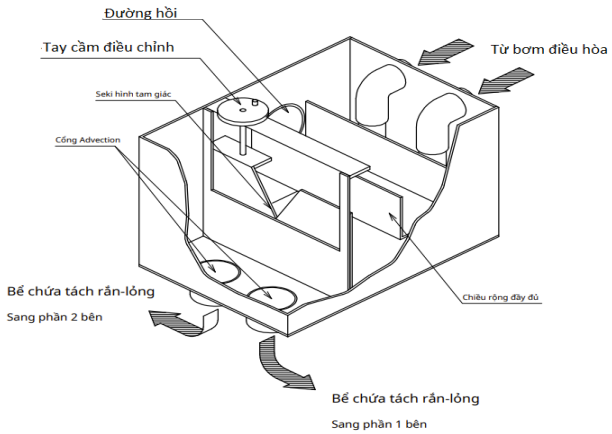
Description of Compartments in the Prefabricated Treatment Tank:

- Wastewater Pumping: Wastewater is pumped from two submersible pumps located in the collection pit into two prefabricated Johkasou compact wastewater treatment units.

- Fine Screen Chamber: Removes solid waste contained in the wastewater. To enhance surface cleaning efficiency of the screen, an aeration device is installed.

- Equalization Chamber (A): Receives and regulates the wastewater flow. This chamber is equipped with two equalization pumps that transfer wastewater to the next treatment compartment. A

flow distribution device is installed to ensure uniform distribution either at the design flow rate or in accordance with the actual incoming wastewater flow.



- Solid–Liquid Separation Chamber (B): This chamber carries out solid–liquid separation, retaining large solids and oil/grease contained in the wastewater, and partially decomposing organic matter. Nutrients are added here to maintain the ratio of BOD:N:P = 100:5:1. In the anaerobic filtration compartment, anaerobic decomposition and nitrogen/organic matter treatment occur through anaerobic microorganisms.

- Biological Filtration Chamber (C): Wastewater passing through the solid–liquid separation chamber is conveyed to the biological filtration chamber for further treatment. This chamber removes residual organic substances and facilitates the nitrification of ammonium. An aeration system is installed at the bottom of the treatment tank to enhance oxygen dissolution efficiency. The dissolved oxygen directly oxidizes organic matter, while part of it ensures effective mixing of activated sludge with wastewater. Cylindrical carriers are introduced into this chamber to increase the efficiency of biological treatment.

- Disinfection Chamber (D): Effluent from the treated water chamber is conveyed to the disinfection chamber, where it is disinfected using solid chlorine tablets placed in containers before discharge into the drainage system.

- Effluent Discharge Chamber (E): Following disinfection to remove pathogenic microorganisms, wastewater is discharged into the drainage manhole. The treated wastewater complies with Column B, QCVN 28:2010/BTNMT prior to final discharge.

- Design Scheme: The compact tank system is designed with two modules operating in parallel, each with a treatment capacity of 15 m³/day. Wastewater is pumped into the treatment tanks by two newly installed submersible pumps located in the existing wastewater collection pit.

- Installation Arrangement: The wastewater treatment tank is located near the existing WWTP to minimize construction time and simplify installation, operation, and equipment maintenance. The tank is installed above ground on a reinforced concrete platform measuring 5.5 m × 5.5 m, and covered with a heat-resistant corrugated roof to protect equipment and extend product lifespan.

- Equipment Room: An equipment room is constructed adjacent to the WWTP with floor dimensions of 3.5 m × 2.0 m, covered with a heat-resistant corrugated roof, and enclosed with B40 galvanized steel mesh for protection.

Table 4: Summary of Quantities

TT	Category	Specifications	Unit	Quantity
I	**BUILD**			
1.1	Wastewater treatment tank pedestal	+ Reinforced concrete pedestal + Dimensions: L x W x H = 5.5 x 5.5 x 0.25m + Details according to the support structure drawing	Set	1.00
1.2	Machine floor	+ Reinforced concrete pedestal + Dimensions: L x W x H = 3.5 x 2.0 x 0.15m	Set	1.00

TT	Category	Specifications	Unit	Quantity
		+ Details according to the support structure drawing		
1.3	Machine placement area	+ Heat-resistant roof + Column and truss structure: galvanized steel + Surround with B40 mesh + Dimensions: L x W = 3.5 x 2.0m	HM	1.00
1.4	Technical ladder and tank operating floor	+ Location: Between 2 pools + Material: galvanized steel + Details according to design drawings	HM	1.00
1.5	Wastewater treatment tank cover	+ Heat-resistant roof + Column and truss structure: galvanized steel + Dimensions: L x W x H = 5.5 x 5.5m	HM	1.00
1.6	Pump water to clean the current sump pit		HM	1.00
II	**TECHNOLOGY EQUIPMENT**			
2.1	Current status of inlet pump pit trash screen box	+ SUS 304 material, mesh size 6 ± 1 mm + Dimensions: W x L x H = 0.4 x 0.4 x 0.4m	Set	1.00
2.2	Wastewater pump	+ Flow rate: 0.1 m3/min + Pressure head: 5.0mH2O + Motor: 380V/3 phase/50 Hz/0.25 kW + Quick coupler + Guide bar, chain: SUS 304-VN	Set	2.00
2.3	Air conditioning sump pump	+ Flow rate: 0.1 m3/min + Pressure column: 3.9mH2O + Motor: 380V/3 phase/50 Hz/0.15 kW	Set	4.00
2.4	Water level indicator	+ Power cord length: 6 m	Set	3.00
2.5	Integrated wastewater treatment tank	+ Operating flow: 15 m3/day + Technology used: Clean and clarify wastewater by biological filtration process, using carriers with high microbial adhesion ability + Dimensions: LxWxH=5340x2500x2850mm + Tank shell material: Composite + Input and output connection: DN50 / DN100 + The wastewater treatment tank is a block of treatment compartments with a capacity of V = 19,356 m3; Including compartments: - (A) Equalization compartment: Va = 7,502 m3 - (B) Solid/liquid separation compartment: Vb = 4,222 m3 - (C) Biological filter compartment: Vc = 4,911 m3 - (D) Disinfection compartment: Vd = 0,162 m3 - (E) Treated water tank: Ve = 2,559 m3 + Synchronized integration: - Garbage separator box, flow divider box: FRP - Biological filter material - Sterilization tablet tube: 2 tubes - Complete connection pipes in the tank	Set	2.00
2.6	Air supply machine	+ Air flow: 1.06 m3/min + Pressure column: 0.04 Mpa + Engine: Asia/ equivalent + Voltage: 380V/3 phase/50 Hz/1.5kW	Set	2.00
2.7	Air supply solenoid valve	+ Normally closed valve type + Diameter: DN20 + Voltage: 220V	Female	4.00
2.8	Methanol chemical tank	+ Capacity: 300L + Material: plastic	Female	1.00
2.9	Chemical metering pump	+ Flow rate: 49.12 L/h + Pressure head: 10 Psi ~ 7m ~ 0.6895 Bar + Power: 45W + Voltage: 220V/1 phase/50 Hz	Set	2.00
2.10	Control cabinets and wiring	+ 2-layer electrical cabinet with powder-coated steel doors + Control: LOGO + Synchronized installation materials and accessories + The investor supplies power to the electrical cabinet.	Cabinet	1.00

TT	Category	Specifications	Unit	Quantity
2.11	Technology pipeline	+ Synchronized installation materials and accessories	Cp	1.00

1.2.4.3. Activity 3 (Output 2.4): Construction of Storm- and Flood-Resilient Housing in Coastal Vulnerable Areas of Binh Dinh Province

This activity prioritizes households belonging to vulnerable groups, including female-headed households, persons with disabilities, and poor and near-poor vulnerable households. The implementation sites are Phu Cat District and Hoai Nhon Town, Binh Dinh Province (now Ngo May Commune, Cat Tien Commune, Hoai Nhon Dong Ward, Hoai Nhon Ward, and Hoai Nhon Bac Ward, Gia Lai Province).

Household selection criteria:

Households must meet at least one of the following criteria. In cases where multiple households meet the requirements, priority will be given to those that satisfy the criteria in the order below, and those that meet multiple criteria:

- Victims of unexploded ordnance (UXO) and/or family members of UXO victims, victims of explosive remnants of war, persons with disabilities, female-headed households, and elderly-headed households.
- Poor and near-poor households, as classified by the Government of Viet Nam, residing in designated development areas cleared of explosive remnants of war.
- Households currently living in inadequate housing with no ability to renovate or upgrade their houses to be storm- and flood-resilient.
- Households living in areas where housing support will generate synergistic impacts with other KOICA-funded programs or projects.

Technical criteria:

- The usable floor must be higher than the highest recorded flood level at the construction site; minimum floor area of 10 m²; main structural components such as foundation, frame, floor, and roof equivalent to permanent housing standards (foundation of reinforced concrete and brick/stone; columns and walls of reinforced concrete, brick/stone, or durable steel/wood; floors of reinforced concrete or durable wood. In storm-prone areas, roofs should be made of reinforced concrete or other high-quality storm-resistant materials).
- Households supported with storm- and flood-resilient housing construction (new construction or renovation/elevation) must have a land use right certificate, house ownership, and other property rights attached to the land in accordance with the Land Law.
- Roofs must be tiled or corrugated with reinforced purlins and joints for additional stability.
- The flood-resilient floor must be made of reinforced concrete or high-quality wood.
- Windows, doors, and waterproofing points must be reinforced.
- Drainage systems around the house must be improved, with reinforced column bases and walls.
- Additional technical reinforcements against storms and floods as appropriate.
- Reusable construction materials (if any) should be salvaged, and construction waste must be collected at designated disposal sites.
- Compliance with occupational safety standards during construction.
- Preference for environmentally friendly solutions and those compatible with local cultural traditions.

The design documentation is based on six design options (PA01–PA06), prepared by the Central Architecture Center, National Institute of Architecture, Ministry of Construction.

1.2.4.4. Current Conditions of Areas for Project Installation and Critical Infrastructure Construction

(i) Installation of Solar PV and BESS Systems

Solar PV systems will be installed on the rooftops of eight health facilities. Survey results indicate that these facilities are located in sparsely populated residential areas or in areas with commune-level offices. The distance from each health station to its surrounding boundary wall is approximately 10–15 m. Illustrative images of the health stations designated for solar PV system installation are presented below.

My Chau Commune Health Station

My Duc Commune Health Station

My Tho Commune Health Station

My Chanh Commune Health Station

My Cat Commune Health Station

My Tai Commune Health Station

My Thang Commune Health Station	Department of Disease Control and HIV/AIDS, Public Health, Nutrition, and Food Safety (Phu My District Health Center)

(ii) Installation of the Johkasou Package Wastewater Treatment System

The Johkasou package wastewater treatment system will be installed at Phu My District Health Center. The system is proposed to be located adjacent to the existing wastewater treatment facility of the Health Center.

The existing wastewater treatment system and the proposed location for the new wastewater treatment system are approximately 150 m from the Infectious Diseases Department, 100 m from the Infection Control Department, and 50 m from the mortuary of Phu My District Health Center (see details in Section 1.2.5.5).

The receiving source of wastewater from both the existing and the proposed wastewater treatment systems of the Health Center is the Da Bac stream, located to the northwest of the Health Center. The Da Bac stream is also expected to receive effluent from the supplementary treatment system. Water from the Da Bac stream is mainly exploited for agricultural irrigation purposes. Wastewater discharges into the Da Bac stream, within a 1 km radius to the northwest of the Health Center (about 500 m away), originate mainly from the following:

- Residential areas to the north and northwest, with pollutants generated from domestic activities and household livestock such as organic matter, ammonia, bacteria, color, suspended solids, etc.;
- Runoff from residential areas carrying solid waste, soil dust, and other components into the stream;
- Pesticide packaging, fertilizers, and agrochemicals used in farming activities, which significantly contribute to surface water pollution.

During the rainy season, the stream flow increases, while in the dry season, the water level decreases rapidly, with some sections running dry. Field observations during the survey indicated that wastewater from the Health Center discharged into the Da Bac stream appeared slightly yellowish, with limited algae and moss presence, and some solid matter carried by the flow.

Table 5: Results of Effluent Monitoring of the Existing Wastewater Treatment System

TT	Indicator name	Unit	Test results	Output (QCVN 28:2010/BTNMT – Column B) K=1.2
1	pH	-	6.82	6.5 – 8.5
2	Total suspended solids (TSS)	mg/l	<5.0	120
3	Biochemical oxygen demand (BOD)5)	mg/l	29	60
4	Chemical oxygen demand (COD)	mg/l	43	120
5	Ammonium (NH4+ as N)	mg/l	KPH (MDL=0.20)	12
6	Nitrate (NO3- as N)		KPH	60
7	Sulphide (S2-)	mg/l	<0.1	4.8
8	Phosphate (PO43-) (as P)	mg/l	1.15	12
9	Total Conliform	MPN/100 ml	9300	5000
10	Oil, fat, animal and vegetable	mg/l	KPH (MDL=0.3)	24
11	Salmonella	CFU/100 ml	KPH (MDL=1)	KPH
12	Shigella	CFU/100 ml	KPH (MDL=3)	KPH
13	Vibro cholerae	CFU/100 ml	KPH (MDL=3)	KPH

(Source: Center for Environmental Monitoring, Department of Natural Resources and Environment of Binh Dinh Province (former), 2024)

The 2024 monitoring results show that the effluent quality of the existing wastewater treatment system had coliform concentrations nearly twice the permissible limit (GHCP) under QCVN 28:2010/BTNMT, Column B. Therefore, given the degradation of the existing wastewater treatment system, the installation of an additional integrated wastewater treatment system is required to improve treatment efficiency, reduce costs, ensure safe operation, enhance sanitation and public health conditions, and minimize risks of community disease transmission.

(iii) Rehabilitation of 40 storm- and flood-resilient houses

Currently, the Department of Finance and the Project Management Unit under the Department, in coordination with commune-level People's Committees of Hoai Nhon Town and Phu Cat District, are appraising the list of beneficiary households. Prior to project commencement, the list of beneficiary households will also be publicly disclosed on commune-level notice boards to inform local residents and enable their feedback. These houses are generally located within existing residential areas. Houses are typically positioned in the middle of the household's land plot and enclosed by fences.

1.2.4.5. Sensitive Receptors

Field survey results show that the installation of rooftop solar photovoltaic systems integrated with BESS will not affect sensitive receptors. Specifically, the solar PV with BESS systems are installed on existing rooftops of 08 health facilities. All facilities are enclosed by boundary walls (see photos in Section 1.2.4.4) and located in sparsely populated areas or within commune-level administrative premises. The distance from each health station to the boundary wall ranges from 10 to 15 m. Similarly, the construction of storm- and flood-resilient houses is not expected to affect sensitive receptors. These houses are typically located in rural areas of Phu Cat District and Hoai Nhon Town, positioned in the middle of household land plots, enclosed by fences, and situated within existing hamlets. Therefore, during house construction, particular attention should be paid to the transportation of construction materials and movement along narrow village lanes.

Field survey results, however, indicate that the installation of the Johkasou integrated wastewater treatment system may generate noise, vibration, and dust that could potentially affect the following sensitive receptors:

Sensitive subjects	Image	Distance to construction site(m)
Department of Infectious Diseases Medical staff and patients receiving inpatient and outpatient treatment at the department		150
Department of Infection Control Medical staff and patients receiving inpatient and outpatient treatment at the Infection Control Department		100
Funeral home area of Phu My Medical Center		50
Silver Stone Stream (Wastewater reception area of Phu My Medical Center)		200

1.2.5. Machinery, Equipment, and Input Materials

- *Construction Equipment*

Machinery and construction equipment must be in good condition and comply with current standards and regulations under Vietnamese law. Certificates of conformity and technical documentation for machinery and construction equipment must be attached to the project dossier.

- *Construction Materials*

Construction materials such as sand, soil, stone, cement, and steel will be procured from Phu My, Phu Cat, Hoai Nhon Town, and adjacent communes/districts in Binh Dinh Province.

- *Power and Water Supply Conditions*

The contractor will utilize water for both domestic and construction purposes through groundwater sources (boreholes) at Phu My Health Center. Electricity will also be supplied by the Health Center. According to the assessment conducted by the consultant for the technical–economic report, the power

and water supply systems of Phu My Health Center are adequate to meet construction requirements without causing overload to the facility's healthcare services.

1.2.6. Construction Methodology

This section describes the construction methodology for infrastructure installation and construction activities, as follows:

(i) Installation of Solar PV System Combined with BESS

1. Preparation of key materials and equipment: solar panels, inverters, battery storage, mounting frames, DC/AC cables, switchboards, and monitoring devices.

2. Detailed construction steps:

a. Preparation of key materials and equipment: Solar panels, inverters, storage batteries, mounting frames, DC and AC cables, electrical cabinets, and monitoring devices.

b. Installation of mounting frames and solar panels

- Secure mounting frames onto the roof (using chemical anchor bolts or expansion bolts).
- Ensure the optimal panel tilt angle (10–15%).
- Install on tiled or metal sheet roofs using aluminum rails.

c. Installation of inverter and storage batteries

- Select a dry, well-ventilated location close to the main electrical cabinet.
- Fix the hybrid inverter to the wall.
- Install storage batteries in accordance with the manufacturer's instructions (ensure ventilation, avoid direct sunlight).
- Connect the DC system (PV and battery) to the inverter.
- Connect the inverter to the load and the grid via the AC distribution cabinet.

d. Installation of electrical cabinets and protective systems

- DC cabinet: fuses, switches, surge protection devices.
- AC cabinet: MCCB, surge protection devices, ATS (if in backup mode).
- Connect wiring from the inverter to the main electrical cabinet of the facility.

e. Monitoring system

- Install online monitoring application (via WiFi/LAN).
- Configure the inverter, check operational parameters, and set backup/storage/time-based modes.

g. Testing – commissioning – handover

- Check voltage, current, and parameters of panels and inverters.
- Conduct trial operation at low capacity, then gradually increase.
- Verify storage and power supply capability during grid outage (UPS mode).
- Commission the system, hand over technical documents and as-built drawings.
- Provide user training on system monitoring and maintenance.

(ii) Installation of the Johkasou Integrated Wastewater Treatment System

1. *Preparation of materials and equipment*

- Johkasou tanks (imported as complete units).
- Ancillary materials: pipelines, sand, gravel, concrete, tank covers, electrical equipment, blowers, etc.
- Construction tools and equipment: excavators, compressors, welding machines, forklifts, etc.

2. *Site leveling, preparation, and foundation works*

- Level the existing site according to design dimensions, place gravel, spread sand, pour concrete bedding, and construct the Johkasou tank foundation.

3. *Installation of Johkasou tanks*

- Lower tanks into position using cranes or forklifts.
- Adjust elevation and orientation in accordance with the design.
- Secure tanks and check stability.

4. *Pipeline connections*

- Connect inlet pipes, outlet pipes, sludge discharge pipes, etc.
- Install ventilation pipes and air pipes for blowers.
- Check tightness and slope of pipelines.

5. *Installation of electrical and aeration systems*

- Connect blowers, control panels, and pumps.
- Wire electrical systems and configure control programs.
- Ensure electrical safety and waterproofing

6. *Site completion*

- Backfill soil for excavated areas for pipes and electrical lines.
- Complete surface finishing (tiling, concrete, or grass planting, etc.).
- Ensure accessibility for future maintenance.

7. *Testing and commissioning*

- Conduct system checks under no-load and load conditions.
- Collect treated effluent samples for quality testing.
- Prepare commissioning records, and provide operation and maintenance guidance to the client.

8. *Handover and user guidance*

- Hand over as-built documents, drawings, and operating manuals.
- Provide operator training (if required).
- Commit to warranty services and periodic technical support.

(iii) Construction of Storm- and Flood-Resilient Housing in Vulnerable Coastal Areas

1. *Pre-construction preparation*

- *Site survey: assess soil conditions, maximum flood levels, storm wind direction, and traffic accessibility.*
- *Appropriate design: elevated floors (2.5–3 m), lightweight roofing, water-resistant materials; mezzanine or flood shelter floor.*
- *Construction planning: workforce allocation, estimation of materials, equipment, and schedule.*

2. *Foundation construction*

- *Excavate deep and stable foundations to prevent scouring during floods.*
- *Reinforce foundations using reinforced concrete, or bamboo/concrete piles for weak soil.*
- *Waterproofing and drainage: install drainage channels around the foundation.*

3. *Construction of structural frame and floor*

- *Columns and structural frame: use reinforced concrete or galvanized steel with high load-bearing capacity.*

- *Flood-resilient floor: build elevated floors at least 0.5 m above historic flood levels, using lightweight concrete or steel floors.*
- *Auxiliary floor (mezzanine): for emergency shelter, built with lightweight, water-resistant materials.*

4. *Construction of walls and roof*

- *Walls: non-fired bricks, concrete blocks, or lightweight walls; waterproofed.*
- *Roof: insulated metal sheets or lightweight tiles; with anchoring devices to prevent roof uplift during storms.*
- *Doors and windows: aluminum-glass, uPVC, or durable wood, fitted with storm-resistant locks.*

5. *Installation of ancillary systems*
6. *Inspection and handover*

1.2.7. Project Budget, Management, and Implementation Arrangements

The total project budget is US$ 1,000,000 in grant ODA, financed by the Government of Japan. Of this amount, the total estimated cost for implementing critical infrastructure components in Binh Dinh Province is US$ 539,000.

Table 6: Estimated Budget and Implementation Schedule of the Project

TT	Work	Cost (VND)	Budget (USD)
I	**Estimated budget for implementation of important infrastructure projects in Binh Dinh province**		539,000
1.1	Installing 08 BESS combined solar battery systems at 08 medical facilities	2,078,160,000	80,000
1.2	Installation of 01 Johkasou integrated wastewater treatment system at Phu My Medical Center	2,597,700,000	100,000
1.3	Support and supervision activities for the installation of BESS combined solar power system and Johkasou integrated wastewater treatment system	337,701,000	13,000
1.4	Construction in vulnerable coastal areas in Binh Dinh province	4,494,021,000	173,000
1.4.1	*Building 40 storm and flood resistant houses*	4,000,000,000	153,983
1.4.2	*Construction management and supervision activities in vulnerable coastal areas in Binh Dinh province**	494,021,000	19,017
II	**Estimated budget for capacity building activities, policy recommendations**		461,000

The project implementation period is 12 months, from March 2025 to March 2026, of which the implementation of critical infrastructure components in Binh Dinh Province is scheduled from May 2025 to December 2025 (6 months).

1.2.8. Project Management and Governance Mechanism

The roles and responsibilities of stakeholders in project management and implementation are summarized as follows:

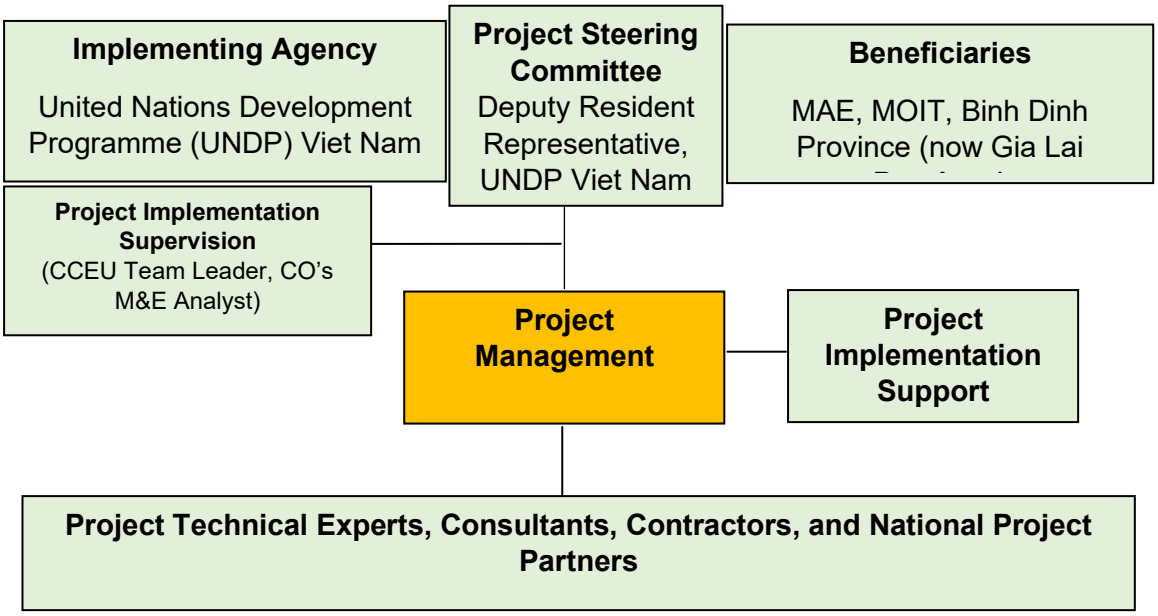


Figure 3: Project Management and Governance Mechanism

CHAPTER 2. LEGAL AND INSTITUTIONAL FRAMEWORK ON ENVIRONMENT AND SOCIAL ASPECTS

This chapter presents the key environmental and social legal and institutional framework that the project's critical infrastructure components in Binh Dinh Province must comply with.

2.1. Vietnam's Environmental and Social Legal and Institutional Framework

a) Legal Documents

❖ ***Laws***

- Law on Fire Prevention, Fighting, Rescue, and Salvage No. 55/2024/QH15 of the National Assembly of the Socialist Republic of Vietnam, adopted on 29 November 2024;
- Land Law No. 31/2024/QH15 of the National Assembly of the Socialist Republic of Vietnam, adopted on 18 January 2024;
- Law on Water Resources No. 28/2023/QH15, dated 27 November 2023, on the management, protection, exploitation, and use of water resources;
- Law Amending and Supplementing a Number of Articles of the Law on Construction No. 62/2020/QH14, adopted on 17 June 2020;
- Law on Environmental Protection No. 72/2020/QH14, dated 17 November 2020;
- Law on Occupational Safety and Hygiene No. 84/2015/QH13, issued on 25 June 2015;
- Law Amending and Supplementing a Number of Articles of the Law on Fire Prevention and Fighting No. 40/2013/QH13, adopted on 22 November 2013;
- Law on Protection of People's Health, adopted on 30 June 1989, Session VIII of the National Assembly, 5th meeting.

❖ ***Decrees***

- Decree No. 01/VBHN-BTNMT, dated 10 January 2025, of MONRE detailing a number of articles of the Law on Environmental Protection;
- Decree No. 05/2025/ND-CP, dated 06 January 2025, amending and supplementing Decree No. 08/2022/ND-CP dated 10 January 2022, detailing a number of articles of the Law on Environmental Protection;
- Decree No. 153/2024/ND-CP, dated 21 November 2024, on environmental protection fees for air emissions;
- Decree No. 102/2024/ND-CP, dated 30 July 2024, detailing the implementation of a number of articles of the Land Law;
- Decree No. 88/2024/ND-CP, dated 15 July 2024, on compensation, support, and resettlement when land is acquired by the State;
- Decree No. 50/2024/ND-CP, dated 10 May 2024, amending and supplementing a number of articles of Decree No. 136/2020/ND-CP and Decree No. 83/2017/ND-CP on fire prevention, fighting, and rescue;
- Decree No. 53/2024/ND-CP, dated 16 May 2024, detailing a number of articles of the Law on Water Resources;
- Decree No. 08/2022/ND-CP, dated 10 January 2022, detailing a number of articles of the Law on Environmental Protection;
- Decree No. 06/2021/ND-CP, dated 26 January 2021, guiding management of quality, construction, and maintenance of works;
- Decree No. 53/2020/ND-CP, dated 05 May 2020, on environmental protection fees for wastewater;

- Decree No. 80/2014/ND-CP, dated 06 August 2014, on drainage and wastewater treatment.

❖ ***Circulars***

- Circular No. 07/2025/TT-BTNMT, dated 28 February 2025, amending Circular No. 02/2022/TT-BTNMT; providing templates for environmental permits under the 2020 Law on Environmental Protection;
- Circular No. 01/2023/TT-BTNMT, dated 13 March 2023, promulgating five national technical regulations on ambient environmental quality;
- Circular No. 02/2022/TT-BTNMT, dated 10 January 2022, detailing the Law on Environmental Protection;
- Circular No. 06/2023/TT-BGTVT, dated 28 April 2023, amending a number of regulations on maintenance of transport infrastructure;
- Consolidated Document No. 33/VBHN-BGTVT (2023), consolidating regulations on management and maintenance of road infrastructure;
- Circular No. 10/2021/TT-BXD, dated 25 August 2021, guiding Decree No. 06/2021/ND-CP and Decree No. 44/2016/ND-CP;
- Circular No. 39/2021/TT-BGTVT, dated 31 December 2021, on management and maintenance of transport infrastructure;
- Circular No. 10/2021/TT-BTNMT, dated 30 June 2021, on environmental monitoring techniques;
- Circular No. 13/2020/TT-BGTVT, dated 29 May 2020, amending regulations on management and maintenance of transport infrastructure;
- Circular No. 03/2019/TT-BXD, dated 30 July 2019, amending Circular No. 04/2017/TT-BXD on occupational safety in construction;
- Circular No. 24/2017/TT-BTNMT, dated 01 September 2017, on environmental monitoring techniques;
- Circular No. 19/2016/TT-BYT, dated 30 June 2016, on occupational hygiene and workers' health management;
- Circular No. 04/2015/TT-BXD, dated 03 April 2015, guiding Decree No. 80/2014/ND-CP on drainage and wastewater treatment.

Vietnamese Standards and Technical Regulations (QCVN/TCVN)

❖ ***Water Quality***

- QCVN 01-1:2024/BYT – National technical regulation on domestic water quality, replacing QCVN 01-1:2018/BYT;
- QCVN 08:2023/BTNMT – National technical regulation on surface water quality;
- QCVN 09:2023/BTNMT – National technical regulation on groundwater quality.

❖ ***Air Quality***

- QCVN 05:2023/BTNMT – National technical regulation on ambient air quality.

❖ ***Noise and Vibration***

- QCVN 26:2025/BTNMT – National technical regulation on noise;
- QCVN 27:2025/BTNMT – National technical regulation on vibration.

❖ ***Solid Waste***

- TCVN 6705:2009 – Ordinary solid waste – Classification;
- TCVN 6706:2009 – Hazardous waste – Classification;
- QCVN 50:2013/BTNMT – National technical regulation on hazardous thresholds for sludge from

wastewater treatment;

- QCVN 07:2009/BTNMT – National technical regulation on hazardous waste thresholds.

❖ ***Occupational Safety and Health in Construction***

- QCVN 18:2021/BXD – National technical regulation on safety in construction;
- QCVN 22:2016/BYT – Lighting requirements in workplaces;
- QCVN 24:2016/BYT – Permissible occupational noise exposure levels;
- QCVN 26:2016/BYT – Permissible microclimate values in workplaces;
- QCVN 27:2016/BYT – Permissible vibration values in workplaces;
- Decision No. 3733/2002/QD-BYT of the Ministry of Health on 21 occupational hygiene standards, 05 principles, and 07 hygiene parameters.

b) Legal documents, decisions, or written opinions from competent authorities related to the project

- Project Document approved by the United Nations Development Programme (UNDP);
- Official Letter No. 3242/UBND-NCVX dated 21 April 2025 of the People's Committee of Binh Dinh Province on the policy of receiving and implementing projects funded by UNDP in Binh Dinh (now Gia Lai Province);
- Decision No. 2526/QD-UBND dated 30 June 2025 of the People's Committee of Binh Dinh Province approving the project document for the technical assistance project "Construction of storm- and flood-resilient houses in vulnerable coastal areas of Binh Dinh Province" funded by UNDP;
- Decision No. 2053/QD-UBND dated 30 June 2025 of the People's Committee of Binh Dinh Province approving the project document for the technical assistance project "Installation of solar photovoltaic systems combined with energy storage batteries and wastewater treatment systems for local health facilities in coastal areas vulnerable to natural disasters in Binh Dinh Province" funded by UNDP;
- Other related documents.

Conclusion:

Pursuant to Clause 5, Article 74 of Decree No. 08/2022/ND-CP dated 10 January 2022 of the Government detailing a number of articles of the Law on Environmental Protection, as amended in Clause 31, Article 1 of Decree No. 05/2025/ND-CP dated 06 January 2025 of the Government amending and supplementing a number of articles of Decree No. 08/2022/ND-CP, projects generating domestic wastewater with a total volume of 20 m^3/day or more must obtain an environmental permit, subject to approval by the competent authority of the Department of Agriculture and Environment.

2.2. UNDP Environmental and Social Legal and Institutional Framework

(i) Screening in accordance with UNDP's Social and Environmental Standards (SES)

The environmental and social impact assessment has applied the environmental and social standards screening in line with UNDP's SES, as illustrated in Diagram 4 below, at both the program and project levels. During the environmental and social impact assessment, the "Social and Environmental Risk Screening Procedure (SESP)" was applied to preliminarily identify potential environmental and social impacts.

The program has complied with the principles of "leaving no one behind," human rights, gender equality and empowerment, sustainable development, climate change response, and accountability.

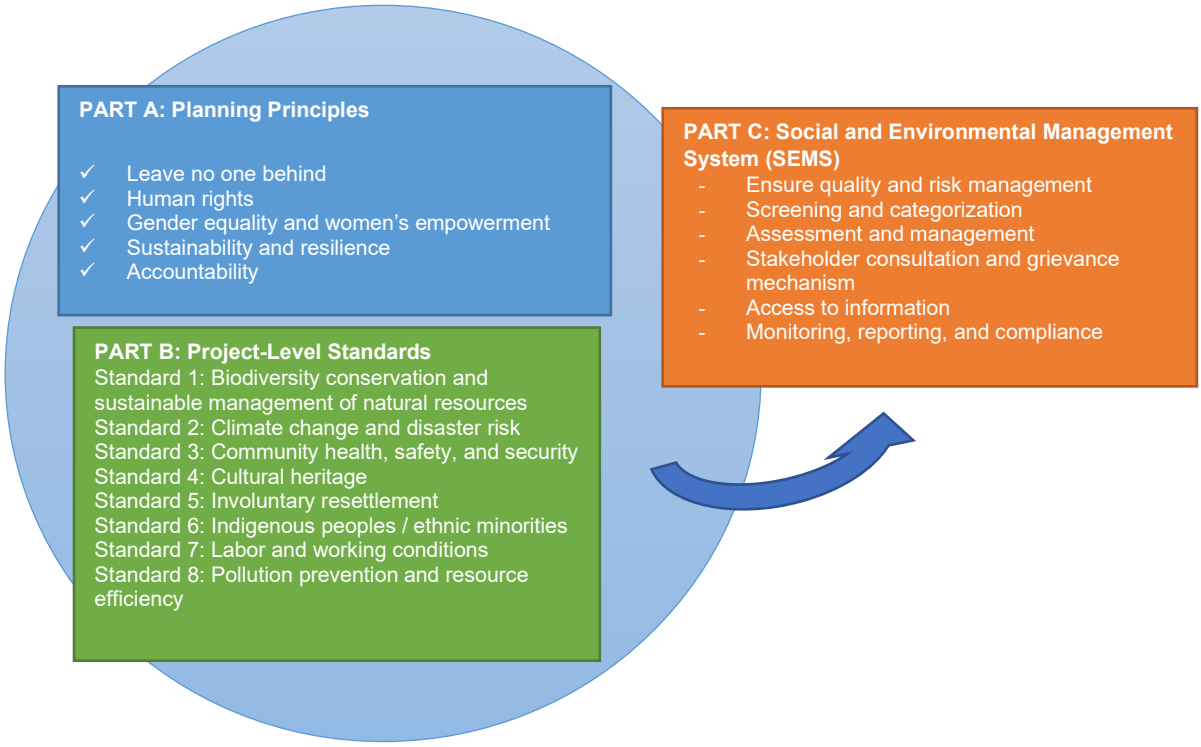


Figure 4: Key Elements of UNDP Social and Environmental Standards (SES)

At the **project level**, the Environmental and Social Impact Assessment (ESIA) reviewed the eight UNDP Social and Environmental Standards (SES) as follows:

Standard 1: Biodiversity Conservation and Sustainable Management of Natural Resources

Standard 2: Climate Change and Disaster Risk

Standard 3: Public Health, Safety, and Security

Standard 4: Cultural Heritage

Standard 5: Resettlement and Displacement

Standard 6: Ethnic Minorities

Standard 7: Labor and Working Conditions

Standard 8: Pollution Prevention and Resource Efficiency

Accordingly, for project activities, the assessments were conducted in line with these eight social and environmental standards. The SES framework provides a regulatory basis, helping projects identify potential risks and positive opportunities at the early design stage. Compliance with UNDP project-level SES ensures that:

- The project will not cause social or environmental risks.
- Sustainable development principles, including human rights, gender equality, and climate adaptation, are integrated from the outset.
- Where risks are identified, appropriate mitigation measures or project design adjustments are applied.

In ODA projects financed by the World Bank, ADB, or UNDP, the concept of potential environmental and social impacts refers to the **effects (positive or negative) that a project may have on the environment, people, communities, and vulnerable groups**. During project preparation, UNDP SES requires:

- Analysis of beneficiary and affected groups, including women, ethnic minorities, persons with disabilities, and poor households.
- Identification of expected positive and negative impacts, including changes to livelihoods, culture, access to services, land tenure, or resettlement.
- Development of measures to avoid or minimize negative impacts.

Potential environmental and social risks are defined as latent threats that **may or may not occur** during project implementation and could negatively affect the environment or society if not properly managed. SES requires that such analyses be carried out **from the project preparation stage**, including:

- Assessing the likelihood of occurrence and classifying the severity of risks.
- Identifying risk triggers (e.g., insufficient consultation, inadequate participation, inequitable allocation).
- Establishing prevention, monitoring, and feedback mechanisms.

The ESIA approach to analyzing potential environmental and social impacts and risks is based on the requirements of the project-level SES framework, with the content and scope of analysis guided by the concepts of "environmental and social impact" and "environmental and social risk".

Before preparing the ESIA report, consultants carried out preliminary environmental screening and determined the project's impact scope based on project activities, project area, and initial environmental and social screening results provided by UNDP. Consultants then conducted field surveys of the project implementation areas and collected baseline environmental and social data from the Department of Health, Department of Finance, People's Committees of Phu My, Phu Cat, and Hoai Nhon districts, Phu My Health Center, and seven commune health stations from 9 to 13 June 2025.

Based on field surveys and collected environmental and social data, the draft ESIA: Identified potential environmental and social impacts during construction, building, and operation. Proposed environmental and social mitigation measures. Developed environmental and social management and monitoring programs. Stakeholder consultations were conducted at the People's Committees of Phu Cat and Hoai Nhon towns, Phu My district, and Phu My Health Center to: Discuss potential social and environmental risks arising from project activities. Review measures to mitigate negative impacts. Participants included: Departments of Health and Finance, District and commune authorities, Households benefiting from cyclone- and flood-resilient housing in Phu Cat and Hoai Nhon. Staff from the Phu My Health Center and seven commune health stations. Local residents living near the health facilities. The consultation outcomes informed the finalization of environmental and social impacts, mitigation measures, and environmental management and monitoring programs, ensuring that the project is feasible and contextually appropriate.

Gender Mainstreaming in Climate Change Policy: Vietnam's Progress and Commitment

In recent years, Vietnam has made significant progress in mainstreaming gender into its climate change (CC) policies and programs. Although the Gender Equality Law of 2006 did not explicitly require gender mainstreaming in the climate change sector, it established the fundamental principle that gender considerations must be incorporated into policy development and implementation. However, due to limitations in capacity, financing, and guiding regulations, gaps in gender integration within climate policy have persisted. With support from UNDP and international organizations such as UN Women, progress has become increasingly evident. The updating of Vietnam's Nationally Determined Contributions (NDC) in 2020 marked a milestone, as the country officially incorporated gender equality and social inclusion into its global climate commitments. Rather than treating women solely as a vulnerable group, the new strategy emphasizes their active role in climate policy planning and implementation, through gender impact analyses in sectors affected by climate change.

The National Climate Change Adaptation Plan (NAP), issued under Decision No. 1422/QĐ-TTg dated 19 November 2024, also identifies gender mainstreaming as a key priority to enhance resilience at the local level. Furthermore, Circular No. 06/2023/TT-BTNMT, issued by the Ministry of Natural Resources and Environment, provides specific guidance on integrating climate change response into development planning and strategies, requiring the identification of vulnerable groups, including women, to design

appropriate adaptation measures. Notably, technical guidance on gender integration in provincial-level climate change plans has been implemented since early 2025 through training programs coordinated by UN Women and the Institute of Strategy and Policy on Agriculture and Environment. These initiatives have strengthened local capacity to incorporate gender considerations into planning and monitoring processes. In parallel with climate policies, Vietnam’s national program to eliminate temporary and substandard housing demonstrates a comprehensive commitment to supporting vulnerable groups. Aiming to remove over 223,000 temporary houses for poor households, beneficiaries of social entitlements, and ethnic minorities by 31 August 2025, the program not only improves living conditions but also enhances resilience to extreme weather events induced by climate change. In Bình Định province alone, over 4,100 houses have been newly constructed or repaired, achieving 95% of the planned target, providing stability for thousands of households during the rainy and storm seasons. These efforts illustrate Vietnam’s shift from climate policies that traditionally focused on technical solutions to a multidimensional approach that integrates gender, social equity, and sustainable development. Gender mainstreaming is no longer a peripheral concept but a core element, ensuring that all population groups, particularly women and vulnerable populations, have the opportunity to participate in and equitably benefit from climate change response initiatives.

CHAPTER 3. SOCIO-ECONOMIC AND NATURAL CONDITIONS OF THE PROJECT AREA

This chapter presents the socio-economic and natural conditions of the areas where the critical infrastructure components of the project will be implemented in Bình Định province.

3.1. Socio-Economic and Gender Characteristics

The critical infrastructure components to be implemented in Binh Đinh province include: i) Eight solar photovoltaic (PV) systems combined with Battery Energy Storage Systems (BESS) at Phu My Health Center and seven commune health stations; ii) One modular Johkasou wastewater treatment system at Phu My Health Center; iii) Construction of 40 climate-resilient houses in coastal communities in Phù Cát District and Hoai Nhon Town.

Vietnam's government structure follows a two-level governance model, comprising the provincial and commune levels, replacing the previous three-level model and ending operations of the district-level administrative units. At the same time, certain provincial and city administrative units were consolidated, resulting in 34 provinces and cities after restructuring, as per Resolution No. 137-KL/TW and Resolution 202/2025/QH15 of the National Assembly, effective 1 July 2025. Accordingly, Binh Đinh province merged with Gia Lai province and adopted the name Gia Lai province from 1 July 2025. The updated provincial-level name and the list of commune-level administrative units participating in the project are attached in Appendix 7.

3.1.1. Socio-Economic Characteristics of Bình Định Province

Economic Structure and Key Indicators (GRDP and Per Capita Income)

Located in the South Central Coastal region, Bình Định is among the provinces with remarkable socio-economic development in recent years. With advantages in geographical location, transport infrastructure, and marine resources, the province has been actively transforming towards sustainable and inclusive development.

Economic Structure

Table 7: Comparison of GRDP Share in Binh Đinh Province, 2024 vs. 2020

Economic Structure	Proportion in 2024 (%)	Proportion in 2020 (%)
Agriculture, forestry and fisheries	17.7	21.96
Industry and construction	43.5	28.63
Service	35.68	49.41
Product taxes minus product subsidies	3.12	0.0

Source: Binh Dinh Statistical Yearbook 2020 and 2024

According to the above data, the economic structure of the province in 2024, compared with 2020, has shifted gradually from agriculture toward industrial and construction development. Agriculture, forestry, and fisheries accounted for 17.7% in 2024, a decrease of approximately 4% compared with 2020. Industry and construction reached 43.5% in 2024, an increase of about 15% compared with 2020. Services (including trade, tourism, logistics, etc.) in 2024 decreased by about 14% compared with 2020, accounting for 35.68%, while product taxes minus product subsidies accounted for 3.12% in 2024.

In 2024, the GRDP of Binh Dinh increased by 7.76%, reaching VND 113,329 billion, equivalent to approximately USD 5.3 billion. On average, the per capita GRDP of Binh Dinh in 2024 was VND 101.7 million/person/year, ranking 25th out of 63 provinces/cities nationwide and 5th out of 14 provinces in the North Central and Central Coastal regions[2]. The average per capita income of the province was about VND 59 million, equivalent to USD 2,330. Binh Dinh's position reflects an above-average development level, with strong growth potential driven by industrial development, tourism, and renewable energy.

[2] Provided by Binh Dinh Provincial Statistics Office

The economic strengths of Binh Dinh lie in the development of processing and manufacturing industries, particularly in wood processing, textiles, mechanical engineering, and renewable energy. The Nhon Hoi Economic Zone and several large industrial zones attract investment in these sectors. Fisheries and agriculture also remain comparative advantages of Binh Dinh. With a long coastline and vast marine area, the province has been strongly developing marine capture, aquaculture, and seafood processing for export. Quy Nhon Port is one of the major seaports in the Central region, enabling Binh Dinh to become an inter-regional and international cargo transshipment hub, leveraging its strengths in logistics and seaport services.

Demographics and Poverty Status:

The total population of the province is 1.515 million people[3], of which women account for approximately 51.5%. The province has a total of 259,000 households. By the end of 2024, there were 4,850 poor households and about 6,200 near-poor households, representing 1.87% and 2.39% of the total households, respectively. Among the poor households, 1,446 households belong to ethnic minority groups, accounting for 5.56% of the total ethnic minority households in the province and nearly 30% of all poor households.

With a poverty rate of 1.87%, Binh Dinh records a significantly lower poverty incidence than many other provinces in the Central region, particularly the North Central region and the Central Highlands, where poverty rates are generally higher due to more difficult economic conditions. Several wards/communes in Quy Nhon, Hoai Nhon, and An Nhon no longer have poor households. Provincial support policies, including investment in production development, vocational training, and housing for poor households, have contributed to a significant improvement in people's livelihoods.

As a coastal province in the Central region, Binh Dinh is exposed annually to natural disasters such as storms, floods, landslides, and strong winds at sea. Over recent years, the province has prioritized disaster prevention and response activities, introducing a number of initiatives and solutions to proactively adapt to climate change. The Provincial People's Committee issued Plan No. 4000/KH-UBND on September 28, 2020, approving the Action Plan for Climate Change Adaptation for the period 2021–2030 with a vision to 2050. This plan operationalized the objectives of the National Climate Change Strategy and outlined measures to mobilize financial resources to strengthen program implementation. In this context, mobilization of non-refundable ODA resources plays an important role in enhancing the adaptive capacity of coastal communities[4].

Specifically in the health sector, on June 5, 2019, the Provincial People's Committee issued the Action Plan for Climate Change Adaptation in the health sector for the period 2019–2030 with a vision to 2050, with the objective of strengthening the resilience of the health sector to climate change to prevent and mitigate environmental and climate change-related risks to human health, thereby contributing to the protection and improvement of public health in Binh Dinh. This plan has since been updated and specified in the Environmental Protection and Climate Change Action Plan for the health sector of Binh Dinh for the period 2023–2030 with a vision to 2050, issued by the Director of the Provincial Department of Health on July 28, 2023. The updated plan also provides measures to establish and scale up health facilities capable of delivering adequate healthcare and protection for communities under climate

change conditions. Both plans encourage international organizations, NGOs, domestic and foreign individuals, and private enterprises to invest in climate change adaptation activities in the health sector.

[3] Information on population is from the Statistics Office via sources Danso.info and baobinhdinh.vn.

[4] In Plan No. 4000/KH-UBND of the Binh Dinh Provincial People's Committee dated September 28, 2020, on the approval of the Climate Change Action Plan for the period 2021–2030 with a vision to 2050, Specific Solution No. 4 on financial measures was proposed. This solution emphasizes mobilizing resources, including socialized contributions, central and provincial budget allocations, ODA projects, and support from non-governmental organizations through programs related to capacity building for technical staff, development and scaling-up of adaptation models, and livelihood support, particularly in localities highly exposed to climate change risks and in areas heavily affected by climate change. Priority is given to allocating financial and material resources, where available, for upgrading infrastructure systems and conducting in-depth assessments of climate change impacts on sectors and fields in order to strengthen climate resilience.

3.1.2. Socio-economic Characteristics of Phu My District

Phu My is a coastal plain district of Binh Dinh Province. It borders Hoai Nhon District to the north, Phu Cat District to the south and southwest, Hoai An District to the northwest, and the East Sea to the east. he economic structure of Phu My District in 2024, based on the share of production value, is as follows: agriculture–forestry–fisheries: 34.43%; industry–construction: 36.79%; and trade–services: 28.78%. The total production value during 2020–2024 increased by an average of 10.8% per year, indicating a structural shift towards a higher share of industry and services. The district's per capita income in 2024 reached VND 68.07 million/person/year.

Phu My District has considerable potential for solar power development. For example, the Dam Tra O Floating Solar Power Plant, considered one of the large-scale floating solar power projects, was constructed on 60 hectares of water surface and 0.6 hectares of land in My Loi Commune. Another major project is the Phu My Solar Power Plant, the largest in Binh Dinh Province, built in My An and My Thang communes, with an output of 520 million kWh/year. The project has been operational since 31 December 2020. Electricity generated by the plant has been connected to the national grid, playing an important role in supplying clean energy to the region[5].

3.1.3. Socio-economic Characteristics of Phu Cat District and Hoai Nhon Town

Phu Cat District is undergoing strong transformation driven by coastal industrialization and the development of airport–port infrastructure. According to the 2024 socio-economic report, the economic structure is as follows: agriculture–forestry–fisheries: 30.5%; industry–construction: 37.2%; and trade–services–tourism: 32.3%. The district's economy is rapidly shifting towards industry and services, with the development of industrial zones such as Cat Trinh, Hoa Hoi, Cat Hiep, and coastal urban development areas such as Cat Tien. The average economic growth rate for 2020–2024 reached 15.43% per year, higher than the provincial average.

Hoai Nhon Town is the northern growth hub of Binh Dinh Province, leading in processing industries and commercial trade. Its economic structure in 2024 was: industry–construction: 45%; trade–services–tourism: 35%; and agriculture–forestry–fisheries: around 20%. Hoai Nhon is notable for its wood processing, seafood, and garment industries, supported by nine major industrial clusters such as Bong Son, Hoai Tan, and Hoai Chau. The industrial production value in 2024 reached more than VND 15,445 billion, an increase of 17.7% compared to 2023.

3.1.4. Distribution of ethnic minorities in the province and the three districts receiving the UNDP project"

Ethnic minorities account for only 2.81% of the provincial population (equivalent to 41,768 people or 11,000 households) and are mainly concentrated in Vinh Thanh, Van Canh, and An Lao districts. These are areas with the highest proportions of ethnic minorities, characterized by mountainous terrain, and are the long-term settlements of groups such as the Ba Na, H'rê, and Cham peoples.

Statistical data indicate that the number of ethnic minorities is relatively low in the three project districts. Initial screening activities, conducted through consultations with district-level leaders, confirmed that there are no ethnic minority communities living in isolation or in segregated settlements; instead, they live interspersed and integrated with the Kinh majority in Phu My, Phu Cat districts, and Hoai Nhon Town. There are no significant differences in living standards between Cham and Ba Na households and Kinh households. Notably, Chinese (Hoa) households often enjoy relatively better living standards, as they tend to reside in central urban areas and possess stronger trading skills than even Kinh households.

The ethnic minority proportion is particularly low in Phu My District, with only 90 Ba Na individuals (approximately 20 households), accounting for less than 0.05% of the district's total population. They are dispersed across several communes, typically two or three households per commune.

[5] The solar power project is built on an area of 380 hectares, with a total designed capacity of 330 MW. The total investment exceeds VND 6,200 billion. Information provided by https://nangluongsachvietnam.vn

In Phu Cat District, the presence of ethnic minorities is also limited compared to the mountainous districts of Binh Dinh Province. According to 2024 statistics, there are only 26 Ba Na households with 91 individuals, residing mainly in Cat Son and Cat Lam communes.

In Hoai Nhon Town, around 1.4% of the population is Cham, usually scattered across the western wards (Hoai Nhon Dong). Approximately 0.2% are Chinese (Hoa), residing mainly in central wards such as Bong Son and Tam Quan. About 0.3% are Ba Na, who typically live in the western peri-urban areas of the town, such as Hoai Nhon Tay, near the foothills.

Consultations with local leaders during meetings held on 10 June 2025 at the Phu Cat District People's Committee and Hoai Nhon Town People's Committee confirmed that in the coastal communes of Hoai Nhon and Phu Cat, there are no ethnic minority communities; only Kinh households reside there.

Table 8: Summary of some socio-economic information in 2024 of local projects

TT	Economic Criteria	Phu My	Phu Cat	Hoai Nhon
1	Population (people)	213,015	220.107	212,063
	Ethnic minorities (%)	0.05	0.05	1.8%
2	Number of households (estimated)	60,860	62,890	60,590
3	Poverty rate (%)	3.48	0.48	0.0
4	Economic structure (%)			
	*Agriculture, forestry and fishery	34.43%	30.5%	20%
	* Industry - construction	36.79%	37.2%	45%
	*Trade and services	28.78%	32.3%	35%
5	Average annual growth in production value (2024)	10.8%	15.43%	~17.7% (industrial)
6	Average income per capita	68.07 million VND/year	~70 million VND/year (estimated)	~75–80 million VND/year (estimated)
7	Typical strengths of the districts	Agriculture + renewable energy	Coastal industry + services	Processing industry + trade
8	Outstanding industrial clusters/zones/projects	Phu My Solar Battery Factory	Hoa Hoi Industrial Park, Cat Trinh	11 industrial clusters
9	Communes** / units participating in the project: - Phu My: Installing solar panels and building a decentralized wastewater treatment system. - Phu Cat and Hoai Nhon: Building houses to resist storms and floods.	Phu My District Medical Center, medical stations of My Cat, My Tai, My Duc, My Chanh, My Tho, My Chau and My Thang communes	Cat Thang, Cat Tien, Cat Hai and Cat Chanh.***	Hoai My, Hoai Thanh, Hoai Thanh Tay, Tam Quan Bac

Source: Binh Dinh Provincial e-Portal. Binhdinh.gov.vn. Accessed on 24 June 2025; and (2) www.danso.info, compilation of information on Binh Dinh Province (former)

* Calculations based on the 2024 socio-economic reports of the People's Committees of Phu My, Phu Cat, and Hoai Nhon.

** All communes will be officially named during the administrative consolidation process and will come into operation under new names from 1 July 2025.

*** At the time of the ESIA assessment, the list of communes and beneficiary households was not yet available

3.1.5. Gender Issues in the Project Area

Active participation of women in environmental protection and disaster risk reduction

In all three project localities, women at both district and commune levels play a proactive and active role in environmental protection and disaster preparedness. According to representatives of the Women's Union leadership in Phu My, Phu Cat Districts, and Hoai Nhon Town, the Women's Union at district and commune levels has organized activities under the theme "Women live green, act practically," including initiatives such as the "Green House" model in Cat Hanh Commune, where recyclable waste is collected

to raise funds in support of disadvantaged women and children. Women's sub-unions at commune/ward level have taken responsibility for maintaining "clean, green, and beautiful" roads, planting flowers, carrying out sanitation activities, and reducing the use of plastic bags and pesticide packaging.

The "Women live green" movement has spread widely, linked to the new rural development program not only in Phu Cat but also across villages in Phu My District. Reports from district and commune officials during consultation meetings highlighted that in My Chau Commune, the "Green House" model helps women practice waste segregation at source, collect recyclables, and generate funds for gifts to disadvantaged children. In My Trinh Commune, recycling contests were organized, and more than 2,000 bins were distributed to households for domestic waste segregation. The Women's Union has also maintained initiatives such as "flower roads" and women-led environmental sanitation teams, contributing to environmental targets under the new rural development program.

In Hoai Nhon Town, women's activities have been directed toward disaster preparedness and community support. The town authorities have developed disaster response scenarios in which able-bodied women registered to participate in commune-level rapid response teams. Moreover, commune-level Women's Unions cooperate with local governments to raise awareness and guide safe evacuation and asset protection, particularly in coastal communes such as Hoai Chau and Hoai Son during storm season. Women-led models on environmental management, tree planting, and flower-road maintenance are also widely implemented.

Women's engagement in preventive healthcare and maternal–child health programs

Beyond environmental activities, reports from seven commune health stations in Phu My District showed that Women's Unions actively supported public health interventions such as disseminating information, reminding households about routine immunization, mobilizing maternal health care, and promoting sanitation. Women members also worked as community collaborators in communication campaigns on infectious disease prevention (e.g., dengue fever, influenza, typhoid, cholera, dysentery, and COVID-19). Their role during and after the COVID-19 pandemic (2021–2022 and onwards) was recognized by local authorities in Phu Cat, Phu My, and Hoai Nhon as highly effective.

Challenges faced by women in the three project localities

Despite broad participation in community activities, women's representation in local governance remains limited. The proportion of women in district and commune authorities is relatively low, restricting their influence in community-level decision-making. The main reasons are persistent gender stereotypes, lack of confidence, and limited opportunities for management training.

According to reports on female cadre development, the proportion of women holding leadership positions (from division head/deputy head or commune vice-chair positions) is only 10–12% of total staff, significantly below the national gender equality strategy target of 30% for the 2020–2030 period. Commune mergers in the near future may further reduce this proportion, as higher requirements on qualifications and capacity will make it more difficult for women to attain leadership roles.

Women continue to face a "double burden" of productive and reproductive roles, balancing family care with livelihood activities. This creates pressure in terms of time and health, with fewer opportunities for training, technology exposure, or personal development. According to female leaders in Hoai Nhon, despite the expansion of digital economy models, many rural women—especially middle-aged women—still struggle with access to digital skills and e-commerce.

At the commune level, as reported by Women's Union leaders in Phu Cat, local Women's Unions often face constraints in financial resources, staffing, and communication tools, limiting their ability to independently implement effective support programs. Consequently, most women-led activities in environmental sanitation remain dependent on collaboration with local government departments, with limited autonomy due to funding shortages.

A summary of socio-economic characteristics of communes with solar power installations and staffing of Phu My District Medical Center is presented in Annex 1.

3.2. Natural Conditions

Topography: The project area, covering Phu My and Phu Cat districts and Hoai Nhon Town, features a diverse terrain consisting of sloping mountains, plains, lagoons, and coastal strips. This diversity

provides favorable conditions for the development of marine-related economic activities such as fisheries and tourism, while the coastal plains are suitable for agriculture and livestock, particularly rice, sugarcane, and other seasonal crops.

Climate: The project area lies within the South Central Coastal climatic zone of Viet Nam, under the Eastern Truong Son climate regime. There are two distinct seasons: a dry season from January to August, and a rainy season from September to December. The rainy season is often influenced by typhoons, with an average frequency of 1–2 storms per year.

Key climatic characteristics include:

Temperature: High annual solar radiation, ranging from 140–150 cal/cm². The average annual temperature is above 26.6°C. The mean lowest temperature is 24.0°C, while the mean highest temperature is 30.8°C.

Rainfall: Average annual rainfall ranges from 1,800–2,000 mm, distributed across two distinct seasons. The dry season, lasting seven months (February–August), accounts for only 10–15% of annual rainfall, while evaporation is very high, representing 65–68% of total annual evapotranspiration. Conversely, the rainy season (August–December) contributes 85–90% of annual rainfall, concentrated in September–November.

Humidity: Average annual humidity is 79.6%, with the highest monthly average at 80% and the lowest at 71%. Average annual evaporation is 1,187 mm.

Wind: In winter, prevailing winds are from the northwest to north. In summer, winds shift to the east and southeast, although westerly to northwesterly winds dominate in the first half of the season.

Overall, the project area enjoys a favorable climate, with manageable rainfall, mild winter temperatures, and abundant sunshine, suitable for tourism development, solar energy, and broader economic activities.

Ecosystems: The ecosystems comprise coastal, forest, agricultural, and lagoon ecosystems.

- **Coastal ecosystems** include coral reefs, lagoons, and shallow beaches, which provide habitats for numerous marine and migratory bird species.
- **Forest ecosystems** still maintain patches of evergreen, broadleaf, and sparse forests, supporting diverse wildlife including birds, small mammals, insects, and rare plant species.
- **Agricultural and lagoon ecosystems** serve as habitats for aquatic organisms and play an essential role in maintaining ecological balance.

Hydrology: The hydrological system is directly influenced by Tra O Lagoon, the La Tinh River, and De Gi Lagoon.

- **La Tinh River:** Originating from the eastern slopes of Cat Son Commune, the river flows into De Gi Lagoon before reaching the sea. It has a total length of 52 km, a catchment area of 739 km², an average discharge of 28.98 m³/s (39.22 l/s.km²), and an annual runoff volume of 0.91 billion m³.
    - Tributaries include Kieu Duyen (20 km, 179 km²), Can River (20 km, 61.4 km²), and Ben Tre (36 km²), all discharging into De Gi Lagoon.
- **Tra O Lagoon:** With a catchment area of 206.5 km², average discharge of 7.3 m³/s (359.35 l/s.km²), and runoff volume of 0.23 billion m³, Tra O is a major freshwater reservoir.
- **Lagoons:** Phu My District hosts two major lagoons—Tra O (freshwater) and De Gi (brackish water).
- **Coastal zone:** The narrow coastal strip along the East Sea averages about 2 km in width, consisting mainly of sand dunes, sandy beaches, and coastal soils.

In the coastal plains of Phu Cat and Hoai Nhon, strong winds and localized tornadoes occasionally occur, causing roof damage, tree falls, and disruptions to the power grid. Storms and tropical depressions, mainly from September to November, often cause heavy rainfall, flooding, and landslides, resulting in damage to housing, infrastructure, agriculture, aquaculture, and community livelihoods.

3.3. Infrastructure

Wastewater Collection and Treatment: According to the Binh Dinh Provincial Environmental Status Report (2015–2020), only Quy Nhon City is equipped with centralized domestic wastewater treatment facilities:

- **Nhon Binh Wastewater Treatment Plant:** capacity of 14,000 m³/day, treatment efficiency 95%.
- **Plant 2A:** capacity of 2,350 m³/day, treatment efficiency 50%.

In other districts and towns, wastewater has not been collected or treated in accordance with regulations. Domestic wastewater is still discharged through combined sewer systems with stormwater, eventually flowing into surface water bodies (canals, rivers, streams) or infiltrating into the soil.

Electricity Supply: Binh Dinh Province is connected to the national grid (110 kV and 220 kV). Approximately 81% of main streets and 45% of alleys have street lighting. The rural low-voltage grid generally ensures electricity access for households. As of 2016, Binh Dinh Power Company had taken over the grid of 95 communes from 135 retail electricity service organizations, operating 23 km of medium-voltage lines, 18,907 km of low-voltage lines, 28 substations with a total capacity of 4,735 kVA, and serving 218,638 customers.

Solid Waste Collection and Treatment: According to the same environmental report, the average collection rate for household waste during 2015–2020 was about 49.5% in urban areas and 27.7% in rural areas. Accordingly, 50.5% of waste in urban areas and 63.3% in rural areas remained uncollected. Household waste is commonly managed through on-site burial or open burning.

Currently, Phu My District and An Nhon Town have sanitary landfill sites:

- **An Nhon Town Landfill:** located in Dong Binh Hamlet, Nhon Tho Commune, with an area of 1 ha and a design capacity of 100,000 tons.
- **Phu My District Landfill:** located in Gia Hoi Hamlet, My Phong Commune, with an area of 1.6 ha. The landfill was built with a total investment of VND 25 billion from a Belgian grant, with a design capacity of 36.3 tons/day.

3.4. Ongoing and Related Projects in Binh Dinh Province

- **Quy Nhon Sustainable Environment Subproject:** Part of the World Bank-funded *Coastal Cities Sustainable Environment Project* (2017–2024) with total investment of over USD 55 million. The project has contributed to improving environmental sanitation infrastructure, enhancing urban living quality, and raising environmental awareness among local communities.
- **Vietnam–Korea Peace Village Project:** A bilateral initiative between Viet Nam and the Republic of Korea, focusing on post-war unexploded ordnance remediation and sustainable community development. One of its four key objectives is to "develop safe, climate-resilient rural communities" through livelihood support, healthcare and housing infrastructure. The project has constructed or upgraded 120 storm- and flood-resistant houses in four Binh Dinh districts, prioritizing poor households, women-headed households in difficult circumstances, and families with persons with disabilities.
- **Renewable Energy Development Program:** Six coastal renewable energy plants, funded by domestic companies, are operational, comprising three solar power plants (total capacity: 430 MWp) and three wind power plants (total capacity: 107.4 MW).
- **PNE Offshore Wind Power Project:** Invested by PNE Group (Germany), with a planned capacity of 2,000 MW and total investment of approximately USD 6 billion. The project is in the survey stage and under consideration for inclusion in the national power development plan, expected to position Binh Dinh as a renewable energy hub in Central Viet Nam.
- **Solar Development Plan:** 40 solar power projects with a total capacity of over 2,280 MWp are planned through 2030. In addition to large-scale plants, the province promotes grid-connected rooftop solar systems with a combined capacity of around 223 MWp.

The establishment and operation of clean energy projects provide a foundation for sustainable growth, reaffirming Binh Dinh's commitment to the Sustainable Development Goals (SDGs) and laying the groundwork for green transition, climate resilience, and enhanced competitiveness in the context of international economic integration.

CHAPTER 4. ASSESSMENT AND PREDICTION OF ENVIRONMENTAL AND SOCIAL IMPACTS

This chapter presents the results of the environmental and social impact assessment for the implementation of key project infrastructure components in Binh Dinh province.

The assessment was conducted using a combination of screening tools, expert analysis, trend evaluation, field surveys and observations, as well as community consultations and interviews with local officials and residents in the project area. The findings indicate that the Project has been designed in compliance with the SES requirements, integrating principles of environmental and social protection and enhancing climate resilience through the application of clean energy technologies and advanced wastewater treatment solutions. In addition, the Project supports coastal communities in constructing storm-resilient shelters, thereby strengthening community resilience to climate change and promoting gender equality. Women and children are identified as the primary beneficiaries of project activities, not only through improved access to resilient housing and better living conditions but also through enhanced access to healthcare services.

4.1. Positive Environmental and Social Impacts of Key Infrastructure Components

(i) Installation of Solar Photovoltaic (PV) Systems with Battery Energy Storage Systems (BESS)

The project activities will enhance access to renewable energy sources at public healthcare facilities in Binh Dinh province. The integration of BESS will ensure stable operation of healthcare services during grid power outages or natural disaster events.

The Project will provide autonomous energy supply, strengthening continuity and improving the quality of primary healthcare services (commune-level). The solar PV systems with integrated storage will ensure uninterrupted electricity supply for vaccine preservation, medical refrigerators, ventilators, and lighting—particularly critical during storm seasons or in case of grid disruption. Both Commune Health Stations (CHSs) and District Health Centers will directly benefit from independent solar power generation. The Project will also enhance epidemic preparedness capacities and reduce electricity expenditure for these facilities.

This intervention will generate benefits for multiple stakeholder groups, specifically:

- **Healthcare staff** (doctors, assistant doctors, nurses, and other medical personnel) at Phu My District Health Center and seven commune health stations will benefit directly from improved working conditions due to stable electricity supply. This will increase the quality of service delivery and working efficiency.
- **Patients** receiving medical care at the District Health Center and seven CHSs are the second major beneficiary group. According to Phu My District Health Center data, between 2022 and 2024, the average number of patients treated at the seven CHSs ranged from 2,700 to 2,900 visits annually, with about 1,300 visits recorded in the first half of 2025. For the District Health Center, the annual number of patient visits ranged from 84,000 to 110,339 during 2022–2024, with 51,842 visits recorded in the first half of 2025. The number of inpatients treated annually has remained between 8,000 and over 9,000, with bed occupancy consistently at 80%–90% (Annex 2: Data on medical staff and patient treatment at Phu My District Health Center).

Healthcare demand is projected to increase further, and service provision will be better ensured with reliable power supply—even under extreme weather events or power cuts.

- **Women and children** will be among the most important beneficiaries, as uninterrupted electricity will significantly improve maternal healthcare and immunization services.

A reliable electricity supply for vaccine storage and diagnostic systems reduces the risk of vaccine spoilage or drug degradation, as self-sufficient energy can maintain required cold-chain conditions, thereby improving immunization effectiveness. Interviews with nurses and female healthcare workers highlighted that solar PV with storage will enable CHSs to securely store vaccines onsite without relying on specialized refrigerators at the District Health Center during grid outages or storms. This is particularly critical given the average distance between CHSs and the District Health Center is 20–25 km, and up to 40 km for some locations (e.g., My Thang commune, now Phu My Dong commune).

Reliable solar power will also enhance the operational stability of the **Departments of Disease Control and HIV/AIDS, Public Health, Preventive Medicine, and Food Safety**. The Project will enable continuous disease control operations, timely epidemiological surveillance, and reduce outbreak risks at the community level.

Furthermore, stable electricity supply will help reduce electricity costs by nearly half (from VND 15–18 million/year at commune health stations and about VND 30 million/year at the Disease Control and HIV/AIDS, Public Health, Preventive Medicine, and Food Safety departments). The savings can be reinvested into strengthening healthcare service capacity. The projected cost savings for healthcare facilities are as follows:

Table 9: Expected cost savings for healthcare facilities

STT	Location	Amount (1000 VND/month)
1	Department of Disease Control and HIV/AIDS, Public Health, Nutrition and Food Safety	2,500
2	My Cat Medical Station	1000-1200
3	My Tho Medical Station	1000
4	My Tai Medical Station	700-800
5	My Duc Medical Station	1200-1500
6	My Chau Medical Station	1500
7	My Thang Medical Station	900-1000
8	My Chanh Medical Station	1200-1500

(Source: Phu My District Medical Center, June 2025)

The Project also contributes to environmental protection and public health for indirect beneficiary groups**:** approximately 40,000 residents living around commune health stations and the Phu My District Health Center will benefit from improved quality of primary healthcare services and uninterrupted access to medical care during power outages and storm events.

(ii) Installation of Johkasou Decentralized Wastewater Treatment System at Phu My District Health Center

The newly installed Johkasou compact wastewater treatment system will reduce operational load on the existing wastewater treatment facility, thereby significantly lowering operating costs. Surrounding communities will benefit from an improved environment due to the effective treatment capacity of this advanced technology. The decentralized wastewater treatment system will minimize microbial and medical chemical pollution, fulfilling the criteria of a *"green–clean–safe hospital"* and protecting public health.

Treated effluent meeting national standards will reduce disease transmission risks and improve water quality, thereby contributing to community health improvement.

(iii) **Construction or Rehabilitation of 40 Storm-Resilient Houses in Vulnerable Coastal Provinces, prioritizing women-headed households and households with persons with disabilities**

This activity will strengthen climate change adaptation and promote gender equality.

The potential positive impacts of constructing storm- and flood-resilient houses have already been demonstrated by the assessment of solid housing units delivered under the *"Vietnam–Korea Peace Village Project"* supported by the Government of Korea during 2023–2024 in 20 communes of Tuy Phuoc, Van Canh, Tay Son, Hoai An, An Lao, and Hoai Nhon districts. Specifically:

- In Hoai Nhon town and Phu Cat district (Ngo May, Cat Tien communes, and Hoai Nhon, Hoai Nhon Bac, Hoai Nhon Dong wards), storm-resilient houses provide protection for residents—

particularly women and children—against storms and floods, stabilize livelihoods, and reduce loss of life and property.

- Prioritizing support for poor women-headed households and households with persons with disabilities enables these vulnerable groups to access assets and strengthen their decision-making power within the family and community.
- Having permanent, resilient housing reduces the caregiving burden on women during natural disasters, thereby improving quality of life and enhancing long-term adaptive capacity of households.

Direct beneficiaries of this activity include households selected to participate in the housing support program, especially women-headed households and vulnerable households. It is estimated that about **160 individuals** will directly benefit from the 40 storm-resilient houses constructed under the Project.

In this way, the Project will contribute to achieving the objectives and targets of the **Socio-Economic Development Plan**, the **Climate Change Action Plan**, the **Disaster Risk Reduction Plan**, and the **Renewable Energy Development Strategy** of Binh Dinh province (now Gia Lai province). It also supports the implementation of the **Environmental Protection and Climate Change Response Plan of the Binh Dinh Health Sector for the period 2023–2030 with a vision to 2050** (Plan No. 78/KH-SYT dated 28 July 2023).

The Project thereby contributes to realizing the objectives of establishing *"a healthcare organizational model capable of meeting community health protection and care needs under climate change conditions"* and *"a model for applying environmentally friendly technologies, renewable energy, and clean energy use in healthcare facilities."*

Indirect beneficiaries include local communities in the project area, as household-level adaptive capacities will be strengthened, thereby reducing disaster-related losses.

The Project will also contribute to the realization of socio-economic development and disaster prevention goals of Binh Dinh province.

4.2. Potential Adverse Environmental and Social Impacts from Implementation of Key Infrastructure Components

The Project activities may generate environmental and social impacts of low to moderate significance and short-term duration during the construction phase, specifically: i) Impacts from installation of solar PV systems with BESS at commune health stations and the Phu My District Health Center, and installation of Johkasou wastewater treatment systems—such as noise, dust, and minor disturbances to the working environment of healthcare staff and patients. ii) During construction of storm-resilient houses, some households may need to temporarily relocate if their existing house site is used for rebuilding, potentially leading to inconvenience if they must rent accommodation or stay with relatives.

During the operational phase, activities of the Johkasou wastewater treatment systems and solar PV + BESS systems may create environmental and social impacts such as risks to water quality and community health if proper operation and maintenance are not adequately implemented.

In line with the environmental and social risk categorization under the UNDP SES applicable to this Project, the identified risks are as follows:

1	**High**	Serious environmental/health impact; irreversible; lack of mitigation measures
2	**Significant**	Significant impact but controllable if appropriate measures are taken
3	**Medium**	Limited, temporary, easily remedied impact
4	**Short**	Small, little or negligible impact; low risk to the environment and society

The screening of both environmental and social risks was conducted based on preliminary information and site observations, combined with consultations with project staff, local authorities, relevant

departments, women's unions, and heads/managers of commune health stations. The risk screening process enables the identification of the Project's environmental and social risk levels for appropriate categorization, and serves as a basis for assessing potential impacts.Based on the eight Project Standards under UNDP's SES, the ESIA assessment team carried out environmental and social risk screening, classified risk levels, and forecasted and evaluated potential adverse impacts.

In line with the screening requirements and guiding questions, the summary table on the following page presents the results of the Project's social risk screening.

The summary table on the next page presents these results.

Table 10: Potential environmental and social impacts, level of risk

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
I	**ACTIVITYDINSTALLATIONDINSTALL SOLAR BATTERY COMBINED WITH BESS:** - 01 30kW solar battery system combined with 20kWh BESS at the Faculty Disease control - HIV/AIDS, Public Health, Nutrition, Food Safety, Phu My Medical Center - 07 solar battery systems with capacity of 6 kW / combined with BESS with capacity of 10 kWh / system at medical stations of My Cat, My Tai, My Tho, My Chau, My Duc, My Thang, My Chanh.				
1.1	Rights of ethnic minorities: There is a presence of isolated ethnic minority communities in the project area.		x	Are not	• There are no isolated ethnic minority communities living in residential areas in Phu My district. Therefore, there will be no need to carry out procedures related to obtaining consensus on the project as required by SES regarding ethnic minorities.
1.2	Land access/ land use rights and assets/ land disputes/ land recovery		x	Are not	• Solar panel systems are installed on the roofs of medical units, without land acquisition. All medical units have land use rights certificates.
1.3	Impact on biodiversity and sustainable resource management	x		Short	• Solar panels are installed on existing infrastructure and in residential and office areas. Therefore, the project does not impact biodiversity and does not occupy natural resources. • The project will provide equipment on a small scale, which may involve unsustainable resource extraction, however, the need for installation materials is also very limited, and certificates of origin will be required for all products to be purchased during project activities.
1.4	Public health and safety risks	x		Medium	*During construction phase:* • Risks and insecurity caused by the construction of solar power systems include falling equipment such as aluminum rails, tiles or corrugated iron sheets and other equipment...causing the risk of injury to workers or medical staff, or patients if they enter the construction area without permission. • Construction workers did not comply with safety conditions when working at height and lacked labor protection. *During the operating phase* • Fire and electrical short circuit incidents if the system does not meet standards (poor quality wires, incorrect installation) • Equipment such as inverters and connection systems wear out over time, so regular maintenance is required; otherwise, there is a risk of fire or electrical short circuit.
1.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups.		x		• There is no evidence to suggest that the project exacerbates gender inequality in the locality.

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
1.6	Risk of inadequate consultation	x		Medium	• People and health workers who are not familiar with solar power generation technology may be concerned about the effectiveness or think that the project is unsafe and will affect the community. • Lack of community information can lead to misunderstandings about the project's goals and benefits. • Medium risk because the probability is likely to occur but there are diverse mitigation measures, implementing full and meaningful consultation activities such as enhancing communication, providing more information on the safety of Solar Panels.
1.7	Deterioration of air quality		x	Short	*Construction phase:* • Solar panel installation activities will involve removing part of the tile and corrugated iron roof systems of medical facilities, then installing the support frame on the tile or corrugated iron roof. Therefore, the installation activities may cause dust to fall on the medical examination and treatment areas. • However, the construction and installation time is from 2-3 days, so the impacts on the air environment occur locally and for a very short time. *Operational phase:* • Using solar panels will help improve air quality, reduce greenhouse gas emissions instead of relying on traditional electricity sources produced by coal, oil and gas... Traditional electricity sources often increase air quality and increase CO2 emissions and increase the greenhouse effect. Therefore, the impacts on the air environment due to this activity are assessed to be low and short-term.
1.8	Noise and vibration pollution		x	Short	*Construction phase* • Partial dismantling of the corrugated iron/tile roof system and fixing the roof frame to install solar panels will cause noise and vibration in medical facilities. However, the installation time is 2-3 days, so the impacts due to noise and vibration are localized and short-lived. *Operational phase:*No noise and vibration hazards
1.9	Generation of solid waste and hazardous waste		x	Short	*Construction phase:* • Roof dismantling and solar panel installation activities will generate solid construction waste such as aluminum pieces, broken tiles and corrugated iron sheets… These types of waste are not hazardous and will be collected, a part will be recycled…. • The activity will mobilize about 4-5 construction workers for 2-3 days, which will generate a small amount of domestic waste. This amount of domestic waste is insignificant and will be collected with domestic waste at medical facilities. • Construction activities will not generate hazardous waste. *Operational phase:*

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
					• Solid waste may be generated from failed panels. However, the lifespan of a panel is approximately 10-12 years. Therefore, the amount of solid waste generated is very small and occurs at the end of the panel's life cycle.
1.10	Risks of system maintenance and operation	x		Medium	*Operational phase:* • Without proper training and transfer of operations, proper operation will affect battery life, reduce power generation capacity and cause risks of fire, explosion and electrical short circuit. • Lack of funding for maintenance and operation of solar panels, water system for cleaning solar panels on the roof, Batteries can degrade quickly due to lack of maintenance of solar panels. Therefore, it is necessary to follow technical instructions for activities such as cleaning the glass every 6 months.
1.11	Gender inequality risks and vulnerabilities of poor women		x		• There is no evidence to suggest that the project exacerbates gender inequality in the locality.
1.12	Impact/infringement on cultural space, relics, cultural sites.		x		• The installation works of medical facilities, with the right to use, do not affect cultural relics (pagodas in communes, memorial houses) in the locality.
1.13	Climate change and disaster risks		x		• The project enhances climate change resilience by equipping eight health facilities with solar panels to counter the risks of grid power cuts due to natural disaster risks. • Project to promote the application of renewable energy in the healthcare sector.
II	**INSTALLATION ACTIVITIES OF THE WASTEWATER TREATMENT SYSTEMIDEANUHJOHKASOUL COMPLEX WASTEWATER TREATMENT PLANT AT PHU MY MEDICAL CENTER**				
2.1	Ethnic minority rights: Presence of isolated ethnic minority communities in the project area		x		• There are no isolated ethnic minority communities living in residential areas in Phu My District. Therefore, there will be no need to carry out procedures related to obtaining consensus on the project as required by SES regarding ethnic minorities.
2.2	Land access/ land use rights and assets/ land disputes/ land recovery		x		• No land acquisition: The project is built on the land premises of the Medical Center, the land has a certificate of land use rights belonging to the Medical Center.
2.3	Impact on biodiversity and sustainable resource management	x		Short	• Johkasoul technology integrated wastewater treatment system built on unused land of Phu My Medical Center. • This area is located within the Medical Center campus, adjacent to the current wastewater treatment area, surrounded by the Phu My district community. Therefore, the project has no impact on biodiversity. • This activity requires construction materials, which may involve unsustainable resource extraction. However, the demand is low and very limited, and certificates of origin will be required for all products that will be purchased during the project activities. Therefore, these impacts are assessed as low.

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
2.4	Public health and safety risks	x		Medium	*Construction phase* • It is expected that there will be only 1-2 trips of trucks transporting the monolithic wastewater treatment system and construction materials. Therefore, the risks to public health and safety are very low and the transporter and the transport company are required to strictly comply with traffic safety regulations. • Construction workers who do not strictly comply with labor safety procedures and labor protection equipment may cause unsafe risks. *Operational phase* • Improper operation and maintenance of equipment and machinery in the wastewater treatment system can cause leakage and stagnation of wastewater, which can cause unpleasant odors in the environment of the medical center; directly affecting people coming for medical examination and treatment, doctors and staff working at the hospital and people attending funerals. These risks are low because Japan's complete treatment technology is considered quite safe. • *The health and safety risks to the community are very low due to*The treatment system is located within the Phu My Medical Center campus, about 500-800 m from the nearest residential area.
2.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups		x		• There is no evidence to suggest that the project exacerbates gender inequality in the locality.
2.6	Risk of inadequate consultation	x		Short	• When there is a lack of information about the safety of the wastewater treatment system, interviewed patients are concerned about the poor quality of the construction, which may affect the treatment and medical environment (it may cause unpleasant odors in the treatment space of the medical center, and the output water after treatment is still unsafe). • Mitigation measures that can be applied include providing additional information on the safety and advantages of the Johkasou integrated wastewater treatment system through community meetings/providing leaflets.
2.7	Deterioration of air quality	x		Medium	*Construction phase:* • Excavation, concrete pouring, construction and installation of pipes, accessories and equipment, fabrication and installation of monolithic wastewater treatment tanks, etc. and transportation of raw materials can cause dust pollution and air quality problems. It is expected that there will be only 1-2 trucks transporting monolithic wastewater treatment systems and construction materials. • Construction activities at the proposed construction site are 500-800 m away from residential areas and 50-100 m away from sensitive locations.

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
					• Therefore, the impacts due to the bulk wastewater treatment activities are at an average level and last for about 20 days. *Operational phase:* • If maintenance and operation are not carried out as required by the manufacturer, there may be a risk of wastewater leakage, causing odor pollution within the wastewater treatment plant. However, since sensitive locations are 50-100 m away from the project site, the impact caused by odor is low.
2.8	Noise and vibration pollution	x		Short	*Construction phase:* • Excavation, concrete pouring, construction, installation of pipes, accessories and equipment, processing, etc. will cause noise impacts to sensitive objects around the construction area. It is expected that there will only be 1-2 trucks transporting the monolithic wastewater treatment system and construction materials. • The construction machines are mainly small welding machines to weld the cover frame and the support frame of the wastewater treatment tank. Therefore, the impact of noise and vibration on staff and patients at the Medical Center is low. *Operational phase:* • Due to the distance between the proposed location for installing the wastewater treatment system and the medical examination and treatment area, during the operation phase, there will be no noise or vibration impact on the community, medical staff and patients in the infection control and infectious disease departments.
2.9	Solid waste generation	x		Medium	*Construction phase:* • Construction activities will generate earth volume, however, it will be reused for the backfilling process on both sides of this monolithic wastewater treatment system. • Domestic waste of workers. Estimated from 8-10 people. Each worker working in the project area generates about 0.9 kg of domestic waste per day (QCXDVN 01: 2008/BXD). Therefore, the amount of waste generated is small, from 7.2 kg to 9 kg/day. • Thus, the solid waste generated is small and within a short period of 20 days. Therefore, the impact is assessed at a low level. *Operational phase:* • General solid waste: • Biological sludge from the treatment tank (excess sludge): is a product of the biological organic decomposition process (aerobic and anaerobic). If not contaminated, sludge is classified as normal waste. • Waste such as trash, paper, large residue, etc. is collected from the garbage separator tank (if any);

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
					• The amount of solid waste generated is low and is collected and treated by a unit with the function of treating domestic and construction solid waste.
2.10	Hazardous waste generation	x		Medium	*Construction phase:* • It is expected that there will be only 1-2 trucks transporting the Johkasou integrated wastewater treatment system and construction materials, so the construction process will not generate waste oil. Therefore, during the construction phase, the impacts due to hazardous waste generation are very low. *Operational phase:* *Hazardous waste includes:* • Hazardous waste: contaminated sludge if the input wastewater contains pathogenic microorganisms (from clinics, patient toilets); residual chemicals or chemical residue from the treatment process (if the systemsystemAdditional chemical disinfection steps such as chlorine, PAC, polymer... • Sludge containing heavy metals or residual pharmaceuticals: Wastewater generated from laboratories, factoriesmedicineor infusion rooms. • Adsorbent or filter membrane (if costheme technology, biological filter membrane, activated carbon or equivalent) • The amount of hazardous waste generated is low and is collected and treated by a unit with the function of treating hazardous waste. • All hazardous waste will be collected and temporarily stored at a designated location, a covered storage area with a cement floor, away from water sources and at a safe distance from residential areas/schools according to Circular 36/2015/BTNMT on hazardous waste management. • The impacts due to the generation of solid waste and hazardous waste are determined at an average level and during the operation of the wastewater treatment system.
2.11	Water quality	x		Medium	*Construction phase:* • Deterioration of surface water quality due to wastewater from camps.The project is expected to mobilize 8-10 people. Thus, the project generates about 0.8-1 m3 of wastewater per day. Thus, the amount of water generated is small and within a period of 20 days. *Operational phase* • When the project is put into operation, a quantity of treated wastewater will be discharged into the environment. Without proper maintenance and operation measures, it is easy to affect the water quality of Da Bac stream. Da Bac stream does not have a surface water collection system for domestic use because the water

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
					source is unstable. Da Bac stream currently mainly plays a role in creating landscape for the area. • In addition, Suoi Da Bac is not only the area receiving wastewater from the residential areas in the North and Northwest of the Medical Center in Tra Quang village, but also receives wastewater from agricultural activities: packaging of plant protection chemicals, fertilizers, and pesticides used by people for agricultural cultivation. • Therefore, the risk to the water quality of Suoi Da Bac from the project is at a medium level.
2.12	Risks of system maintenance and operation	x		Medium	• Without proper transfer of technical knowledge on operation and maintenance of the project, the wastewater treatment system can deteriorate rapidly. Currently, the existing water treatment system of the Medical Center is directly maintained and operated by the part-time staff of the Infection Control Department. Therefore,CentralThe health center must always ensure and maintain experienced and competent people to operate this treatment system. Otherwise, risks may occur and there is a risk of affecting the surface water quality of the project area.
2.13	Gender inequality risks and vulnerabilities of poor women		x		• There is no evidence to suggest that the project exacerbates local gender inequality.
2.14	Impact/infringement on cultural space, cultural relics/sites.		x		• The construction project is only carried out on the land of the Medical Center and has ownership and usage rights, and will not affect any cultural relics (pagodas in communes, memorial houses) in the locality.
2.15	Climate change and disaster risks		x		• The existing wastewater treatment system of Phu My Center was built in 2008. The project will improve the medical wastewater treatment situation to avoid pollution and disease spread. • Because the existing wastewater treatment system of the Medical Center has degraded, when put into operation, it will not be effective for the surrounding environment. Therefore, the installation of a comprehensive wastewater treatment system will help improve the ability to handle environmental pollution and ensure sustainable operation in the face of extreme weather phenomena.
III	**BUILDING STORM- AND FLOOD-RESISTANT HOUSING IN VULNERABLE COASTAL AREAS**				
3.1	Rights of ethnic minorities: There is a presence of isolated ethnic minority communities in the project area.		x		• There are no isolated ethnic minority communities in coastal areas. Some Chinese and Cham families live together and blend in with the Kinh in Hoai Nhon town and Phu Cat district. • Therefore, there will be no need to carry out procedures related to obtaining consensus on the project as required by SES regarding ethnic minorities.

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
3.2	Land access/ land use rights and assets/ land disputes/ land recovery	x		Medium	• There may be disputes over housing after the new house is built, due to poor women head of household not standing up.nameIn the land use right certificate, the land belongs to the husband's family or the land has been transferred to the children.[6] • The lack of legal assistance/protection mechanisms to support poor women can in some cases lead to property disputes. They may not be able to secure permanent housing. • The risk is likely to be moderate because if it occurs, it will lead to cumulative impacts such as house and land disputes. However, it can be controlled by practical measures such as consultation and public disclosure of household selection criteria and consensus.
3.3	Impact on biodiversity and sustainable resource management	x		Short	• Renovating existing structures in households. Therefore, it does not affect biodiversity and resources.originalnature • Impacts on biodiversity and sustainable resource management are likely to be low due to the project activities using construction materials, which may involve unsustainable resource extraction and can be mitigated when products purchased under the project activities are traceable.
3.4	Public health and safety risks	x		Short	• Construction workers and people living near construction sites can also have work accidents due to carelessness.at the timeConstruction due to not wearing protective equipment, not using safety belts during construction at height • House quality is not up to standard if not well supervised, risking the safety of family members when storms come. • Abilitypowerrisks that can occur in reality but can be controlled with easily applicable measures
3.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups	x		Medium	• Women headed by poor households, poor households/households with disabilities may be overlooked or ignored if there is no clear priority mechanism. The lack of priority criteria for them (the PMU plans to use the criteria for selecting beneficiaries of the Vietnam-Korea Hoa Binh village house construction project) may cause women headed by poor households and households with disabilities to be excluded from the list of beneficiaries, increasing their vulnerability. • Medium risk because of high likelihood of occurrence, cumulative effects. However, measures can be strengthenedcheckinspection and monitoring. Have a mechanism

[6] During the assessment, the consulting team visited the situation of a poor single woman in Cat Tien commune, Hoai Nhon town. The head of the household is living in a dilapidated house that is almost about to collapse. She was introduced by the commune chairman as a household that the commune wanted to introduce to the list of beneficiaries, even though the land she lives on had been transferred to her daughter's name. However, the commune chairman still emphasized that this is a family that needs the project's support more than other households in his commune, because the situation of this elderly woman is too difficult. She only has a social allowance of about 100,000 VND per month to live (interview by the consulting team 6/2025).

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
					for prioritizing and publicizing priority regimes, conduct consultations to create consensus on priority criteria..
3.6	Risk of inadequate consultation	x		Medium	• Risk of community representatives/representatives of coastal disadvantaged households and women being left out of participationproblem, or were invited to participate but misunderstood project information • Representatives havebodyDisagree with the criteria for selecting beneficiaries, but not considered or responded to. • The home design may not suit the needs of the household because of lack of consultation before and after design. • PeopleAre notknow who to turn to to express their opinions because they believe they are being treated unfairly by not receiving support when they feel they qualify. • Abilitydevelopcomplaints if the consultation process is incomplete or not transparent. • The above social risks are likely to occur, but the remedies are easy to apply, such as transparent public information on the criteria for selecting beneficiaries, and meaningful full consultation. Strengthen consultation before and after house design. Currently, there are 6 different house designs (applying the design model of the Vietnam-Korea Peace Village project will give people the choice to apply.
3.7	Deterioration of air quality	x		Short	• The process of transporting raw materials will cause dust and air pollution. In rural areas in Binh Dinh province, the distance between houses is alwaysabout50-100m. The amount of materials is small, about 2-3 vehicles, so the impact on air quality is low and insignificant.
3.8	Noise and vibration pollution	x		Short	*Construction phase:* • Excavation and house construction activities will also impact the surrounding community in terms of noise and vibration. Houses are usually located in the middle of the garden and surrounded by fences, so the impact on noise and vibration is negligible during the construction process. *Operational phase:* • No impact
3.9	Generation of solid waste and hazardous waste	x		Short	*Construction phase:* • House construction activities generate construction solid waste and are often reused by households, such as as foundation materials, yard materials, etc. The impacts are insignificant and short-term. *Operational phase*: No impact occurs
3.10	Risks of system maintenance and operation	x		Medium	*Construction phase:*No impact occurred *Operational phase:* • The house candownlevel based on time of use if not maintained periodically.

STT	Potential environmental and social impacts	Possibility of risk		Risk level	Detailed review
		Have	Are not		
					• Poor quality construction can cause the house to collapse.
3.11	Gender inequality risks and vulnerabilities of poor women	x		Medium	• Lack of regulationprogramIndependent monitoring and clear priority criteria frameworks increase the risk of women in poor households and policy target groups being excluded from the beneficiary list. • There may be disputes.rightsLand use and property being held in the name of another family member means that women receiving assistance do not have legal control over their place of residence. • The absence of legal assistance/protection mechanisms to support poor women can lead tostatusdisputed property or unstable permanent residence. • RiskroModerate because of its high occurrence, there may be cumulative effects. • Althoughof course, can strengthen inspection and supervision measures. Have a priority mechanism and publicize the priority regime for households.
3.12	Impact / encroachment on cultural space, cultural relics / sites		x		• The project to build and renovate houses for households, all on private land with the right to use, has absolutely no impact on any cultural relics (pagodas in communes, memorial houses) in the locality.

Thus, the list of environmental and social risks associated with the SES requirements after risk screening and categorization includes:

i. **Land dispute risks / absence of Land Use Right Certificates (LURCs).** Construction land of poor households may lack formal LURCs (medium risk for storm-resilient housing support activities). Installation of wastewater treatment systems poses no risk of land disputes, as health facilities already possess LURCs, and solar PV panels are mounted on facility rooftops. However, the storm-resilient housing support activity may require clear provisions to mitigate potential risks. Specifically, some poor households may not yet be issued LURCs, potentially leading to their exclusion from the beneficiary list. Moreover, after female-headed households receive newly constructed houses, disputes may arise over land ownership with other family or extended family members, given that in Vietnam, women often relocate to their husband's land after marriage.

ii. **Risks of inadequate consultation** (medium risk for solar PV and storm-resilient housing; low risk for wastewater treatment systems). Households interviewed around certain commune health stations indicated that lack of project information—on solar PV safety and wastewater treatment quality/technology—could lead to concerns about adverse impacts. Absence of consultations and discussions on beneficiary selection criteria could create community disagreement, or even complaints. Another risk is that without consultation on housing design, completed houses may not meet household needs.

iii. **Risks of inequitable access** (medium risk for storm-resilient housing). Dissent may arise among beneficiaries when households disagree with the selection criteria. Additionally, poor female-headed households or households with persons with disabilities may be overlooked without clear prioritization mechanisms.

iv. **Gender inequality risks** (medium risk for storm-resilient housing support). Without monitoring and clear prioritization mechanisms, poor female-headed households and other vulnerable groups (e.g., persons with disabilities) may not receive support in practice, despite being prioritized. In many cases, although women are supported with housing, they may not have control over the asset due to land disputes with the husband's family. Poor women may face new vulnerabilities, such as being coerced to sell the house, dispossession, or inability to secure long-term residency.

v. **Community health and safety risks** (medium risk for solar PV; low risk for wastewater treatment systems and storm-resilient housing). Concerns have been raised by commune health staff (particularly female staff) and some nearby households that solar PV radiation may affect community health. Improper disposal of PV modules could also pose risks. However, solar PV is primarily composed of silicon, a non-toxic material safely encased in glass and aluminum. During installation and operation, however, risks of injury and fire/explosion from batteries exist if systems are poorly installed or operated. Wastewater treatment systems, if not regularly maintained, may deteriorate and emit odors, affecting staff and patients at district hospitals. Construction workers and nearby residents may also face occupational health and safety risks (e.g., ladder falls, scaffold collapse, wall collapse) if safety regulations are not adhered to.

Risks of air pollution, noise, vibration, solid and hazardous waste generation, and impacts on water quality. All three activities may generate environmental impacts. Wastewater treatment installation at Phu My District Health Center requires particular attention, as activities include excavation, concrete works, installation of pipelines, fittings, and equipment. These pose environmental pollution risks, particularly within the Health Center premises. Contractors must comply with proposed mitigation measures. Furthermore, construction requires environmental permits issued by the Department of Agriculture and Environment, supported by the Health Center and the technical and ESIA consultants. Construction of storm-resilient housing and wastewater treatment systems should avoid the rainy season to prevent exacerbating environmental degradation.

vi. **Risks of sustainability and operation & maintenance (O&M) after investment** (medium risk for solar PV systems, decentralized wastewater treatment, and storm-resilient housing). There is a risk of equipment degradation, causing service interruptions, if there is no periodic maintenance plan or insufficient post-warranty budget. In terms of human capacity, health station and district health center staff may lack technical skills for solar PV and wastewater O&M. District- and commune-level interviews highlighted that without training and transfer of operational know-how, as well

as budget for O&M, there could be misoperation, reduced lifespan of solar PV, and malfunctioning of decentralized wastewater treatment systems. Storm-resilient houses may also deteriorate or become damaged over time if not properly maintained, particularly if construction quality is substandard.

CHAPTER 5. ENVIRONMENTAL AND SOCIAL POLLUTION PREVENTION AND MITIGATION MEASURES

This chapter presents the prevention and mitigation measures for environmental and social impacts related to the project’s critical infrastructure components in Binh Dinh Province.

Mitigating the project’s environmental and social risks, in line with UNDP’s SES procedures, is prioritized not only to ensure equity in project benefits but also as a core element of the project’s sustainable development and climate resilience strategy. Within the project framework on critical infrastructure support in Binh Dinh Province, representatives of the Provincial People’s Committee (PPC), the Department of Finance, the Department of Health, along with district- and town-level government leaders and representatives from health facilities participating in the project, contributed valuable ideas on environmental and social risk mitigation measures. Three consultation workshops, held in Phu Cat District, Hoai Nhon Town, and Phu My District Health Center on June 11–12, 2025, revisited and reinforced the identified groups of environmental and social risks, while also discussing mitigation measures.

The proposed solutions for mitigating environmental and social risks associated with activities—such as installation of solar PV systems combined with Battery Energy Storage Systems (BESS) at health facilities, installation of Johkasou package wastewater treatment plants, and retrofitting of storm-resilient housing for poor households—are diverse. These measures are expected not only to reduce risks but also to help localities cut greenhouse gas emissions, limit water pollution, and strengthen the adaptive capacity and resilience of communities in the three coastal areas of Binh Dinh Province against increasingly frequent natural disasters caused by climate change.

Through consultations with communities and potential beneficiaries, and by drawing lessons from previous projects (such as the Vietnam–Korea Peace Village Project in Binh Dinh Province), the prevention and mitigation measures for social risks were designed to be locally appropriate while also ensuring comprehensiveness. This allows local authorities, health facilities, and communities to apply them effectively—not only to reduce risks and overcome challenges but also to proactively adapt to emerging social challenges brought by climate change. The table below presents the environmental and social risk prevention and mitigation measures for the project’s critical infrastructure components in Binh Dinh Province.

Table 11: Measures to prevent and minimize environmental and social pollution for important infrastructure projects in Binh Dinh province

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
I	**INSTALLATION OF BESS SOLAR POWER SYSTEM** - 01 30kW solar battery system combined with 20kWh BESS at the Faculty Disease control and HIV/AIDS, Public Health, Nutrition, Food Safety, Phu My Medical Center - 07 solar battery systems with capacity of 6 kW combined with BESS with capacity of 10 kWh/system at medical stations of My Cat, My Tai, My Tho, My Chau, My Duc, My Thang, My Chanh.				
1.1	Rights of ethnic minorities: There is a presence of isolated ethnic minority communities in the project area.		x		No mitigation measures are proposed.
1.2	Land access/ land use rights and assets/ land disputes/ land recovery		x		No mitigation measures are proposed.
1.3	Impact on biodiversity and sustainable resource management	x		Short	• Project to purchase products with certificate of origin • Materials and equipment purchased to perform installation
1.4	Public health and safety risks	x		Medium	*Construction phase:* • Announce construction time and set up construction area signs to prevent medical staff and patients from entering the construction area and from performing medical examination and treatment activities in the construction area. • Construction workers must ensure they have protective equipment. *Operational phase* • Ensure the equipment has origin and source to avoid importing poor quality goods. • Follow the supplier's installation procedures • Regularly maintain and service the inverter system, connection system, etc. to avoid risks of fire, explosion, and electrical short circuits.
1.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups.		x		No mitigation measures are proposed.
1.6	Risk of inadequate consultation	x		Medium	• Strengthen communication, provide more complete and easy-to-understand information about the safety of solar panel technology. • Publicise the complaints and feedback process in accordance with regulations through the media, or disseminate it during local consultations
1.7	Deterioration of air quality		x	Short	• Comply with the regulations on construction methods implemented by the Technical Consultant.

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
					• Inform patients and medical staff about the construction plan, construction time, and installation of the solar panel system so that the affected area (medical examination and treatment) can be moved to another area, ensuring that medical examination and treatment for the community is not interrupted.
1.8	Noise and vibration pollution		x	Short	• There are measures to reduce noise and vibration such as planning the use of noise-generating equipment, ensuring that construction and installation do not cause high noise levels... affecting patients and medical staff. • Regularly monitor the contractor's construction activities to ensure that noise and vibration levels do not exceed the permitted standards on noise and vibration according to QCVN 26:2025/BTNMT - National technical regulations on noise; QCVN 27:2025/BTNMT - National technical regulations on vibration; QCVN 05:2023/BTNMT - National technical regulations on air quality;
1.9	Generation of solid waste and hazardous waste	x		Short	• Construction solid waste: Collect and classify reusable solid waste. In case the waste cannot be reused, sign a contract with the competent authority - Phu My Public Service Management Board - to collect, transport and treat the waste; • Hazardous waste is collected and treated by the competent unit: Hau Sanh Trading and Environment Company Limited (if any). Because this company is the hazardous waste treatment unit for Phu My Medical Center.
1.10	Risks of system maintenance and operation	x		Medium	• There is a plan to train and transfer operating techniques to the technical team of the District Health Center. • Project owner - Department of Health and Medical Center arrange budget for maintenance (within the unit's annual repair budget)
1.11	Gender inequality risks and vulnerabilities of poor women		x		No mitigation measures taken
1.12	Impact / encroachment on cultural space, cultural relics / sites.		x		No mitigation measures taken
1.13	Climate change and disaster risks		x		No mitigation measures taken
II	**INSTALLATION ACTIVITIES OF THE WASTEWATER TREATMENT SYSTEMIDEANUHJOHKASOUL COMPLEX AT PHU MY MEDICAL CENTER**				
2.1	Land revocation/Land dispute/lack of land use right certificate		x		No mitigation measures taken
2.2	Land access/ land use rights and assets/ land disputes/ land recovery		x		No mitigation measures taken
2.3	Impact on biodiversity and sustainable resource management	x		Short	• To ensure that the raw materials, Jahkashoul wastewater treatment system does not involve unsustainable resource exploitation. The supplier must provide a certificate of origin.

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
					• Raw materials will be purchased during project activities, not self-exploited.
2.4	Public health and safety risks	X		Medium	*Construction phase* • Officers and workers comply with the requirementsbridgeon labor protection such as labor protection equipment • Transporting raw materials, excavated soil, fill soil, and materials must be covered and tarpaulin-covered. *Operational phase* • Comply with the requirements of the Johkasoul integrated wastewater treatment system operation and maintenance manual
2.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups		x		No mitigation measures taken
2.6	Risk of inadequate consultation	x		Short	• Provide information on wastewater treatment system safety through community meetings
2.7	Deterioration of air quality	x		Medium	*Construction phase:* • Collect construction materials and waste. Arrange workers to collect construction materials and waste to designated areas at the end of the day or shift. • Temporarily contain materials and waste within a fence or cover to prevent dust dispersion. *Operational phase:* • Maintain and operate according to manufacturer's requirements to avoid risks of wastewater leakage, causing environmental pollution within the wastewater treatment plant.
2.8	Noise and vibration pollution	x		Short	*Construction phase:* • There should be plans to mobilize construction machinery to ensure no noise or vibration is caused to people coming for medical examination and treatment and to staff working at the Medical Center. • Avoid construction activities that cause loud vibrations and loud noises between 6 p.m. and 6 a.m. Nighttime construction must be notified to medical visitors and medical staff at the Health Center at least 2 days in advance. *Operational phase:*No effect
2.9	Solid waste generation	x		Medium	*Construction phase:* • The contractor shall arrange trash bins, classify waste, and have a daily site cleaning plan that must be followed throughout the construction process. • Waste containers must be covered and made of corrosion-resistant, waterproof materials. • Do not litter in unauthorized places. • Segregate recyclable materials from waste streams for use or sale prior to disposal according to design documents approved by the supervising engineer.

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
					• Solid waste will be collected and treated according to the contract signed by Phu My District Medical Center with Phu My Public Service Management Board to treat solid waste and domestic waste. *Operational phase:* • Solid waste and domestic waste will be collected and treated according to the contract signed by Phu My District Medical Center with Phu My Public Service Management Board to treat solid waste and domestic waste.
2.9	Hazardous waste generation	x		Medium	*Construction phase:*No impact *Operational phase:* • Collect, store and transport hazardous waste according to Circular No. 36/2015/TT-BTNMT on hazardous waste management and Decision No. 38/2015/ND-CP dated April 24, 2015 on waste and scrap management. • Currently, Phu My Medical Center has signed a contract with Hau Sanh Trading and Environment Company Limited to handle hazardous waste.
2.10	Water quality	x		Medium	*Construction phase:* • Agreement with Phu My Medical Center to use existing restrooms due to small number of workers, about 20 people. • Do not discharge waste, garbage, oil into water. *Operational phase* • Periodically monitor the quality of output wastewater: 02 times/year, ensuring that the wastewater meets the requirements for output wastewater.
2.11	Risks of system maintenance and operation	x		Medium	The medical center arranges for competent people to receive technical transfer on operation and maintenance of works, wastewater treatment systems and management of wastewater treatment system operations.
2.12	Gender inequality risks and vulnerabilities of poor women		x		Not applicable
2.13	Impact / encroachment on cultural space, cultural relics / sites.		x		• The construction project is only carried out on the land of the Medical Center and has ownership and usage rights, and will not affect any cultural relics (pagodas in communes, memorial houses) in the locality.
2.14	Climate change and disaster risks		x		• The existing wastewater treatment system of Phu My District Center was built in 2008. The project will contribute to reducing the risk of environmental pollution and disease spread. • Due to system processingwaterThe existing wastewater treatment system of the Medical Center has degraded, so the installation of a suitable wastewater treatment system will help improve the ability to handle environmental pollution and ensure sustainable operation, especially in extreme weather conditions.
III	**BUILDING STORM- AND FLOOD-RESISTANT HOUSING IN VULNERABLE COASTAL AREAS**				

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
3.1	Land revocation/Land dispute/lack of land use right certificate	x		Medium	• Announce the criteria for selecting beneficiary households (HHL) so that households know, discuss and agree. • Discuss a specific criterion related to land use rights: poor households, poor female-headed households, lacking land use rights certificates but in real need of housing support, with land suitable to local planning, agreed by the community, can still receive support.[7] • Develop a written agreement between family members and the female head of household. This discussion should be endorsed by the local authorities. The commune People's Committee should clearly state the rights of the female head of household.
3.2	Land access/ land use rights and assets/ land disputes/ land recovery	x		Medium	• Add flexible and priority criteria to the set of beneficiary criteria (inherited from the previous Korean-supported housing project) that take into account gender factors. Allow poor households or poor female-headed households who do not have land use rights certificates but are residing stably on land that does not violate local planning to be included in the list of beneficiaries when their houses are damaged or dilapidated.
3.3	Impact on biodiversity and sustainable resource management	x		Short	• Renovating existing structures in households. Therefore, it does not impact biodiversity and natural resources. • Use of construction materials, which may involve unsustainable resource extraction, can be minimized when products purchased during project activities are guaranteed to have a provenance.
3.4	Public health and safety risks	x		Short	• The contractor requires workers to comply with labor safety regulations. • Construction workers inspect construction equipment before use, such as mixers and drills. • Reinforce scaffolding, ladders, and walls according to technical standards • Install nets and fences around the construction area to prevent materials from falling out. • There is a warning for people not to go near the construction site.
3.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups	x		Medium	• Develop a clear set of criteria, publicly available to the community; organize meetings to review the List of beneficiary households with the participation of community representatives and commune/village officials. • There are priority/specific criteria for female-headed households of poor households, poor households need support even if they do not have land use rights certificates, but their residential land is in accordance with local land use planning.

[7] At the meeting at the People's Committee of Hoai Nhon town and the People's Committee of Phu Cat district, the issue of poor households that do not have land use right certificates but really need housing support was raised. Representatives of the Economic - Infrastructure Department and the Department of Natural Resources and Environment said that if there are such requests, the functional departments will review the household's residential land. If this land does not violate the local land planning, such households should still be included in the list of beneficiaries (priority mechanism like female heads of poor households). The leaders of the People's Committee of the town also expressed their agreement with the above opinion.

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
3.6	Risk of inadequate consultation	x		Medium	• Conduct full community consultation, providing information and two-way communication with all community representatives, poor households, households with disabled people and female-headed households. The consultation content focuses on clearly introducing the project, as well as making transparent the criteria for selecting beneficiaries. • Provide guidance/publicize the complaint and feedback process in accordance with regulations through the media, or disseminate it during project introductions. • During the design consultation, the scope of financial support should be clearly communicated.
3.7	Deterioration of air quality	x		Short	• Vehicles transporting raw materials must be covered with tarpaulin to ensure that raw materials do not fall or fly dust onto village roads, affecting traffic participants (it is expected that there will be 2-3 vehicles transporting raw materials).
3.8	Noise and vibration pollution	x		Short	*Construction phase:* • There must be plans to mobilize construction machinery to ensure no noise or vibration is caused to the surrounding community. • Avoid construction activities that cause loud vibrations and loud noises between 6 and 7 a.m. Nighttime construction must be notified to the surrounding community at least 2 days in advance.
3.9	Generation of solid waste and hazardous waste	x		Short	*Construction phase:* • Collect solid waste and household waste and treat them according to the local waste collection and treatment system.
3.10	Risks of system maintenance and operation	x		Medium	• The coordinator works with local authorities, asking the authorities to recommend reputable construction contractors/ or allowing homeowners to choose reputable contractors they know. • Establish criteria on construction quality and building materials that contractors must comply with. • The project coordinator/supervisor will be present on site continuously to supervise the construction, execution/installation. • Mobilize community monitoring with the participation of people in general and representatives of the Women's Union in particular, supporting the project management board coordinator in monitoring activities. • Conduct three (3) steps of supervision and acceptance[8]such as acceptance of the house foundation when the construction team completes pouring the foundation; acceptance of the house frame and rough construction; and finally acceptance after completing the house.

[8] This recommendation is provided by the Project Management Unit Coordinator of the Vietnam - Korea Peace Village Project, which is also the Project Management Unit of the Department of Finance - Binh Dinh, based on experience from the supervision of the implementation of storm shelter construction works of this project implemented in Binh Dinh in 2023.

STT	Potential environmental and social risks	Risk potential Have	Are not	Risk level	Measures to prevent and reduce environmental pollution
					• There are supervision records/acceptance records to ensure transparency.
3.11	Gender inequality risks and vulnerabilities of poor women	x		Medium	• Announce household selection criteria and have a clear priority criteria framework for groups of poor women and policy target groups to include in the list of beneficiary households. • Consult with both husband and wife on the design, ensuring that the application for support has the names and signatures of both husband and wife (unless one of them is deceased) • In case the land is under the use rights of the husband's family members, a written agreement mechanism can be applied between family members, in which the female head of household agrees to be the owner of the property. This document needs to be confirmed by the People's Committee of the commune/ward to ensure legality and avoid future disputes. • Include commune-level women representatives in the program to monitor the benefits of vulnerable groups, including poor female-headed households, according to criteria for selecting beneficiaries that have been agreed upon and made public in the community.
3.12	Impact / encroachment on cultural space, cultural relics / sites		x		• No mitigation measures taken

CHAPTER 6. ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

This chapter is prepared based on the findings of the Environmental and Social Impact Assessment (ESIA) and the proposed mitigation measures for the project’s critical infrastructure components in Binh Dinh Province. Building on these results, the chapter outlines the Environmental and Social Management and Monitoring Programs, the Stakeholder Engagement Plan (SEP), the Grievance Redress Mechanism (GRM), and the arrangements for stakeholder participation in grievance redress processes.

6.1. Environmental Management and Monitoring Program

This section consolidates the identified environmental and social impacts, the corresponding mitigation measures, and sets out the Environmental and Social Management and Monitoring Program for the project’s critical infrastructure in Binh Dinh Province. Details are provided in the table below:

Table 12: Consolidated Environmental Management and Monitoring

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
I	**BESS COMBINED SOLAR PANEL INSTALLATION ACTIVITIES** - 01 30kW solar battery system combined with 20kWh BESS at the Faculty Disease control and HIV/AIDS, Public Health, Nutrition, Food Safety, Phu My Medical Center - 07 solar battery systems with a capacity of 6 kW combined with BESS with a capacity of 10 kWh at My Cat, My Tai, My Tho, My Chau, My Duc, My Thang, My Chanh medical stations							
1.1	Ethnic minority rights: Presence of isolated ethnic minority communities in the project area		x	Are not	No mitigation measures are proposed.[9]	No implementation required	No implementation required	
1.2	Land access/ land use rights and assets/ land disputes/ land recovery		x	Are not	No mitigation measures are proposed.	No implementation required	No implementation required	
1.3	Impact on biodiversity and sustainable resource management	x		Short	• Project to purchase products with certificates of origin and quality • Materials and equipment purchased for installation: Inverter, PV panels, BESS	Equipment supplier and installer	Binh Dinh Department of Health UNDP	CO and CQ certificates required for Inverters, PV panels, BESS Before installing the device
1.4	Public health and safety risks	x		Medium	*Construction phase:* • Announce construction time and set up construction area signs to keep medical staff and patients away from the construction area and not perform medical examination and treatment activities in the construction area. • Construction workers must ensure they have protective equipment. *Operational phase*	Solar panel equipment supplier 08 medical facilities	Binh Dinh Department of Health UNDP	Monitor the construction process to ensure contractors comply with occupational safety procedures. Implementation report and summary report

[9]Despite the assertions by the leaders of Hoai Nhon Town and Phu Cat District that there are no ethnic minority communities living in the coastal communes where storm shelters are expected to be supported, if some ethnic minority households are included in the list of beneficiaries according to the final decision of the localities, Article 6 of the SES Ethnic Minority Standards will be triggered, ensuring that UNDP-supported projects respect the rights, culture, and livelihoods of ethnic minority communities. There will be assessments on whether FPIC (Free, Prior, and Informed Consent) needs to be triggered and whether an Ethnic Minority Plan needs to be implemented.

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
					• Ensure the equipment has origin and source to avoid importing poor quality goods. • Follow the supplier's installation procedures • Regularly maintain and service the inverter system, connection system, etc. to avoid risks of fire, explosion, and electrical short circuits.			
1.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups.		x	No risk	• No mitigation measures are proposed.	No implementation required	No implementation required	
1.6	Risk of inadequate consultation	x		Medium	• Strengthen communication, provide more complete and easy-to-understand information about the safety of solar panel technology. • Publicise the complaints and feedback process in accordance with regulations through the media, or disseminate it during local consultations	08 Medical Facilities Commune People's Committee Mass organizations such as the Vietnam Fatherland Front Project coordinator	Binh Dinh Department of Health, UNDP	Implemented in all 3 project phases (preparation-design, construction and handover-operation). Minutes and/or reports of consultation implementation
1.7	Deterioration of air quality		x	Short	• Comply with the regulations on construction methods implemented by the Technical Consultant. • Inform patients and medical staff about the construction plan, construction time, and installation of the solar panel system so that the affected area (medical examination and treatment) can be moved to another area, ensuring that medical examination and treatment for the community is not interrupted.	Equipment supplier and installer	Phu My Medical Center/07 Commune Health Stations Binh Dinh Department of Health, UNDP	Construction phase Construction methods must be agreed upon by UNDP and the Department of Health. Implementation report and summary report

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
1.8	Noise and vibration pollution		x	Short	• There are measures to reduce noise and vibration such as planning the use of noise-generating equipment, ensuring that construction and installation do not cause high noise levels... affecting patients and medical staff. • Regularly monitor the contractor's construction activities to ensure that noise and vibration levels do not exceed the permitted standards on noise and vibration according to QCVN 26:2025/BTNMT - National technical regulations on noise; QCVN 27:2025/BTNMT - National technical regulations on vibration; QCVN 05:2023/BTNMT - National technical regulations on air quality;	Equipment supplier and installer	Health Center/07 Commune Health Stations Binh Dinh Department of Health, UNDP	Construction phase All equipment has environmental safety license. Implementation report and summary report
1.9	Generation of solid waste and hazardous waste	x		Short	• Construction solid waste: Collection and classification of reusable solid waste. • In case the waste cannot be reused, the amount of solid waste will be collected according to the current solid waste collection unit of the Medical Center - Thus, Phu My Public Service Management Board will collect, transport and treat these types of waste; • Hazardous waste is collected and treated by the competent unit: Hau Sanh Trading and Environment Company Limited (if any)	Equipment supplier and installer	Phu My Medical Center and 07 commune health stations Binh Dinh Department of Health, UNDP	During project construction, before handing over the project. Waste management plan Implementation report and summary report
1.10	Risks of system maintenance and operation	x		Medium	• There is a plan to train and transfer operating techniques to the technical team of the District Health Center. • Project owner - Department of Health and Medical Center arrange budget for maintenance (within the unit's annual repair budget)	Equipment supplier and installer Phu My Medical Center and 07 commune health stations	Binh Dinh Department of Health UNDP	During the handover and operation of the BESS hybrid solar power system Number of training sessions, technology transfer System Operation and Maintenance Manual

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
1.11	Gender inequality risks and vulnerabilities of poor women		x		• No mitigation measures are proposed.	No implementation required		
1.12	Impact / encroachment on cultural space, cultural relics / sites.		x		• No mitigation measures are proposed.	No implementation required		
1.13	Climate change and disaster risks		x		• No mitigation measures are proposed.	No implementation required		
II	**INSTALLATION ACTIVITIES OF THE WASTEWATER TREATMENT SYSTEMIDEANUHJOHKASOUL COMPLEX WASTEWATER TREATMENT PLANT AT PHU MY MEDICAL CENTER**							
2.1	Land revocation/Land dispute/lack of land use right certificate		x		• No mitigation measures are proposed.	No implementation required	No implementation required	
2.2	Land access/ land use rights and assets/ land disputes/ land recovery		x		• No mitigation measures are proposed.	No implementation required	No implementation required	
2.3	Impact on biodiversity and sustainable resource management	x		Short	• To ensure that the raw materials, Jahkashoul wastewater treatment system does not involve unsustainable resource exploitation. The supplier must provide documents certifying the origin. • Raw materials will be purchased during project activities, not self-exploited.	Equipment supply and installation contractor	UNDP, Department of Health, Phu My Medical Center	During project installation and operation Documents certifying the origin and quality of equipment and materials used in the project.
2.4	Public health and safety risks	x		Medium	Construction phase • Contractor staff and workers comply with labor protection requirements. Operational phase • Comply with the requirements of the Jahkashoul integrated wastewater treatment system operation and maintenance manual	Equipment supply and installation contractor	Medical Center Health service UNDP	Project construction time. Safety instructions and documentation during installation. Report on implementation of safety measures during system installation phase Safety instructions for system operation phase

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
2.5	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups		x		• No mitigation measures are proposed.	No implementation required	No implementation required	
2.6	Risk of inadequate consultation	x		Short	• Provide information on wastewater treatment system safety through community meetings and to health care workers	Phu My District Medical Center. Health Department Coordinator	Binh Dinh Department of Health UNDP	Before and during construction. Monitoring Index:: *Number of information consultations and proportion of female participants.
2.7	Deterioration of air quality	x		Medium	Construction phase: • Collect construction materials and waste. Arrange workers to collect construction materials and waste to designated areas at the end of the day or shift. • Temporarily contain materials and waste within a fence or cover to prevent dust dispersion. Operational phase: • Maintain and operate the system according to the manufacturer's requirements.	Equipment supply and installation contractor	Phu My District Medical Center Binh Dinh Department of Health UNDP	Construction and operation phase Report on implementation of solutions to ensure environmental safety System Operation Manual
2.8	Noise and vibration pollution	x		Short	*Construction phase:* • There must be plans to mobilize construction machinery to ensure that noise and vibration do not affect people coming for medical examination and treatment and doctors at the Medical Center. • Avoid construction activities that cause loud vibrations and loud noises between 6 p.m. and 6 a.m. Nighttime construction must be notified to medical visitors and medical staff at the Health Center at least 2 days in advance.	Equipment supply and installation contractor	Phu My District Medical Center Binh Dinh Department of Health UNDP	Construction phase: Certification records of machinery and equipment to ensure safety and quality
2.9	Solid waste generation	x		Medium	*Construction phase:*	Equipment supply and	Phu My District Medical Center	Construction and operation phase

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
					• The contractor shall arrange trash bins, classify waste, and have a daily site cleaning plan that must be followed throughout the construction process. • Waste containers must be covered and made of corrosion-resistant, waterproof materials. • Do not litter in unauthorized places. • Segregate recyclable materials from waste streams for use or sale prior to disposal according to design documents approved by the supervising engineer. • Solid waste will be collected and treated according to the contract signed by Phu My District Medical Center with Phu My Public Service Management Board to treat solid waste and domestic waste. *Operational phase:* • Solid waste and domestic waste will be collected and treated according to the contract signed by Phu My District Medical Center with Phu My Public Service Management Board to treat solid waste and domestic waste.	installation contractor	Binh Dinh Department of Health UNDP	Contracts and reports on solid waste collection and treatment Implementation report
2.9	Hazardous waste generation		x	Medium	*Construction phase:* • No impact *Operational phase:* • Collect, store and transport hazardous waste according to Circular No. 36/2015/TT-BTNMT on hazardous waste management and Decision No. 38/2015/ND-CP dated April 24, 2015 on waste and scrap management. Currently, Phu My Medical Center has signed a contract with Hau Sanh Trading and Environment Company Limited to handle hazardous waste.	Phu My District Medical Center Binh Dinh Department of Health UNDP	Phu My District Medical Center Binh Dinh Department of Health UNDP	Operational phase Contract and report on the collection and treatment of hazardous waste.
2.10	Water quality	x		Medium	*Construction phase:*	Equipment supply and	Phu My District Medical Center	Construction and operation phase:

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
					• Agreement with Phu My Medical Center to use existing restrooms. • Do not discharge waste, garbage, oil into water bodies. *Operational phase* • Periodically monitor the quality of output wastewater:02times/year, ensuring wastewater meets output wastewater requirements.	installation contractor	Binh Dinh Department of Health UNDP	Surface water monitoring results near the wastewater discharge area of Phu My Medical Center.
2.11	Risks of system maintenance and operation	x		Medium	• The medical center arranges for competent people to receive technical transfer on operation and maintenance of works and operation of wastewater treatment system.	Phu My District Medical Center	Binh Dinh Department of Health UNDP	During the operating phase Project handover report System Operation Manual
2.12	Gender inequality risks and vulnerabilities of poor women		x		• There is no evidence to suggest that the project exacerbates gender equality issues in the locality.	No implementation required		
2.13	Impact / encroachment on cultural space, cultural relics / sites.		x		• The construction project is only carried out on the land of the Medical Center and has ownership and usage rights, and will not affect any cultural relics (pagodas in communes, memorial houses) in the locality.	No implementation required		
2.14	Climate change and disaster risks		x		• The project will improve medical wastewater treatment to prevent contamination and disease spread. • Due to the deterioration of the existing wastewater treatment system of the Medical Center, wastewater treatment is ineffective and can pose risks to the surrounding environment. Therefore, the installation of a suitable wastewater treatment system will help improve the ability to handle environmental pollution and ensure sustainable operation in extreme weather conditions.	No implementation required		
III	**BUILDING STORM- AND FLOOD-RESISTANT HOUSING IN VULNERABLE COASTAL AREAS**							

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
3.1	Lack of access to land/ land and property rights/ land disputes/ land repossession	X		Medium	• Announce the criteria for selecting beneficiary households (HHL) so that households know, discuss and agree. • Discuss a specific criterion related to land use rights: poor households, poor female-headed households lacking land use rights certificates but in real need of housing support, with land suitable to local planning and agreed by the community, can still receive support.[10]. • *Develop a written agreement between family members and the female head of household. This discussion should be confirmed by the local authorities. The Commune People's Committee should clearly state the rights of the female head of household. • Add soft criteria, allowing some poor female-headed households, households with disabled members who are in extreme hardship, and living on land owned by other family members to still receive support.	People's Committees of communes Women's organizations Project coordinator	Department of Finance/UNDP Supervision of the Women's Union and the Fatherland Front of the commune (MTTQ)	During the project preparation phase, consultation is carried out. During the design and approval phase Monitoring indicators: 1) Names of localities announcing criteria for selecting beneficiary households; 2) Number of specific/priority criteria for poor women breadwinners and poor households lacking land use rights certificates approved; 3) Feedback from women and men on the above specific priority criteria
3.2	Impact on biodiversity and sustainable resource management	x		Short	• Renovating existing structures in households. Therefore, it does not impact biodiversity and natural resources. • Use of construction materials, which may involve unsustainable resource extraction, can be minimized when products purchased during project activities are guaranteed to have a provenance.	No implementation required		During construction Construction contractor performance report

[10]At the meeting at the People's Committee of Hoai Nhon town and the People's Committee of Phu Cat district, the issue of poor households that do not have land use right certificates but really need housing support was raised. Representatives of the Economic - Infrastructure Department and the Department of Natural Resources and Environment said that if there are such requests, the functional departments will review the household's residential land. If this land does not violate the local land planning, such households should still be included in the list of beneficiaries (priority mechanism like female heads of poor households). The leaders of the People's Committee of the town also expressed their agreement with the above opinion..

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
3.3	Public health and safety risks	x		Short	• The contractor requires workers to comply with labor safety regulations. • Construction workers inspect construction equipment before use, such as mixers and drills. • Reinforce scaffolding, ladders, and walls according to technical standards • There is a warning for people not to go near the construction site.	Construction contractor	Department of Finance/UNDP People's Committees of communes Mass organizations	During construction Construction contractor performance report
3.4	Social Justice and Inclusion: Lack of Equitable Access for Vulnerable Groups	x		Medium	• Develop a clear and public set of criteria for selecting participants; organize meetings to review the list of beneficiary households with the participation of community representatives and commune/village officials. • There are priority criteria for female-headed households, poor households in need of support without land use rights certificates, and disabled households.	People's Committees of communes Mass organizations Project coordinator Households and residents benefit	Department of Finance/UNDP Representatives of the Commune Women's Union and the Vietnam Fatherland Front	Done during project preparation phase. Monitoring index: priority provisions added to the beneficiary selection criteria (beneficiary selection criteria of the Vietnam-Korea Peace Village support project) List of female breadwinners of poor households and disabled households (if priority is given) is compiled.
3.5	Risk of inadequate consultation	x		Medium	• Conduct full community consultation, provide information - two-way exchange with community representatives, poor households, households with disabled people and female-headed households. The consultation content focuses on clearly introducing the project, as well as publicizing the criteria for selecting beneficiaries. • Provide guidance/publicize the complaint and feedback process in accordance with regulations through the media, or disseminate it during project introductions. • During the design consultation, it is necessary to clearly inform the scope of financial support within the project scope.	People's Committees of communes Mass organizations Project coordinator	Department of Finance/UNDP Fatherland Front and representatives of the Commune Women's Union	Throughout the life of the project. Monitoring index: I) Number of consultations/consultation minutes and number of men/women participating in consultations 2)Consultation contents on criteria for selecting beneficiaries; GRM has been announced in which localities 3) Local media support community consultation, publicize project information, and publish lists of beneficiaries.
3.6	Deterioration of air quality	x		Short	• Vehicles transporting raw materials must be covered with tarpaulins to	Construction contractor	Department of Finance/UNDP	During construction phase.

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
					ensure that they do not fall or spread dust onto village roads, affecting the community in the project area (it is expected that there will be 2-3 vehicles transporting raw materials).		People's Committees of communes Mass organizations	Construction contractor performance report
3.7	Noise and vibration pollution	x		Short	*Construction phase*: • There must be plans to mobilize construction machinery to ensure no noise or vibration is caused to the surrounding community.	Construction contractor	Department of Finance/UNDP People's Committees of communes Mass organizations	Construction phase: Machinery mobilization plan Construction contractor performance report
3.8	Generation of solid waste and hazardous waste	x		Short	*Construction phase:* • Collect solid waste, domestic waste and treat it according to the local waste collection and treatment system	Construction contractor	Department of Finance/UNDP People's Committees of communes Mass organizations	Construction phase Construction contractor performance report
3.9	Risks of system maintenance and operation	x		Medium	• The coordinator works with local authorities, asking the authorities to recommend reputable construction contractors/ or allowing homeowners to choose reputable contractors they know. • Establish criteria on construction quality and building materials that contractors must comply with. • The project coordinator/supervisor will be present on site continuously to supervise the construction, execution/installation. • Mobilize community monitoring with the participation of people in general and representatives of the Women's Union in particular, supporting the project management board coordinator in monitoring activities.	Construction contractor	Department of Finance/UNDP People's Committees of communes Mass organizations	Construction phase and operation phase Monitoring indicators: List of monitoring groups and number of women involved in monitoring activities Number of houses accepted as meeting requirements

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
					• Conduct three (3) steps of supervision and acceptance[11]such as acceptance of the house foundation when the construction team completes pouring the foundation; acceptance of the house frame and rough construction; and finally acceptance after completing the house. • There are minutes of supervision and acceptance to ensure transparency.			
3.10	Gender inequality risks and vulnerabilities of poor women	x		Medium	• Announce household selection criteria and have a clear priority criteria framework for groups of poor women and policy target groups to include in the list of beneficiary households. • Consult with both husband and wife on the design, ensuring that the application for support has the names and signatures of both husband and wife (unless one of them is deceased) • In case the land is under the use rights of the husband's family members, a written agreement mechanism can be applied between family members, in which the female head of household agrees to be the owner of the property. This document needs to be confirmed by the People's Committee of the commune/ward to ensure legality and avoid future disputes. • Include commune-level women representatives in the program to monitor the benefits of vulnerable groups, including poor female-headed households, according to criteria for	People's Committees of communes Mass organizations Project coordinator.	Department of Finance/UNDP Fatherland Front and representatives of Women's Union at commune level	During the project preparation phase, develop additional criteria for prioritizing beneficiary selection, before confirming the beneficiary lists. Monitoring index: 1. Proportion of women participating in consultation sessions and receiving information on beneficiary criteria. 2. Additional priority criteria to be added to the set of criteria for selecting beneficiary households. 3. Number of female pillars of poor households of the project benefiting 4.Affidavit of participation in house construction signed by both husband and wife

[11]This recommendation was provided by the Project Management Unit Coordinator of the Vietnam - Korea Peace Village Project, which is also the Project Management Unit of the Department of Finance - Binh Dinh, based on experience from the supervision of the implementation of storm shelter construction works of this project carried out in Binh Dinh in 2023.

STT	Potential environmental and social risks	Risk potential		Risk level	Measures to prevent and reduce environmental pollution	Responsibility		Monitoring time and index
		Have	Are not			Made by	Monitor	
					selecting beneficiaries that have been agreed upon and made public in the community.			
3.11	Impact / encroachment on cultural space, cultural relics / sites		x		No mitigation measures are proposed.	No implementation required		

6.2. Stakeholder Engagement Plan

The Stakeholder Engagement Plan (SEP) for project activities in three district-level localities of Binh Dinh Province and participating health facilities is developed in line with the UNDP Social and Environmental Standards (SES). The SEP aims to ensure that project implementation adheres to the principles of transparency, equity, and sustainable development. It plays a critical role in enhancing accountability and promoting meaningful participation of stakeholders throughout the entire project life cycle.

The plan is prepared with a gender-sensitive approach, ensuring that women—particularly single women, female-headed households, poor households, as well as other vulnerable groups—and men have equal opportunities to voice their perspectives, express their needs, and benefit from project outcomes. This integration contributes to safeguarding and advancing the rights of groups often marginalized in development processes.

The plan shall be subject to consultations and disclosure through meaningful stakeholder consultations. These activities will facilitate the building of social consensus, thereby strengthening community support for the project. Consultations also provide an opportunity to integrate context-appropriate solutions, ensuring that project implementation avoids adverse impacts while contributing to the promotion of human rights and social equity. The content of the plan reflects UNDP's commitment to international standards of responsible and inclusive development, adapted to the realities and cultural context of Viet Nam.

6.2.1. Identification of Stakeholders

Project stakeholders will be grouped according to their functions, responsibilities, and roles across the project life cycle. The stakeholders are identified as follows:

Table 13: Classification of Stakeholders and Roles of Stakeholders

TT	Classify stakeholders into groups	The main roles of the parties
1	Sponsors and implementers of important infrastructure projects in Binh Dinh province	
a.	UNDP Vietnam	Project funding. Organize procurement (with BSS combined solar panels and Johkasou integrated wastewater treatment system) and hand over the package to selected medical units. Support and transfer costs to implement the construction of 40 flood-resistant houses in Binh Dinh province (now Gia Lai province). Project implementation monitoring (through reporting from the project owner, or from the contractor selected by UNDP, or field survey...) Provincial support organization, project technical experts
b.	Health service	Project management, coordination, preparation and support for UNDP to implement project activities at the local level, specifically the installation of solar panels combined with BESS and installation of Johkasou (combined wastewater treatment system) Support contractors/stakeholders in implementing measures to mitigate environmental and social risks (if any) Project implementation supervision ensures that project activities are carried out according to approved documents (check reports, work on site with stakeholders to determine completed volume)
c.	Department of Finance - Project Management Board	Project management, coordination and responsibility for implementing relevant activities at the local level, specifically the construction of 40 flood-resistant houses. Monitor and support contractors/stakeholders in implementing measures to mitigate environmental and social risks (if any).

TT	Classify stakeholders into groups	The main roles of the parties
	represents UNDP's partner agency[12]	Support to resolve complaints/inquiries in GRM.
d.	Technical support consulting	Support for design of BES combined solar battery system, Johksou integrated wastewater treatment system, construction of flood-resistant houses Support and coordinate with ESIA Consultant to complete environmental license for Johkasau integrated wastewater treatment system.
e	ESIA Consulting	Conduct environmental and social impact reviews and assessments of the project, develop necessary risk management plans to ensure that project activities comply with UNDP's environmental safeguard policies and are in accordance with Vietnamese government regulations. Ensure appropriate consultation processes during the finalization of ESIA reports, guidance on GRM mechanisms, and development of ESMPs for project construction items. Support Phu My Medical Center to complete environmental license for johkasau wastewater treatment system.
g	Contractor/Equipment Supplier	Prepare and submit the environmental management plan to the Department of Health and the Department of Finance for approval of the Contractor's Environmental and Social Management Plan (C-ESMP) before commencing construction and implementation of the C-ESMP during construction. Take actions to manage all activities that pose risks to the environment, society and safety. Maintain contact with local health facilities and residents to manage social disruption during construction. Disseminate the C-ESMP and safety instructions to all employees and field workers to understand the procedures and their duties in implementing the C-ESMP. Report to the Department of Finance and the Department of Health on any difficulties in project implementation and propose solutions for implementation and support (if necessary). Promptly report to local authorities, medical facilities, the Department of Finance and the Department of Health if environmental incidents occur and coordinate with key agencies and stakeholders to resolve these incidents. Develop operation and maintenance manuals and organize technical training and operating instructions for equipment items installed by the contractor.
2	State management agencies and relevant local authorities.	
	People's Committee of 02 districts: Phu My, Phu Cat and Hoai Nhon town	Support and coordinate with the Department of Health; Department of Finance/Project Management Board to implement locally.

[12]The Project Management Board representing the Binh Dinh Department of Finance - representing the UNDP partner agency, is still named the Vietnam - Korea Peace Village Construction Project Management Board.

TT	Classify stakeholders into groups	The main roles of the parties
	Commune and Ward People's Committees	After July 1, 2025, the People's Committees of communes with projects will perform the Support function and coordinate with the Department of Health, Department of Finance/Project Management Board to implement locally. Review and confirm vulnerable households to be included in the beneficiary list/confirm the list of households benefiting from storm shelters based on compliance with the criteria for selecting beneficiaries and priority provisions. The People's Committee of the commune/ward participates in resolving complaints in GRM as the administrative level receiving and resolving inquiries/complaints.
	Assigned commune cadres	Support the Department of Health; Department of Finance/Project Management Board to organize community consultations/communications. Support communication, select subjects, organize community consultation.
	Village chief/neighborhood chief	Support commune-level authorities to confirm and approve the list of beneficiary households. Participate in mediation / support project management board staff / mediate and resolve conflicts and complaints at the lowest level.
3	Relevant units benefiting from the project	
	Phu My Medical Center	Unit receiving and managing the operation of the BESS integrated solar energy system and decentralized wastewater treatment system: Agree with the Department of Health and UNDP on equipment installation location. Participate in ESIA activities during project preparation phase. Coordinate with UNDP ESIA consultant to complete environmental license and submit to Department of Agriculture and Environment for approval. Support supervision during construction and installation. Arrange technical team to attend training classes and operation instructions. Ensure operation and maintenance of equipment after the warranty period. Support project results evaluation.
	7 commune health stations of Phu My district	Participate in ESIA activities during project preparation phase. Support supervision during construction and equipment installation Support project results evaluation.
	People from households with housing difficulties (poor households, female-headed poor households, households with disabled people)	Enjoy the storm shelter. Protect your home from storms

TT	Classify stakeholders into groups	The main roles of the parties
	receive housing support.	
4	Other social organizations/voluntary community supporters	
	Organizations such as the Vietnam Fatherland Front and other social organizations	Representing community voices, supporting consultation and outreach to vulnerable groups, and providing support to vulnerable groups. Support for consultation and supervision of the Department of Health; Department of Finance/Project Management Board

Note: After July 1, 2025, commune/ward health stations will operate under the administrative management of the Commune/Ward People's Committees. District (or regional) Health Centers will provide technical support to the health stations.

6.2.2. Stakeholder Engagement Plan

This Stakeholder Engagement Plan (SEP) is structured according to the different phases of the project, including: (i) the preparation phase, (ii) the construction and installation phase, and (iii) the operation phase. The engagement activities focus primarily on stakeholders directly participating in or benefiting from project interventions, specifically: i) installation of solar photovoltaic (PV) systems with integrated Battery Energy Storage Systems (BESS); ii) installation of Johkasou package wastewater treatment plants; and iii) provision of support for the construction of storm-resilient housing for households in selected communes of Binh Dinh Province.

Table 14: Stakeholder Engagement Plan (SEP)

Project phase	Main objectives/activities	Responsibility of participating parties	Implementation method	Notes/ Explanations
Project initiation and preparation	1) Providing information on UNDP/Government of Japan funding activities 2) Assess the need/necessity of solar panel installations, wastewater treatment facilities and flood-resistant housing. 3) Analyze beneficiaries, including departments, commune authorities, health stations, households... for each construction item. 4) Preliminary design/review of suitable technologies/capacity	Representative of UNDP donor/UNDP project officer. Representing the UNDP partner agency is the Provincial Department of Health/Department of Finance. Representative of Phu My Medical Center Local authorities of 2 districts and 1 town. Commune/ward level authorities after merger (July 1, 2025) The participation task of local authorities is to provide comprehensive economic and social information data, and to provide information on households expected to be on the beneficiary list. Respond to the needs of the community/households benefiting from the project.	Provide relevant documents Stakeholder consultation meeting Discuss and agree on content with the parties. Synthesis of primary and secondary data	Beneficiary analysis: • Which specific medical stations will have solar panels installed and what investment items does Phu My Medical Center include? • Which commune/ward: Which households are eligible (according to expected standards) to receive storm shelters? • Are there any group preferences? (e.g., poor women-headed households, people with disabilities) **Note: The project has the following design features.** ✓ With the BSS solar panel installation system, UNDP organized a bidding to hire a consultant to prepare a technical economic report and a unit to supply complete equipment and hand it over to the Department of Health and beneficiaries. ✓ The Johkasou integrated wastewater treatment system is similar. UNDP organized a bidding to hire a consultant to prepare a technical economic report, prepare construction design drawings, and organize a complete procurement and hand over to the Department of Health and the beneficiary unit.
Design and approval	1) Build detailed designs of equipment and systems to be installed and built. 2) Review, comment and approve technical designs. 3) ESIA Assessment Organization 4) Organize the provision of project information to government representatives, representatives of the Fatherland Front - Women's Union), community representatives and representatives of potential beneficiaries -	Technical consultants propose design options for solar panel installation and wastewater treatment system. Medical centers and health stations confirm installation and construction locations. UNDP representative reviewed, commented and agreed. The ESIA consultant conducts ESIA assessment, proposes risk mitigation and management measures according to UNDP SES standards, and determines	Field survey of installation location Stakeholder consultation workshop. Use appropriate available means in the commune: Radio; Documents are hung/posted in visible locations.	

Project phase	Main objectives/activities	Responsibility of participating parties	Implementation method	Notes/ Explanations
	including poor women's households, households with disabilities. 5) Determine the list of beneficiaries and make the final decision on beneficiaries. Specify poor female-headed households/households with disabled members according to priority/special mechanism.	implementation responsibilities and monitoring implementation. Representatives of the Health Center and 7 health stations participated in the ESIA assessment. Community and family groups involved in housing support activities (representing vulnerable groups, including women from poor households and households with disabled people) participated in the ESIA consultation process. The Project Management Board under the Department of Finance and representatives of commune/ward leaders organized consultation meetings and provided information on support activities for building flood-resistant houses in the locality. Representatives of commune/ward authorities and project coordinators publicly announce/agree on criteria for selecting beneficiary households and priorities. Representatives of poor households, households with disabled people, households headed by women and representatives of organizations responded to the project. Specifically: - Criteria for selecting beneficiaries and priorities according to information provided by the Project Management Board representative - Administrative procedures that beneficiaries need to know and follow.		**House Design Model for 40 Storm-Resistant Houses:** ✓ With the activity of Building storm- and flood-resistant houses, there are currently 6 house designs from the Peace Village project - Vietnam - Korea implemented in 2023 and the Department of Finance and UNDP have agreed to use these models for house building activities, without requiring design appraisal and approval. **On the structure of government and mass organizations supporting and participating in the project.** ✓ From July 1, 2025. There will be only 2 levels of administrative management (Province and Commune/Ward) ✓ Phu My Medical Center will be under the management of the Department of Health. ✓ From July 1, 2025, the Vietnam Women's Union at all levels has become a member unit/1 committee in the structure of the Vietnam Fatherland Front at all levels. **Project information includes:** a) Purpose, objectives, items, location, implementation time and project budget for house construction. b) Standards for households to be included in the list of households receiving housing support, with special priority standards for women headed by poor households and households with disabled members.

Project phase	Main objectives/activities	Responsibility of participating parties	Implementation method	Notes/ Explanations
		- Feedback on 06 approved house designs and choose the house design that suits your wishes. - Three-step supervision and acceptance process during house construction (foundation; frame/wall, and after completion). Project coordinators/village heads and commune and provincial authorities are involved in the grievance/complaint resolution steps - in GRM.		c) Disseminate registration procedures (application form, commitment form...) d) Disseminate the complaint/question settlement mechanism **Beneficiary approval criteria and gender priority, consensus of criteria.** ✓ The project inherits the criteria of the Vietnam-Korea Hoa Binh village storm shelter construction project and registration forms/procedures. (Appendix...) ✓ It is necessary to consider gender factors, ensuring women's rights such as: giving special priority to female-headed households and disabled households first among poor/disadvantaged households that meet the criteria. ✓ Female-headed households that lack land use rights certificates but have legal residential land and comply with land use planning will still be considered for approval. ✓ Female head of household, living on husband's family land (husband passed away), has real need for housing, will be considered for support when there is a commitment from both parties (female head of household - representative of husband's family) with confirmation from the People's Committee of the ward/commune. ✓ Add a space requiring the wife's name and signature in the application (if the family has two spouses).
Construction / installation implementation.	Installing solar panel system at Medical Center and 7 commune health stations. Installing a centralized wastewater treatment system at Phu My Medical Center. Construction of 40 storm and flood resistant buildings	Contractor for construction and installation of works at medical facilities. Department of Health: supervises construction and installation. Project coordinator/supervisor (Department of Health) supervises on site. Health centers and commune health units support construction supervision. The project coordinator (Department of Finance) consulted with representatives of the commune government and selected reputable private construction contractors to build storm-proof houses. Households are also allowed to choose construction contractors that they consider reputable and experienced in building storm-proof houses. Households are allowed to choose construction contractors that they	Supervise construction quality by comparing quality requirements criteria Formal and informal feedback/exchange; Stakeholder performance reports; Site survey.	

Project phase	Main objectives/activities	Responsibility of participating parties	Implementation method	Notes/ Explanations
		consider reputable and experienced in building storm-proof houses. Project Management Board - Department of Finance: Inform/disseminate technical requirements for contractors, acceptance steps, and payment terms binding on acceptance results. Community/women's union representatives and representatives of beneficiary households (poor households, female-headed households and poor households) participate in monitoring and reporting feedback to the Project Management Board according to progress. Assist project coordinator in supervising construction quality/ supervising construction materials. The Project Management Board organizes acceptance of each phase. House construction: Completing the house foundation - House frame and walls - Completing the whole house) Project coordinator/village head and Commune/Provincial level authorities participate in the grievance/complaint resolution steps - in GRM. (if there are any grievances/complaints).		
Operation and maintenance	Project handover. Operational training support	UNDP representative/project officer receives handover from contractor for solar panel installation and wastewater treatment system installation.	Periodic updates on construction quality Develop technical operating instructions	

Project phase	Main objectives/activities	Responsibility of participating parties	Implementation method	Notes/ Explanations
	Establish a post-investment monitoring/construction maintenance mechanism	The Department of Health received the project handover from the UNDP representative and handed it over to the health units. Project Management Board - Department of Finance/ Commune project coordinator accepts house completion; Project Management Board - Department of Finance and local authorities hand over houses to beneficiaries. The Department of Health has a mechanism to manage the activities/operations of support facilities for medical units. **Contractors**/equipment supplier Ensure responsibility for testing and warranty of equipment supplied and installed by the unit; Support operational training for technical worker groups of the Medical Center. Instruct medical staff at health stations on basic operating techniques. Contractor/Supplier of maintenance support equipment for MT Battery projects and Johkasu Integrated Wastewater Treatment System Construction Contractors Provide Technical Guidance on Storm House Maintenance to Beneficiaries. Households Maintain House Structures Households apply and comply with home maintenance instructions. Report to the contractor when detecting unusual	Dialogue exchange	

Project phase	Main objectives/activities	Responsibility of participating parties	Implementation method	Notes/ Explanations
		changes in the house, so that timely repairs can be made during the maintenance period.		

6.3. Grievance Redress Mechanism (GRM) and Stakeholder Participation in the GRM

In line with the UNDP Social and Environmental Standards (SES), project-level grievance redress mechanisms and the Stakeholder Response Mechanism (SRM) are designed to ensure that individuals, communities, and stakeholders affected by the project have access to appropriate processes to raise and resolve concerns related to the project's environmental and social impacts.

Specifically, the core principles emphasized by the SES in establishing a GRM for each project include:

1. Ensuring equitable and transparent access: The mechanism must be accessible, non-discriminatory, gender- and culturally-sensitive, and provide confidentiality where necessary.
2. Effective resolution of grievances: Complaints must be received, validated, and acknowledged in a timely manner (typically within 5–7 working days), and if deemed valid, resolved through good-faith dialogue and appropriate corrective measures.
3. Protection of complainants: Ensuring no retaliation against complainants and providing support in serious cases such as sexual exploitation or abuse.
4. Learning and continuous improvement: Grievances and their resolution are documented to draw lessons learned, improve risk management, and enhance project performance.
5. Linkages to higher-level mechanisms: If complainants are not satisfied with project-level handling, they may escalate the case to the UNDP Accountability Mechanism, including the SRM and the Social and Environmental Compliance Unit (SECU).

1. Objectives and Accessibility of the GRM

Under the UNDP SES as well as Viet Nam's legal framework, citizens have the right to submit grievances or complaints regarding any issues they perceive as being adversely affected, dissatisfied, or disadvantaged by the project. To ensure the right of communities to lodge complaints regarding UNDP-supported activities in Binh Dinh Province, a project-level Grievance Redress Mechanism (GRM) has been developed, consistent with UNDP requirements and harmonized with Government of Viet Nam regulations.

The GRM was designed with contributions from project coordination staff of the Binh Dinh Department of Finance and Department of Health during the ESIA process, along with UNDP project specialists through meetings in Ha Noi.

This mechanism provides a framework to address environmental and social grievances and respond to concerns of affected communities, including those who may feel unfairly treated (e.g., excluded from the beneficiary list). At the project level, the GRM is designed with the expectation that concerns and complaints can be resolved promptly without resorting to complex administrative or judicial procedures. The GRM will be finalized during the late design stage of the project. Once reviewed and cleared by UNDP, it will be disclosed in appropriate locations and publicly announced in the project communes prior to implementation of support activities.

The GRM design ensures flexibility, allowing grievances to be submitted orally, via phone, handwritten notes, or in writing—enabling vulnerable groups, particularly poor women, to raise concerns in the manner most convenient to them. Complainants may contact project field coordinators, supervision consultants, or contractors directly, using whichever form of communication they prefer.

2. Project-Level GRM: Three-Step Process

In the pre-construction phase, the GRM will be disseminated by representatives of UNDP's partner agencies (project coordinators/on-site supervision staff) along with information about the project. The project coordinators/supervisors from the Department of Health and the Department of Finance, in coordination with local authorities, will inform the affected communities about the content of the GRM, the steps of the grievance resolution process, the levels of responsibility involved, the contact numbers of the responsible staff, and the designated locations for grievance resolution at each level. All of this

will be carried out through information disclosure and community consultation. GRM-related information may also be posted publicly at the offices of the commune People's Committees or other public places where local people can easily access it.

The diagram below illustrates the three-step GRM process:

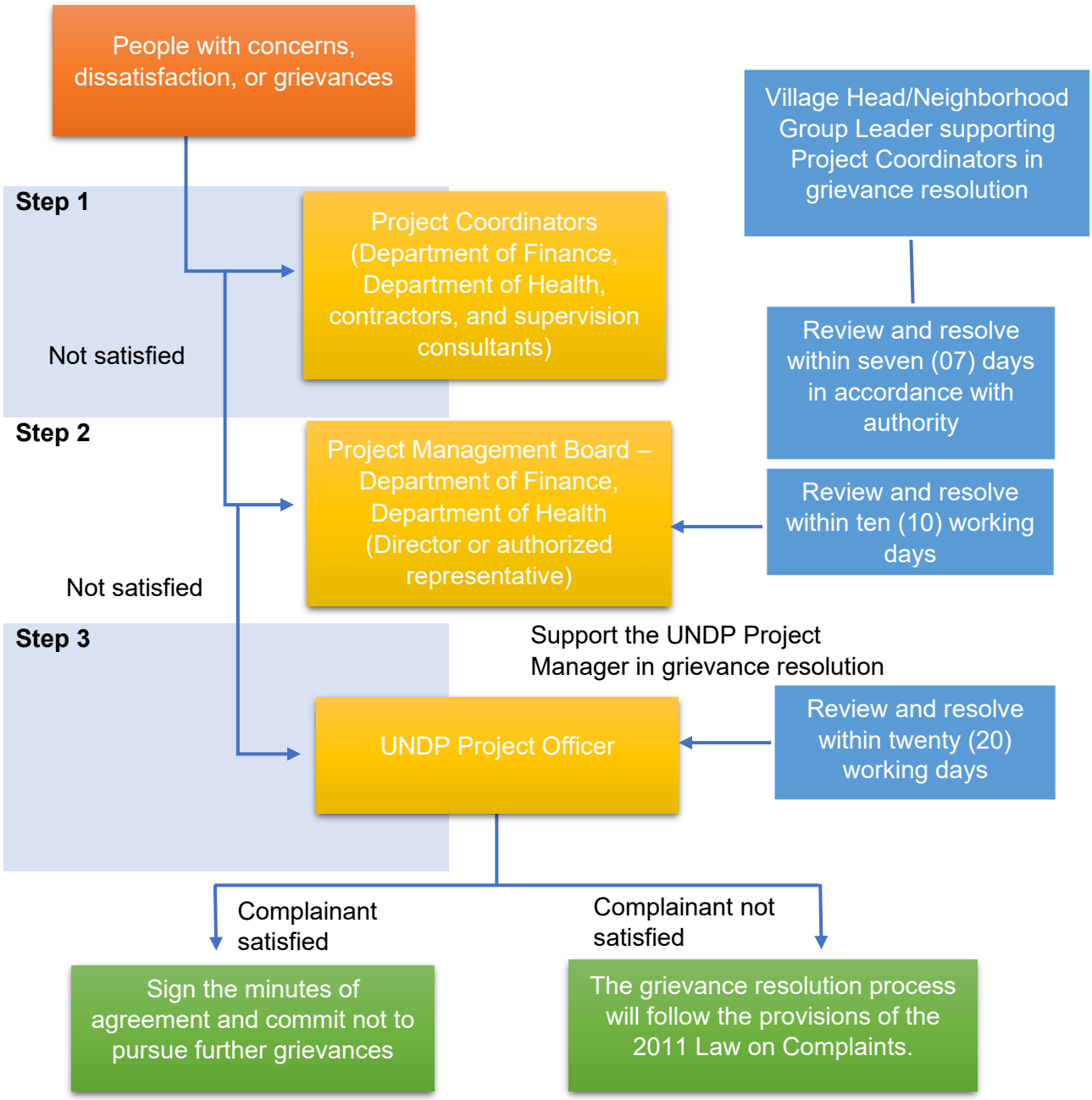


Figure 5: Diagram showing the complaint settlement mechanism

Step 1: On-site Resolution by Project Coordinator / Site Supervisor / Contractor

When affected individuals or communities perceive that project activities generate excessive dust, noise, or other negative impacts on their families and livelihoods, or when they feel disadvantaged (e.g., due

to perceived unfair treatment by the contractor), they may lodge a complaint verbally, by phone, or in writing (letter/email) to the Project Coordinator, Site Supervisor, or Contractor.

Upon receipt of a complaint, the Project Coordinator or Site Supervisor, in collaboration with the Contractor, shall promptly review, discuss, and address the issues raised, within their delegated authority, and within seven (7) working days. Village heads or community leaders may also participate in the resolution process as trusted intermediaries to help mediate at the local level.

The Project Coordinator / Site Supervisor will record the complaint, the resolution process, and the outcome in the Project's Supervision Log. If the complainant accepts the resolution, they will sign an agreement form, and the grievance will be considered resolved at this stage.

If the complainant remains dissatisfied with the explanation or solution provided, or disagrees with the mediation outcome, they may escalate the grievance to the next level — the Project Management Unit (PMU), specifically the PMU Director under the Department of Finance or Department of Health. Issues beyond the authority of Step 1 must be reported upward by the Project Coordinator / Site Supervisor to the PMU Director.

Step 2: Resolution by the PMU Director / Deputy Director

If the complainant is not satisfied with Step 1, they may submit a formal written complaint through the "Reception and Response Office" of the concerned Department (Finance or Health), addressed to the PMU Director. The PMU Director (or Deputy Director) will review and respond to the grievance within ten (10) working days; for complex cases, the process may take up to fifteen (15) working days. In doing so, the PMU Director will consult the Project Coordinators, Site Supervisors, and Contractors before issuing a written response. For complex cases, the Director or a delegated officer may also hold direct meetings with the complainant.

If the complainant is satisfied and signs the agreement form, the grievance is considered resolved. All records of grievances and their resolution will be maintained by the Coordinator / Supervisor and attached to the PMU's implementation report, which is also submitted to the UNDP Project Manager in Hanoi. If the complainant remains dissatisfied, the PMU Coordinator will guide them to escalate the grievance to the UNDP Country Office.

Step 3. The Project Manager at the UNDP office addresses and mediates with complainants.

If the complainant does not agree with the decision of the Director of the Project Management Unit, they may submit a grievance directly to the Project Manager at the United Nations Development Programme Country Office in Hanoi, either by post, email, or telephone, using the contact details provided by the Project Management Unit during the disclosure of the grievance redress procedure.

The Project Manager at the United Nations Development Programme Country Office in Hanoi will review and respond to the complaint within twenty (20) working days; for complex cases, the timeframe may extend up to thirty (30) working days. The Project Manager will consult with the Project Management Units of the Departments in Binh Dinh Province before issuing a written response.

As this represents the final tier of grievance resolution at the project level, every effort will be made to provide a clear, transparent, and fair resolution in line with project entitlements, standards, and community agreements. If the complainant accepts the resolution and signs the agreement of acceptance, the grievance will be considered resolved.

If the complainant remains unsatisfied, they may pursue further recourse through the national administrative and legal system, in accordance with:

- The Law on Complaints (2011), Articles 12 and 27–43 on the rights of citizens and the procedures for filing and resolving complaints;
- Decree No. 124/2020/ND-CP, which provides detailed regulations on the implementation of the Law on Complaints, including procedures and timeframes;
- The Law on Construction (2020) and Decree No. 37/2015/ND-CP, which contain provisions on dispute resolution and complaint handling in the construction sector.

3. Recording and Documentation of Complaints and Grievances

All complaints and grievances must be recorded in the monitoring reports of the Project Coordinator or Project Supervisor. As indicated in the grievance procedure, grievances may be submitted verbally or in writing, directly or through telephone or email.

Upon receipt, the Project Coordinator, Project Supervisor, or the Project Management Unit representative shall complete a standardized Grievance Form (attached in Annex …) and maintain a Grievance File, including a grievance logbook, until the complaint is fully resolved.

Once a signed grievance form is received, the Project Coordinator or Project Supervisor will make photocopies of the complaint: the original will be kept in the Grievance File, one copy will be provided to the leadership of the Project Management Unit, and another copy will be retained by the Coordinator or Supervisor.

The grievance logbook shall include at least the following information:

- Date and time of receipt of the grievance;
- Name, address, and contact details of the complainant;
- Summary and reasons for the grievance;
- Actions taken to address the grievance, including persons consulted and results of each step;
- Dates and details of communications with the complainant during the resolution process;
- Final resolution provided;
- Date, time, and method of informing the complainant of the resolution;
- Signature of the complainant confirming acceptance of the resolution;
- For unresolved cases: reasons for dissatisfaction and referral to higher-level authorities.

All grievance records, responses, signed agreements, and cases referred to higher levels shall be carefully documented, archived in the project files, included in the implementation reports, and submitted to the Project Manager at the United Nations Development Programme Country Office in Hanoi.

CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS

7.1. Conclusions

The level of environmental and social risks associated with each activity of the project's critical infrastructure components in Binh Dinh Province under the project *"Promoting Renewable Energy Development and Enhancing Climate Change Resilience to Strengthen Human Security and Sustainable Growth in Viet Nam,"* funded by UNDP, has been assessed as ranging from low to moderate.

The identified risks can be mitigated provided that all stakeholders, including UNDP, equipment suppliers, provincial counterparts in Binh Dinh (such as the Provincial People's Committee, the Department of Finance, and the Department of Health), together with commune/ward authorities, healthcare facilities, construction contractors, and technical consultants, comply with their respective obligations and responsibilities.

The construction of storm-resilient houses, the installation of solar photovoltaic systems, and the deployment of wastewater treatment systems may present moderate environmental and social risks if not adequately anticipated and managed. For example, some poor households participating in storm-resilient house construction may lack Land Use Right Certificates (LURCs), making them vulnerable to exclusion from project benefits or to land ownership disputes after construction is completed—particularly for female-headed households residing on land belonging to the husband's family, which is a common practice in Viet Nam. By contrast, the installation of wastewater treatment systems and solar PV systems at healthcare facilities is considered to carry low land-related risks, given that LURCs are already available.

In terms of community health and safety, although solar PV systems provide sustainable benefits, concerns remain among healthcare workers and local residents regarding potential health impacts and risks related to improper handling of expired panels. However, the project confirms that solar panels, whose main component is silicon, are non-toxic and safely encapsulated within glass and aluminum frames. Risks remain during installation and operation, including injuries and fire hazards related to battery storage systems if installed or operated incorrectly. Similarly, decentralized wastewater treatment systems could degrade, emit odors, and affect healthcare service quality if not maintained regularly. Construction activities may also pose risks to workers and nearby communities if occupational safety measures are not strictly enforced.

Equitable access to project benefits requires attention. The beneficiary selection process for storm-resilient houses, if lacking transparent and objective criteria, may cause community tensions, especially for vulnerable groups such as poor women and persons with disabilities, who are often overlooked without affirmative measures. Inadequate stakeholder consultations before, during, and after project implementation could also lead to misunderstandings, distrust of technologies, or houses that fail to meet actual household needs.

Operational and maintenance risks are also significant. Without maintenance plans, financial allocations, technical training, and transfer of responsibilities to healthcare facility staff, solar PV systems and decentralized wastewater treatment systems may become ineffective, degraded, or inoperative. Similarly, storm-resilient houses, if not constructed to standard or not maintained, may deteriorate over time. Gender inequality risks also require careful attention throughout implementation. Female-headed households and vulnerable groups may not receive adequate support, or may lose decision-making control over supported assets, particularly in cases of land disputes with in-laws. Without adequate legal and practical support from local authorities, women may fail to retain secure control over storm-resilient houses provided under the project.

To manage these environmental and social risks, the report has developed an Environmental and Social Management and Monitoring Program (ESMMP), consolidating the impacts and corresponding mitigation measures. These measures are designed to align with the nature of the identified impacts and assign clear implementation, monitoring, and reporting responsibilities, along with defined timelines.

The report also develops a Stakeholder Engagement Plan (SEP) to ensure transparent, fair, and effective implementation consistent with UNDP's Social and Environmental Standards (SES), and establishes a Project-level Grievance Redress Mechanism (GRM). The GRM comprises three steps: Step 1 assigns initial review and resolution responsibilities to the Project Coordinator when grievances or inquiries are raised by community members; Step 2 specifies the lead role of the Department of Health and Department of Finance (as Project Management Unit); and Step 3 assigns escalation responsibilities to UNDP's Project Manager. This three-tiered GRM enables timely and efficient resolution of community concerns at the project level, without requiring recourse to lengthy government administrative procedures. Gender-responsive monitoring is integrated throughout the project cycle—from planning and beneficiary selection to operation and maintenance.

7.2. Recommendations

Given that the two-tier local administrative system will take effect on 1 July 2025, prior to field-level installation and construction, the Department of Finance (and its Project Management Unit), the Department of Health, the Phu My District Health Center, and commune-level healthcare facilities should proactively engage with newly appointed local authorities (commune leaders, neighborhood heads, and representatives of the Women's Union) to inform them about the project, UNDP's support, project policies, and the importance of local authority endorsement and collaboration throughout project implementation and completion.

To ensure sustainable, equitable, and risk-minimized implementation, stakeholders should undertake the following actions:

On risks relating to the rights of ethnic minority peoples

The ESIA, informed by local authorities, confirms that no isolated ethnic minority communities reside in the coastal communes targeted by the project. Therefore, Free, Prior and Informed Consent (FPIC) is not required. However, if ethnic minority households are later identified among project beneficiaries, UNDP's SES Standard 6 on Indigenous Peoples will be triggered. The implications of SES Standard 6 are detailed in Annex 6.

On risks associated with inadequate consultation and insufficient project information

In line with UNDP's SES, meaningful stakeholder consultation must be conducted throughout the project lifecycle. The Project Coordinator should prepare phase-specific consultation plans. At project inception, local officials—including commune/ward People's Committees, Women's Unions, and the Fatherland Front—must organize structured and transparent community meetings to provide full information about the project, the technologies to be applied, safety aspects, and the installation process.

The GRM should be made public and actively communicated, with clear procedures for grievance submission, acknowledgment, and resolution. Similarly, criteria for beneficiary selection and any special priority criteria must be disclosed and discussed with communities, including potential beneficiaries. In addition to direct meetings, this information should be disseminated via local radio or public notice boards.

Women from poor households and persons with disabilities must be invited to consultations on an equal basis to ensure their access to information. Healthcare staff at Phu My District Health Center and commune-level facilities should be fully informed by contractors and technical experts on the safety of solar PV and wastewater treatment systems to address their concerns, as raised during ESIA consultations.

Consultations before and after the design of storm-resilient house models are essential to ensure the constructed houses meet household needs. Since the project allows the use of pre-existing designs from the Viet Nam–Korea Peace Village Project, six storm-resilient house models should be disclosed for beneficiary households to review and select according to their needs.

Clear communication regarding UNDP's scope of support for storm-resilient houses must be part of community consultations. Households wishing to add extra floors or ancillary structures must notify the Project Coordinator to ensure appropriate design and construction adjustments.

On risks related to gender equity and women's land use rights

Integrating gender equality and social equity principles is essential for broad-based acceptance and long-term sustainability. Beneficiary selection for storm-resilient houses must be transparent, community-based, and participatory. Public meetings should be held to disclose selection criteria and special priority measures, with particular focus on poor women, persons with disabilities, and other vulnerable groups. Lists of selected beneficiaries must be publicly posted at commune/ward People's Committees.

Potential beneficiaries must provide proof of legal land tenure. Commune/ward authorities are responsible for verifying land status prior to submitting beneficiary lists to the Project Management Unit under the Department of Finance, thereby reducing risks of disputes.

The Project Management Unit should consider flexible priority criteria that incorporate gender equity, for example, allowing support to a limited number of poor households headed by women or families with persons with disabilities, even without LURCs, provided their land is not in violation of local land-use plans and they have resided stably long-term.

For long-term assets such as storm-resilient houses, women must be recognized as joint decision-makers and legal co-owners. Commitment forms and handover agreements must include spaces for signatures of both spouses (where applicable). This ensures women's rights are respected and contributes to social stability and equitable resource allocation.

On gender-responsive monitoring

The Department of Health and Department of Finance (Project Management Unit) should integrate gender-responsive monitoring across the project lifecycle, from planning and beneficiary selection to operation and maintenance. Legal advisory services should be established to address land and asset-related disputes. Technology and safety information should be provided to both healthcare staff and households, including vulnerable groups, from the outset. These activities must be coordinated with local authorities and mass organizations, particularly the Women's Union, to maximize inclusiveness and alignment with UNDP's SES.

On risks related to operation and maintenance (O&M) post-investment

From the start of implementation, the Department of Health, in coordination with Phu My District Health Center and commune-level facilities, should prepare systematic O&M plans for solar PV and wastewater treatment systems.

Financial resources should be allocated, responsibilities defined, and technical training provided to local staff (including healthcare staff) to ensure timely repairs and compliance with technical standards.

On health and safety risks during construction and operation of solar PV and wastewater treatment systems

The Department of Health, Phu My District Health Center, and commune facilities should work with contractors and specialized firms to train technical staff on safe operation and maintenance.

Technical compliance procedures must be verified, and regular site inspections conducted to ensure occupational safety standards are followed, thereby minimizing risks of accidents.

On risks to water quality in the Da Bac stream

During the pre-operation phase, the Environmental and Social Impact Assessment (ESIA) consultant together with the United Nations Development Programme (UNDP) technical assistance consultants shall support the Phu My District Health Center in preparing the Environmental Permit. The permit will be developed on the basis of the findings of the Environmental and Social Impact Assessment report and the technical–economic report for the wastewater treatment system of the Phu My District Health Center. The Health Center, on behalf of the project donor, will submit the application to the Provincial Department of Natural Resources and Environment for appraisal and approval.

The Phu My District Health Center shall designate qualified environmental staff responsible for continuous oversight of the wastewater treatment system, including routine inspection of wastewater collection and drainage infrastructure, daily recording of operational parameters in the logbook as required by regulations, and regular monitoring of wastewater treatment processes.

Wastewater quality monitoring shall be conducted semi-annually (once every six months). Treated effluent must comply with the requirements of QCVN 28:2010/BTNMT, Column B—National Technical Regulation on Healthcare Wastewater—prior to discharge into receiving water bodies. Monitoring results shall be submitted in a timely manner to the competent authorities responsible for regulating wastewater discharge and environmental protection.

United Nations Development Programme (UNDP):

- UNDP shall manage project financing, technical assistance activities, monitoring and evaluation of the project, and ensure sufficient resources for the implementation of the Environmental and Social Management Plan (ESMP).
- UNDP shall ensure the quality of project activities and outputs in line with international and national standards, as well as sustainable development and environmental and social safety objectives.
- UNDP shall coordinate with implementing agencies to ensure that all field-level project activities are carried out in compliance with applicable regulations.

People's Committee of Binh Dinh Province:

- Responsible for overall management and supervision of the progress of infrastructure subprojects within Binh Dinh Province; direct relevant provincial departments, agencies, and mass organizations to coordinate with UNDP in implementing project activities, ensuring timely progress and project results.

Binh Dinh Provincial Department of Health:

- Assign healthcare facilities to collaborate with commune/ward People's Committees, the Women's Union, and the Fatherland Front to organize community information disclosure and consultation meetings in a transparent manner regarding project activities under its supervision.
- Supervise contractors in the preparation and implementation of their Occupational Health and Safety (OHS) Management Plans at construction sites.
- Coordinate with contractors to provide adequate information and training on technology and operation of installed equipment for staff in the 08 participating healthcare facilities.
- Disclose the Grievance Redress Mechanism (GRM), record and respond to community feedback, and resolve concerns/complaints (if any).

Healthcare Facilities:

- Collaborate with commune/ward People's Committees, the Women's Union, and the Fatherland Front to provide clear, comprehensive, and transparent information about project activities to communities.
- In coordination with the Department of Health, supervise contractors/suppliers on-site to ensure compliance with the contractor's Occupational Health and Safety Management Plan during construction.
- Work jointly with the Department of Health and contractors/suppliers to develop operation and maintenance (O&M) plans for solar PV systems and wastewater treatment systems.

Phu My District Health Center:

- Collaborate with the ESIA consultant to finalize the draft Environmental Permit application and submit it to the Provincial Department of Natural Resources and Environment for appraisal and approval.

- Coordinate with the Department of Health to supervise contractor/supplier equipment installation, ensuring that construction activities do not adversely impact staff, patients, and surrounding communities.
- Monitor contractor compliance with the contractor's Occupational Health and Safety Management Plan.
- Conduct semi-annual wastewater quality monitoring. Treated effluent must comply with QCVN 28:2010/BTNMT, Column B—National Technical Regulation on Healthcare Wastewater—prior to discharge[13]. Monitoring results shall be submitted to the competent authorities responsible for wastewater discharge management and environmental protection.

Binh Dinh Provincial Department of Finance:

- Collaborate with commune/ward People's Committees, the Women's Union, and the Fatherland Front to organize transparent and accessible information sessions on project activities. The criteria for beneficiary household selection, including special priority groups (if any), shall be discussed with communities and local authorities. Selection must be transparent and subject to verification by relevant stakeholders. The approved list of beneficiaries shall be disclosed at village meetings or posted in accessible public places.
- Disclose the GRM, record and respond to community feedback, and resolve concerns/complaints.
- Ensure that women from poor households and persons with disabilities are equally consulted and have access to project information.
- Organize beneficiary group consultations during disclosure of project-supported items, as well as those requiring co-contributions from households or other local resources, as proposed by the Project Management Unit (PMU).
- Facilitate beneficiary group consultations during the selection of housing design models to ensure that constructed houses meet household needs.

ESIA Consultants and UNDP Technical Assistance Consultants:

- Conduct environmental and social impact assessments of the project, develop necessary risk management plans, and ensure compliance with UNDP's environmental and social safeguards and the Government of Viet Nam's regulations.
- Ensure inclusive stakeholder consultation during the preparation of the ESIA report, provide guidance on the GRM, and support the development of the ESMP for project subprojects.
- Provide guidance on environmental permitting requirements, and support the preparation of permit application dossiers for relevant subprojects, including the installation of the Jonkasou modular wastewater treatment system.

Contractors / Equipment Suppliers:

- Prepare and submit Contractor's Environmental and Social Management Plan (C-ESMP) to the Department of Health and the Department of Finance for approval prior to construction, and implement the C-ESMP during construction.
- Undertake measures to manage all activities with potential environmental, social, and occupational safety risks.
- Maintain communication with healthcare facilities and local residents to minimize disruption during construction.

[13] Point a, Clause 3, Article 97, Decree No. 08/2022/ND-CP (detailing several Articles of the Law on Environmental Protection)

- Disseminate the C-ESMP and provide occupational health and safety training to all site staff and workers to ensure full understanding of procedures and responsibilities.
- Report to the Department of Health and the Department of Finance on any difficulties in project implementation and propose solutions.
- Promptly notify local authorities, healthcare facilities, the Department of Finance, and the Department of Health of any environmental incidents, and coordinate with relevant stakeholders in resolving them.
- Develop operation and maintenance manuals and organize technical training and operational guidance for installed equipment.

Mass Organizations and Community-Based Groups (e.g., Viet Nam Fatherland Front, Commune Women’s Union, and other social organizations):

- Act as representatives of community voices, supporting consultation and ensuring participation of vulnerable groups.
- Provide support for community consultation and independent monitoring activities led by the Department of Health, the Department of Finance, and the PMU.

APPENDIX 1. SOCIO-ECONOMIC BENEFITS OF DISTRICTS/COMMUNES PARTICIPATING IN THE INSTALLATION OF SOLAR ENERGY SYSTEMS AND WASTEWATER TREATMENT SYSTEMS

Phu My District	My Cat	My Tho*,	My Tai	My Duc	America	My Thang	My Chanh	Note
Agriculture	53.24	48.2	51.0	57.4	65.6		32.64	
Industrial	21.07	17.65	28.0	24.7	17.5		33.39	
Services and trade	25.09	34.13	21.0	17.8	16.9		33.97	
Population	7,783	17,600						
Number of households	1867	4,600	2674					
Average income/person (million VND)	49.5 million	56.2	55.5	54.0				
Multidimensional poverty	1.39	0.64		0.65	2.26			
Percentage of rural population using clean water (%)	100	100.0	100.0				100.0	
In which, the proportion of population using tap water/clean water	59.8		28.11	50.0	58.0		92.53	
Percentage of people using hygienic toilets	99.1							
Percentage of solid waste collected in rural areas (%)	75.0	77.0	75.0	77.9	86.7		88.38	
Number of medical staff at the station								
Number of hospital beds per 10,000 people	10							
Patients receiving medical examination and treatment at the station 2022-2024 (times/person)	2,970	1,629		856				
Pregnancy check-up	196							
Gynecological examination	916							
Preventive check-up	3449							
Management of patients with infectious diseases								

**My Tho: Population and number of households are estimates*

APPENDIX 2. DATA ON MEDICAL STAFF AND PATIENTS AT PHU MY DISTRICT MEDICAL CENTER (2023-2024)

1. Number and qualifications of medical staff at Phu My District Health Center and commune health stations

- **Phu My District Health Center**

TT	Structure of Phu My district medical center	The entire Phu My district medical center	Department disease control and HIV/AIDS, public health, nutrition, food safety
1	Infrastructure Number of treatment beds	300	
2	Number of departments (total)	16	
3	Number of specialized departments for medical examination, treatment, prevention...	8	10
4	Number of medical staff	Female.....145..... Male....52.....	Female.....14..... Male.....05.....
5	Doctor/specialist	Female.....04..... Male.....28.....	Female.....01..... Male.....00.....
6	Doctor	Female.....05..... Male.....0.....	Female.....06..... Male.....02.....
7	Nursing	Female.....93..... Male.....19.....	Female.....07..... Male.....03.....
8	Other	Female..... Male.....	Female..... Male.....

- **Health Stations**

Qualificatio

TT	*Medical Stations*	*Total*	*Male*	*Female*	*Doctor*	*Bachelor of Nursing*	*College of Pharmacy*	*Midwife*	*Other*
1	My Cat	6	1	5	1	2	1	1	1
2	My Tho	8	3	5	0	2	1	1	4
3	My Tai	7	1	6	1	2	1	1	2
4	My Duc	5	0	5	0	2	1	1	1
5	America	6	2	4	1	1	1	1	2
6	My Thang	9	3	6	1	4	2	1	1
7	My Chanh	5	2	3	0	1	1	1	2

ns of staff and employees working at Health Stations

Note: Classification may be made by education level, in line with statistics from the District Health Center.

II. Number of patients

Content	Unit	2022	2023	2024	2025 (expected first 6 months)
Total number of medical visits	Turn	84,979 (female 45,052; male 39,927)	100,691 (female 54,215; male 46,476)	110,339 (female 59,728; male 50,611)	51,842 (female 28,178 Men 23.664)
Number of inpatients	Turn	9,505	8,298	9,767	4,040

discharged from hospital					
Number of days of inpatient treatment before discharge	Day	55,201	57,891	62,162	24,522
Hospital bed occupancy rate	%	89	93.3	94.6	75.7
Average days of hospital discharge	Day	5.8	7.0	6.4	6.1
Regular prescription medical examination and treatment	Turn	84,985	100,702	110,347	52,785
Pregnancy check-up	People	1,453	1,272	1,132	641

Source: Data from Phu My District Health Center, June 2025

III. Number of patients visiting medical stations:

II.	***Medical Stations***	*2022*	*2023*	*2024*	*2025 (first 6 months)*
2.1	My Cat	1086	941	937	422
2.2	My Tho	3,857	3,357	3,501	1,506
2.3	My Tai	4,249	3,661	3,730	1,462
2.4	My Duc	1330	1882	2275	1200
2.5	America	3,916	3,135	3,229	1,215
2.6	My Thang	3638	3871	3941	2125
2.7	My Chanh	2507	2176	2482	1293

IV. Electricity Costs:

Electricity Costs

STT	**Location**	**Amount (1000 VND)**
I.	**Phu My District Medical Center**	
1.1.	Phu My District Medical Center	80,000,0000/month
1.2.	Department disease control and HIV/AIDS, public health, nutrition, food safety	*2,500,000/month*
II.	***Medical Stations***	
2.1	My Cat	1000-1200
2.2	My Tho	1000
2.3	My Tai	700-800
2.4	My Duc	1200-1500
2.5	America	1500
2.6	My Thang	900-1000
2.7	My Chanh	1200-1500

APPENDIX 3. COMMUNITY CONSULTATION

For the infrastructure subprojects implemented in Binh Dinh Province, the Consultant conducted stakeholder consultations at three construction and installation sites, namely in Phu My District, Hoai Nhon Town, and Phu Cat District, where three infrastructure components are to be installed. The details are as follows:

(i) Subproject Activity 1: Installation of solar photovoltaic systems with integrated Battery Storage Systems (BSS) for seven commune health stations and one HIV/AIDS care and prevention unit under Phu My District Health Center; and

(ii) Subproject Activity 2: Installation of an integrated Johkasou wastewater treatment system for one district health center in Phu My District.

- The Project organized a stakeholder consultation meeting at Phu My District Health Center with a total of 32 participants, of whom 25 were women (78.2%) and 7 were men (21.8%).
- Time and Venue: 14:00 on 12 June 2025 at Phu My District Health Center.
- Participants included: health workers from eight health facilities, village health workers, officers from the Department of Disease Control and HIV/AIDS, Preventive Medicine, Nutrition, Food Safety, and Infection Control units.
- Content: The Consultant presented the preliminary findings of the impact assessment for (i) the installation of solar photovoltaic systems with integrated BSS for eight health facilities; and (ii) the installation of an integrated Johkasou wastewater treatment system for one district health center in Phu My.

Key feedback received:

- All health staff expressed strong support for the installation of solar photovoltaic systems at the eight health facilities. Participants unanimously agreed on the benefits, particularly in reducing monthly and annual operational costs for commune-level healthcare. The project was also recognized as a driver of renewable energy application in the health sector.
- However, health workers and project beneficiaries raised concerns regarding system operation, as well as the collection and recycling of batteries at the end of their life cycle. The Consultant clarified potential impacts of solar photovoltaic systems, recommended the use of panels with extended service life, and emphasized that suppliers must provide clear operational and management guidelines, including user manuals, as health staff have limited technical expertise in solar systems.
- Concerns were also raised about whether installation and operation could affect patients' health at the facilities. The Consultant confirmed that the solar photovoltaic systems pose no health risks to the community. The supplier/installer will provide periodic maintenance for the eight health facilities during the warranty period of at least two years. The contractor will prepare a full set of Operations and Maintenance (O&M) procedures, including Emergency Response protocols, in accordance with regulations. Training and knowledge transfer on system operation and maintenance will be provided to health staff of the eight facilities at an appropriate time, as required by the Provincial Department of Health after the second year of O&M.

(iii) Subproject Activity 3: Retrofitting of 40 storm- and flood-resilient houses in disaster-prone coastal provinces, prioritizing households headed by women and households with persons with disabilities.

- The Project organized two consultation meetings in Hoai Nhon Town and Phu Cat District.
- **Time and Venue:** 08:30–11:30 at Phu Cat District People's Committee, and 13:30–16:30 at Hoai Nhon Town People's Committee, on 11 June 2025.

- **Participants included:** functional departments of Phu Cat District and Hoai Nhon Town, representatives of the Women's Union of both localities, and households affected by and eligible for the retrofitting of 40 storm- and flood-resilient houses in vulnerable coastal provinces.
- **Participation:** In Phu Cat District, there were 10 participants (4 women and 6 men). In Hoai Nhon Town, there were 11 participants (6 women and 5 men).

Consultation content:

- The Project disclosed the criteria for household selection: targeted beneficiaries are poor and vulnerable households residing in disaster-prone areas affected by storms, floods, landslides, and coastal or mountain erosion. Household selection will be publicly announced to the community to ensure transparency.

Key feedback received:

- Hoai Nhon and Phu Cat are areas frequently affected by storms, tropical depressions, floods, flash floods, and landslides. According to statistics, Phu Cat District currently has approximately 147 households severely affected by disasters, particularly in coastal and landslide-prone areas. UNDP's support will contribute to eliminating unsafe temporary shelters and reducing disaster-related losses.
- Local authorities, in coordination with project focal points, will provide designs, conduct design consultations, and disseminate information to communities on beneficiary households. Lists of beneficiaries will be disclosed publicly to ensure transparency. Consultations confirmed that UNDP's support will cover the construction of houses up to the standard design area. If households wish to build additional floors or ancillary sanitary facilities, they may contribute their own funds or access concessional loans for water supply and sanitation construction through the Social Policy Bank's programs for the poor. This approach was encouraged and supported by district and town authorities.
- Representatives of infrastructure management offices of both localities stated their support for prioritizing vulnerable households (female-headed poor households, households with persons with disabilities) as eligible even in cases where the households have residential land without Land Use Right Certificates, provided that the land is not in violation of local land-use planning. This view was widely agreed upon by workshop participants.

APPENDIX 4. SOME PICTURES OF COMMUNITY CONSULTATION

Phu My District

Phu Cat District

Hoai Nhon Town

ĐẢNG CỘNG SẢN VIỆT NAM QUANG VINH MUÔN NĂM !

APPENDIX 5. INFORMATION OF THE DEPARTMENT RECEIVING COMPLAINTS/QUESTIONS/OR COMPLAINTS AND PARTICIPATING IN COMPLAINT RESOLUTION

No.	Names of Project Coordinators / Supervision Officers / Project Management Board Officers – Department	Agency/Organization	Position/Title	Phone	Email Address
	Support Item …				
1	….		Project Coordinator		
2					
	Support Item …				
1	Department Project Management Board Officer …				

The list of individuals in this liaison committee along with their positions, phone numbers and emails will be made public at the People's Committee halls of communes/wards where there are sponsored sub-projects.

APPENDIX 6. SAMPLE GRIEVANCE RECEIPT AND RESOLUTION FORM (GRM)

GRIEVANCE RECEIPT AND RESOLUTION FORM (GRM)

Project Management Board
Department of ……

Project Title:

"Project on Promoting Renewable Energy Development and Enhancing Climate Resilience to Strengthen Human Security and Foster Sustainable Growth in Viet Nam"

Location: (Commune/Ward, Province)

Name of Complainant: .....

Gender: ☐ Male ☐ Female ☐ Other

Age: .....

Contact Phone Number: .....

Contact Address: .....

Form of Submission:

☐ In person

☐ By telephone

☐ By email

☐ Suggestion box

☐ Other: .....

Date of Receipt: .....

Content of Complaint and Request:

(Details of the issue, time of occurrence, location, persons involved, etc.)

.....

Severity Level of Complaint:

☐ Minor

☐ Moderate

☐ Serious

☐ Urgent

Receiver:

Name: .....

Position: .....

Signature: .....

Initial Handling Approach:

☐ Refer to competent authority

☐ Resolve on site

☐ Further investigation required

☐ Other: .....

Expected Response Timeline: ..... working days

Complainant (Signature and Full Name):

.....

APPENDIX 7. FPIC UNDER UNDP STANDARD 6

This standard focuses on the rights of **Indigenous Peoples** (equivalent to the term *ethnic minorities* in Viet Nam). FPIC is a mandatory requirement when a project may affect:

- The land, natural resources, or traditional territories of ethnic minority communities in the project area.
- Livelihoods, tangible and intangible cultural heritage.
- The right to self-determination and development in accordance with the community's own priorities.

Về nghĩa của FPIC. Meaning of FPIC:

- Free: Voluntary, without coercion or undue pressure.
- Prior: Conducted before any project activity is initiated.
- Informed: Participants are provided with complete and relevant information, including risks, impacts, objectives, and processes.
- Consent: Clear agreement, which may be in the form of acceptance or the explicit decision not to participate in the project.

APPENDIX 8. PROVINCIAL PLACE NAMES AND LIST OF COMMUNE-LEVEL LOCALITIES AND NEW NAMES PARTICIPATING IN THE PROJECT

According to Decree No. 1664/NQ-UBTVQH15 on the arrangement of commune-level administrative units of Gia Lai province in 2025, the provincial-level place names and the list of commune-level localities and new names participating in the specific project are as follows:

No.	Former Administrative Units	New Administrative Units (after July 1, 2025)
1	**Binh Dinh Province**	**Gia Lai Province**
2	**Phu Cat District**	
	Cat Thang Commune, Cat Chanh Commune	Ngo May Commune
	Cat Hai Commune, Cat Tien Commune	Cat Tien Commune
3	**Hoai Nhon Town**	
	Hoai Thanh Ward, Hoai Thanh Tay Ward	Hoai Nhon Ward
	Hoai Huong Ward, Hoai Hai Commune, Hoai My Commune	Hoai Nhon Dong Ward
	Tam Quan Bac Ward, Hoai Son Commune, Hoai Chau Commune	Hoai Nhon Bac Ward
4	**Phu My District**	Phu My Commune
5	My Cat Commune, My Chanh Commune	An Luong Commune
6	My Duc Commune, My Chau Commune	Phu My Bac
7	My Tho Commune, My Thang Commune	Phu My Dong
8	My Tai Commune	Phu My Nam