INCEPTION REPORT

Preliminary Study on development of Clean Energy Complex in Khanh Hoa Province, Vietnam

Performed by:

Power Engineering Consulting JSC 1

JULY 2025

MAIN CONTENTS

PART 1. INTRODUCTION

1. GENERAL INTRODUCTION

- Bases of the Project
- Objectives and Scope of works

2. WORK PLANT

- Tasks of teams
- Work schedule
- Method for project management of the Consultant

3. ORGANIZATION SCHEME AND COORDINATION MECHANISM

- Method for work coordination
- Backup services

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PART 2. MEETINGS

1. KICKOFF MEETING WITH PV POWER

- Parties agreed on the scope of the study
- Further analysis for the scale and location of components: Pumped-storage hydropower (PSH), Solar Power, and BESS
- PV Power presented its expectations regarding electricity pricing and operational time
- …

2. MEETING WITH DEPARTMENT OF INDUSTRY AND TRADE OF KHANH HOA

- PECC1 presented the research findings as of the meeting date
- The Department of Industry and Trade (DOIT) agreed the strategy to study for project's development
- PV Power wished for continued support from the DOIT in incorporating the project into the provincial planning framework to enable early implementation

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PART 3. DATA COLLECTION

1. DATA COLLECTION IN HANOI

- Topographical documents
- Geological documents
- Radiation documents
- Meteor-hydrological documents
- Documents of Power System
- Documents of power supply sources and infrastructure

2. DATA COLLECTION AT THE FIELD

- Documents of power supply sources and infrastructure*
- Documents of Power System*
- Environmental documents

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PART 4. IMPLEMENTATION METHOD

TASK 2: PRELIMINARY INVESTMENT ROADMAP

- Assessment the compliance with regulations and in lign with the Planning
- Financial analysis and funding sources
- Preliminary investment roadmap

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PART 4. IMPLEMENTATION METHOD

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- Preliminary design:
  - Solar Power, Pumped storage Hydropower. BESS, Connection with Power Grid, Energy
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- Analysis for economic financial efficiency
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PART 4. IMPLEMENTATION METHOD

TASK 4: STAKEHOLDER CONSULTATIONS AND DESIGN REVIEW

TASK 5: FINALIZATION OF THE STUDY AND REPORTS

- Finalization of the Study
- Reports :
  - Refinement of Solar Power, BESS, PSH components
  - Refinement of Power Grid connection component
  - Refinement of Schedule, Social Environment, Cost Estimation, Financial Economics

TASK 6: APPROVAL OF THE GOVERNMENT

MAIN CONTENTS

DELIVERABLES

Part	DOC. TITLE	DOC. No	IFR (Draft)	UNOPS (Submission)	Note
PART I	INCEPTION REPORT	12.2025-UNOPS/PVP-LS-CEC-PD-RPT-001		30/7/2025	Task 1
PART II	REPORT ON PRELIMINARY INVESTMENT ROADMAP	12.2025-UNOPS/PVP-LS-CEC-PD-		30/8/2025	Task 2
PART III	REPORT ON PRELIMINARY TECHNICAL DESIGN AND RISK ANALYSIS				Task 3
Volume III.1	General report	12.2025-UNOPS/PVP-LS-CEC-PD-...-...		30/9/2025	
Volume III.2	Appendix on legal bases				
Volume III.3	Drawing appendix				
PART IV	REVIEW REPORT			30/7/2025	Task 4
		12.2025-UNOPS/PVP-LS-CEC-PD-...-...			
PART V	FINALIZATION OF STUDY AND REPORT	12.2025-UNOPS/PVP-LS-CEC-PD-...-...		30/10/2025	Task 5
	SUMMARY REPORT	12.2025-UNOPS/PVP-LS-CEC-PD-...-...		30/11/2025	Task 5

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APPENDICES

APPENDIX 1: **MINUTES OF MEETING FOR KICKOFF MEETING BETWEEN PECC1 AND UNOPS**

APPENDIX 2: **MINUTES OF MEETING BETWEEN PECC1, PV POWER AND UNOPS**

APPENDIX 3**: GEOLOGICAL MAP IN SCALE OF 1:50,000**

APPENDIX 4: **HYDRO-METEOROLOGICAL DATA**

APPENDIX 5**: ANTICIPATED CONNECTION OPTION**

APPENDIX 6: **SOME PHOTOS**

INTRODUCTION: Objectives and Scope

- The Khanh Hoa Clean Energy Complex Project (formerly Ninh Thuan) is a strategic initiative aimed at advancing Vietnam's net-zero emissions target by 2050. It focuses on de-risking investments in renewable energy infrastructure.
- The project will support the development of **a clean energy complex** with an installed capacity comprising:
  - **3,500 MWp** of Solar PV,
  - **1,440 MW** of pumped storage hydropower and,
  - **350 MW** battery energy storage system - BESS.

INTRODUCTION: Background for implementation

Basis for implementation of the study:

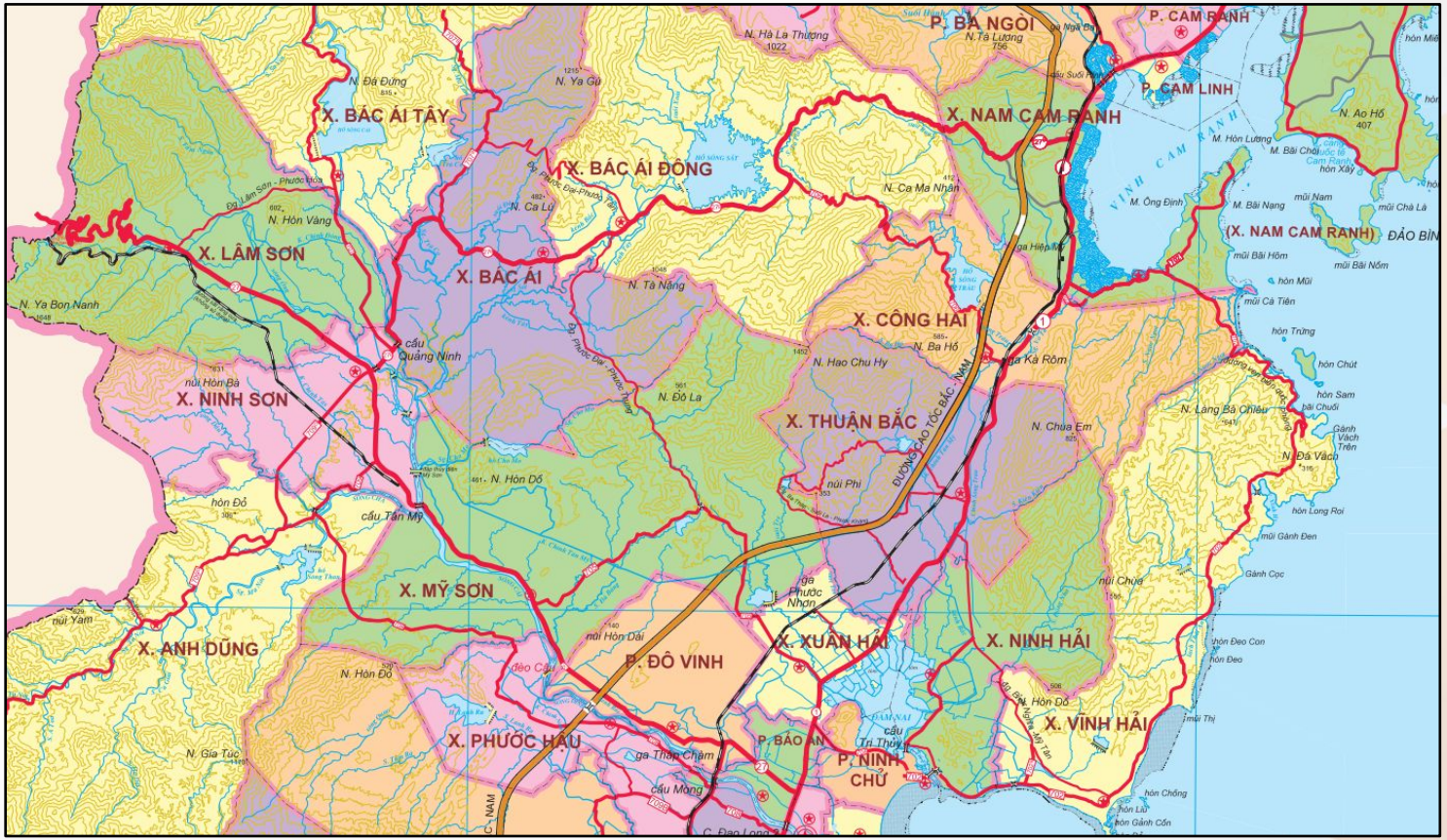
- Based on Contract No. EAPMCO/ETP/2025/3252 signed between UNOPS and PECC1 on 17 June 2025;
- Based on the methodology outlined in Form D submitted as part of the bid document;
- The National Power Development Plan 8 (PDP8) for the period of 2021–2030, with a vision to 2050 and the revised PDP8 and implementation plan for the PDP8 (the revised once) that has been approved; and
- In consideration of the current status and actual conditions of the project area.

INTRODUCTION: Administrative units after merging

Project area:

06 communes:

- ✔ Lâm Sơn
- ✔ Bắc Ái Tây
- ✔ Bắc Ái Đông
- ✔ Ninh Sơn
- ✔ Anh Dũng
- ✔ Mỹ Sơn



INTRODUCTION: Study area of the project

Project area:

06 communes:

- ✔ Lâm Sơn
- ✔ Bắc Ái Tây
- ✔ Bắc Ái Đông
- ✔ Ninh Sơn
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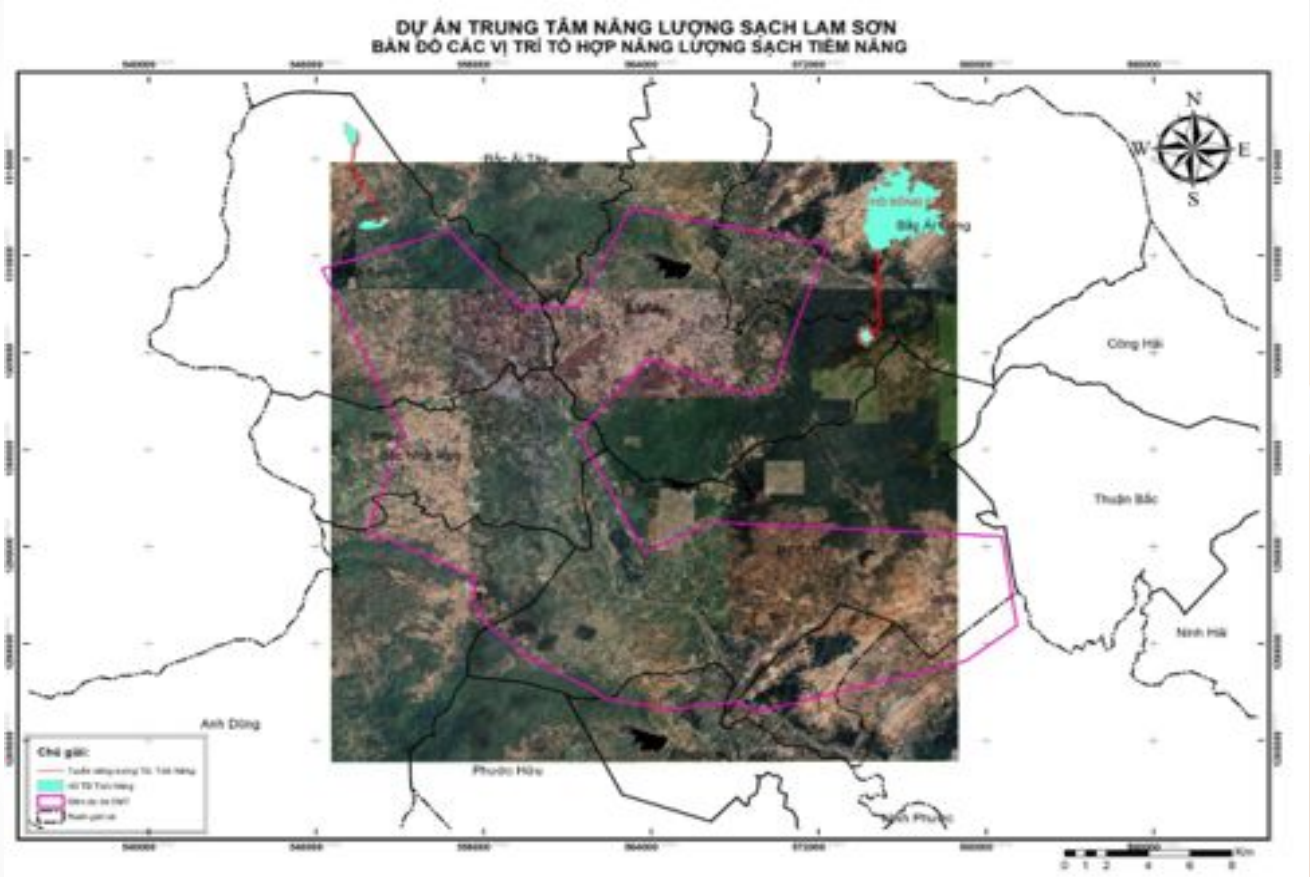
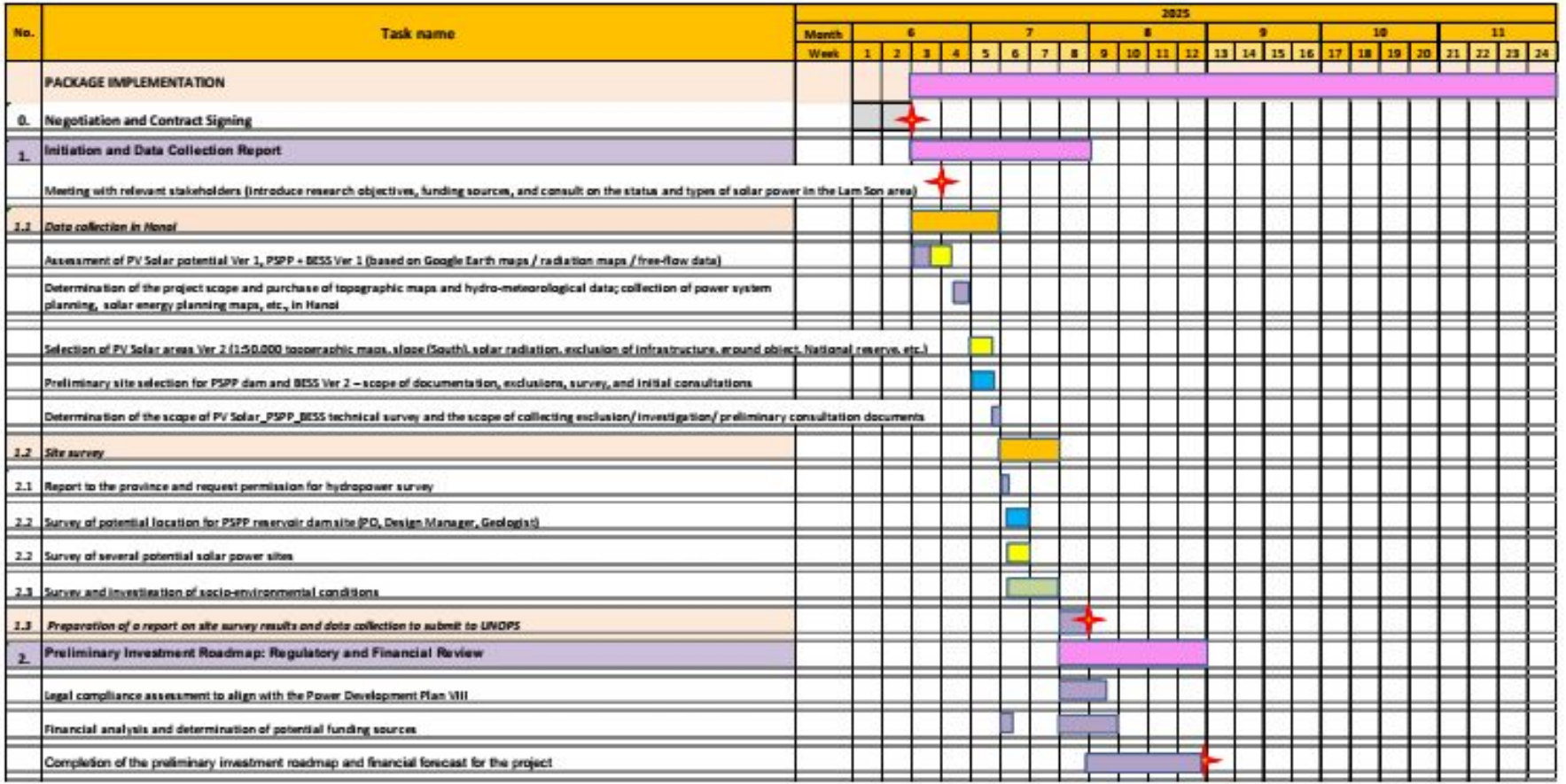
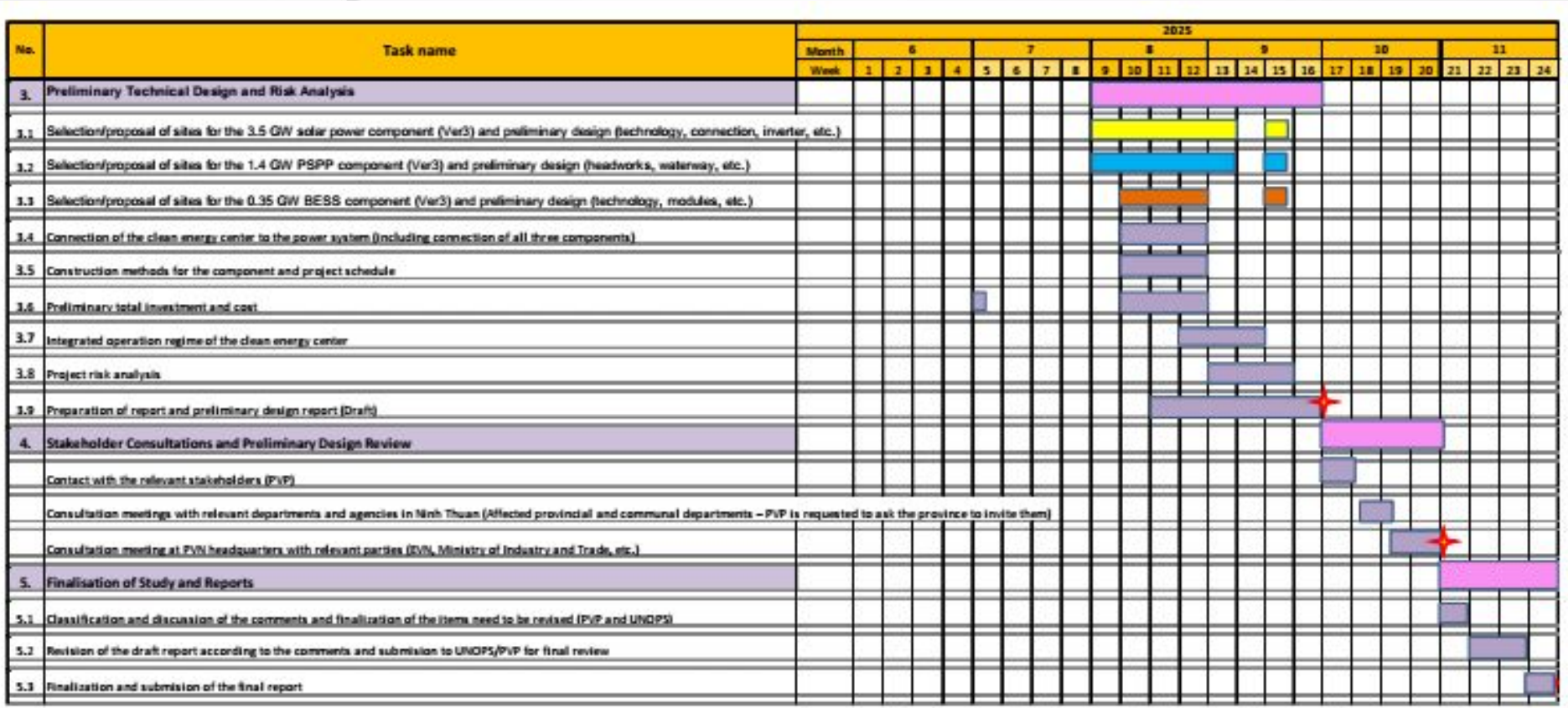


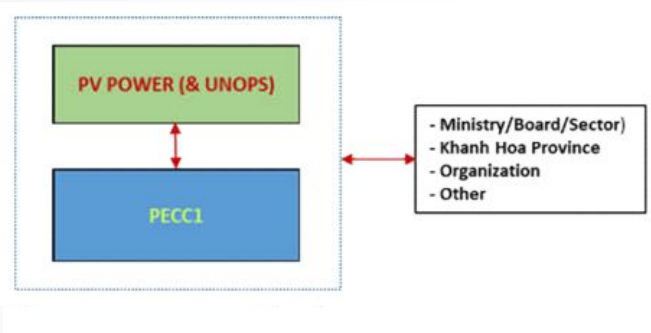
INTRODUCTION: Schedule for Study implementation



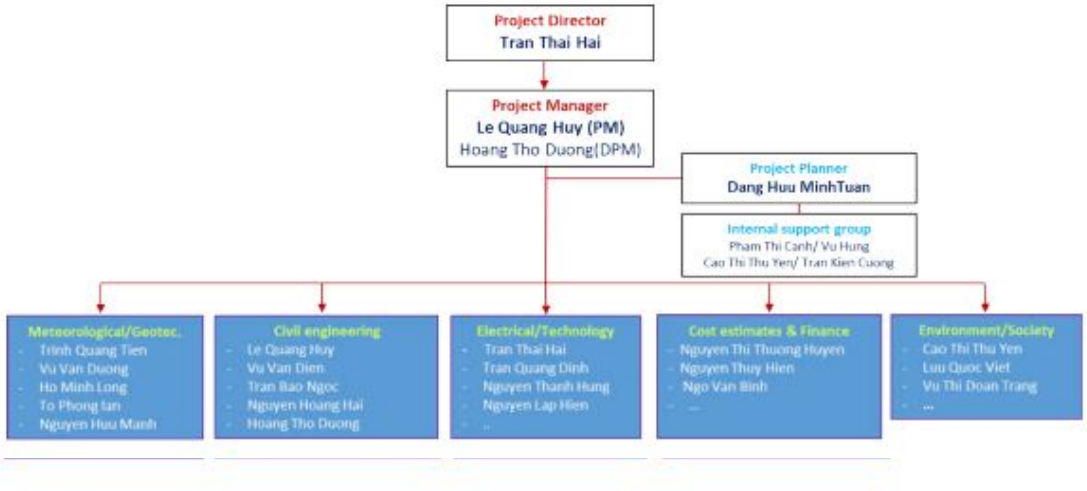
INTRODUCTION: Schedule for mission implementation



INTRODUCTION: Staffing scheme

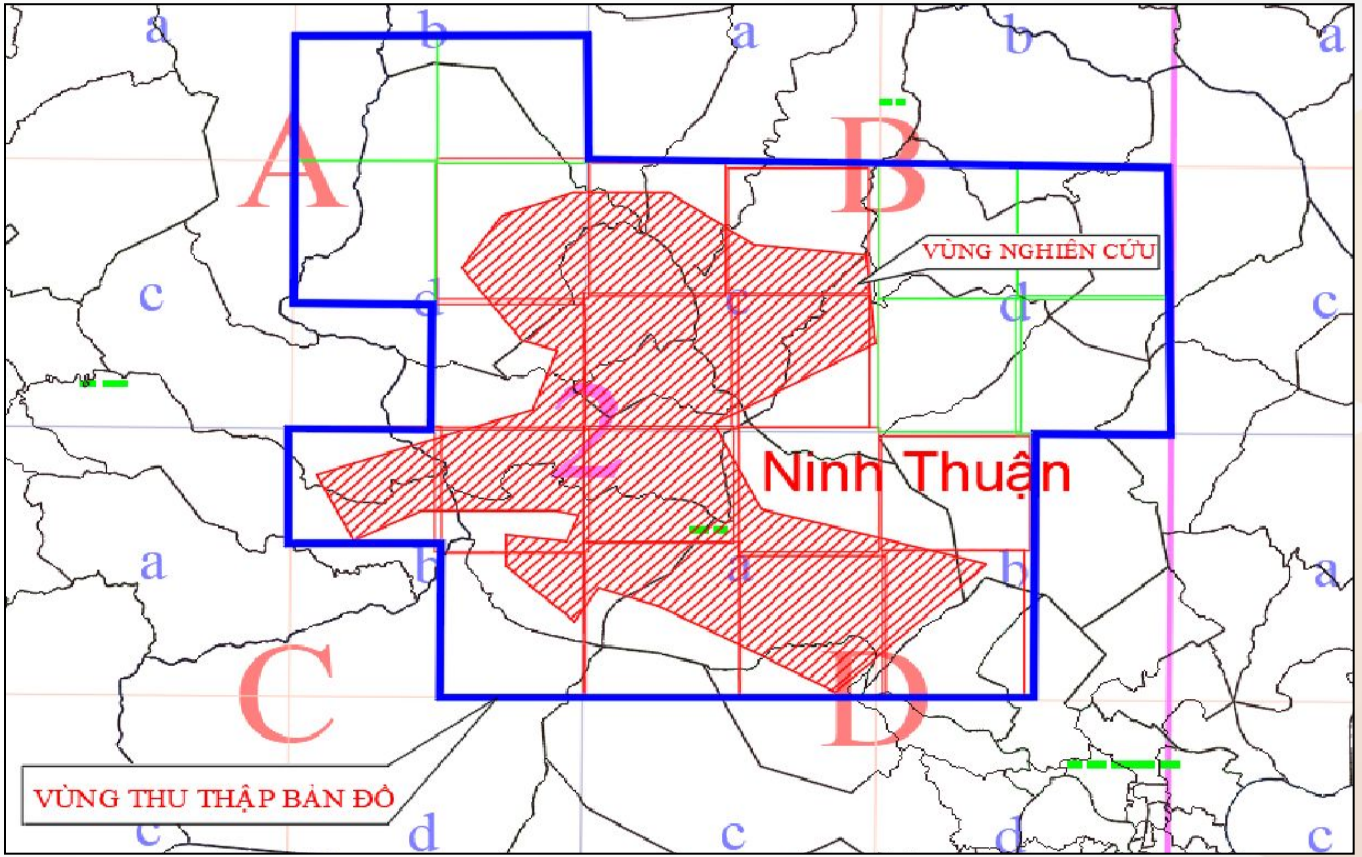


3 ORGANIZATION CHART AND INTERACTION:



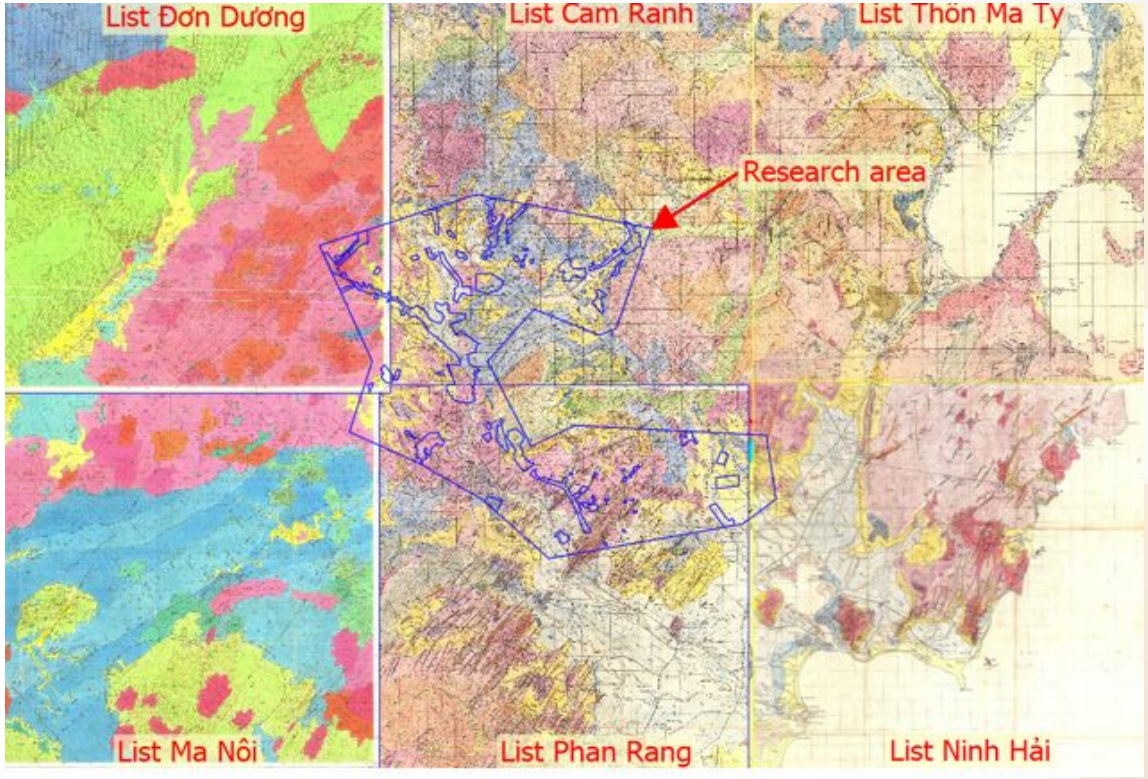
DATA COLLENCTION: Area of Topographical Map

Listed of maps collected in scale of 1/10,000					
C	49	2	A	b	3
C	49	2	A	b	4
C	49	2	A	d	1
C	49	2	A	d	2
C	49	2	A	d	4
C	49	2	B	c	1
C	49	2	B	c	2
C	49	2	B	c	3
C	49	2	B	c	4
C	49	2	B	d	1
C	49	2	B	d	2
C	49	2	B	d	3
C	49	2	B	d	4
C	49	2	C	b	1
C	49	2	C	b	2
C	49	2	C	b	4
C	49	2	D	a	1
C	49	2	D	a	2
C	49	2	D	a	3
C	49	2	D	a	4
C	49	2	D	b	1
C	49	2	D	b	3



DATA COLLENCTION: Geological maps

- Collected geological map sheets in scale of 1:50,000:
  - Cam Ranh sheet
  - Thôn Ma Ty sheet
  - Phan Rang sheet
  - Ninh Hải sheet
  - Đơn Dương sheet (6732-IV) – Group of Da La sheets
  - Ma Nôi sheet (6732-III) - Group of Da La sheets



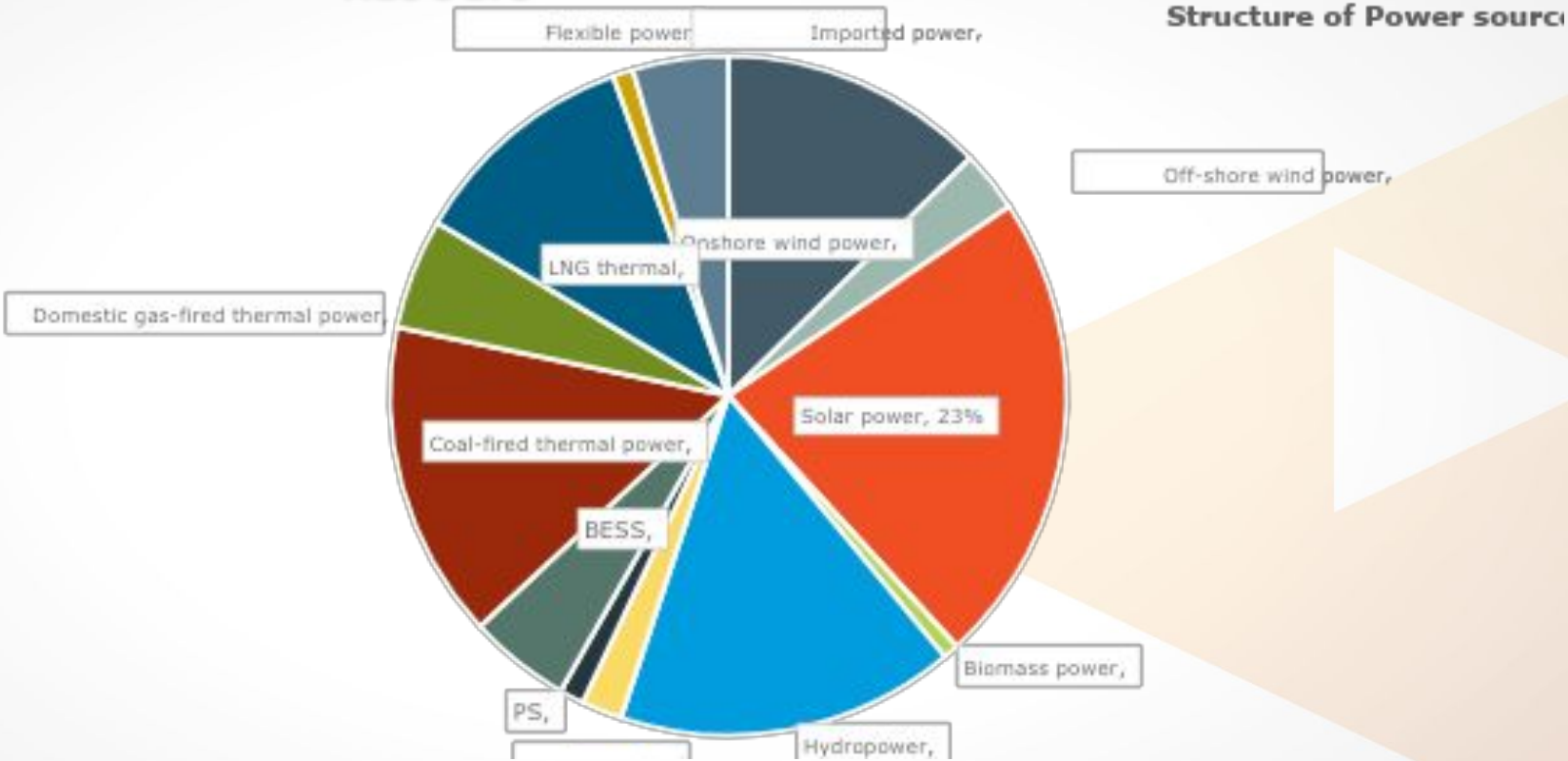
DATA COLLENCTION: Hydrological documents

Refer to attached file for hydrological documents

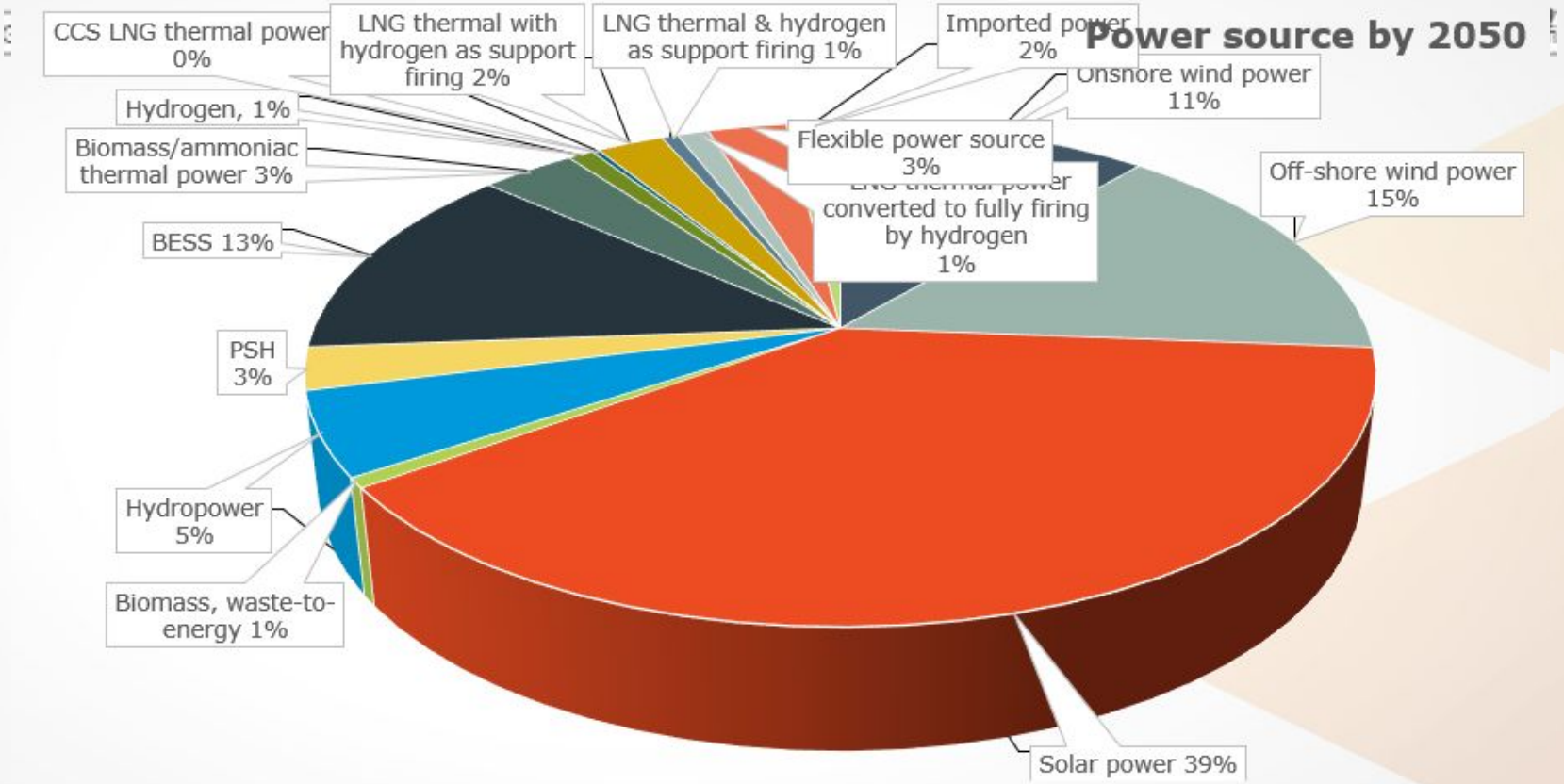
DATA COLLENCTION: Social environment

- Maps of current status of land use, land use planning, current forest status map, and three-category forest planning map.
- Current status and planning of technical infrastructure works and biodiversity.
- Report on environmental current status and environmental planning.
- Current status of water exploitation and use, and water resource planning
- Nature reserves, biosphere reserves, national parks, etc....
- Socio-economic development report for 06 communes within the project area.
- Documents on livelihoods, gender equality, vulnerable groups, and ethnic minorities in the affected localities.

IMPLEMENTATION METHOD & PRELIMINARY RESULTS

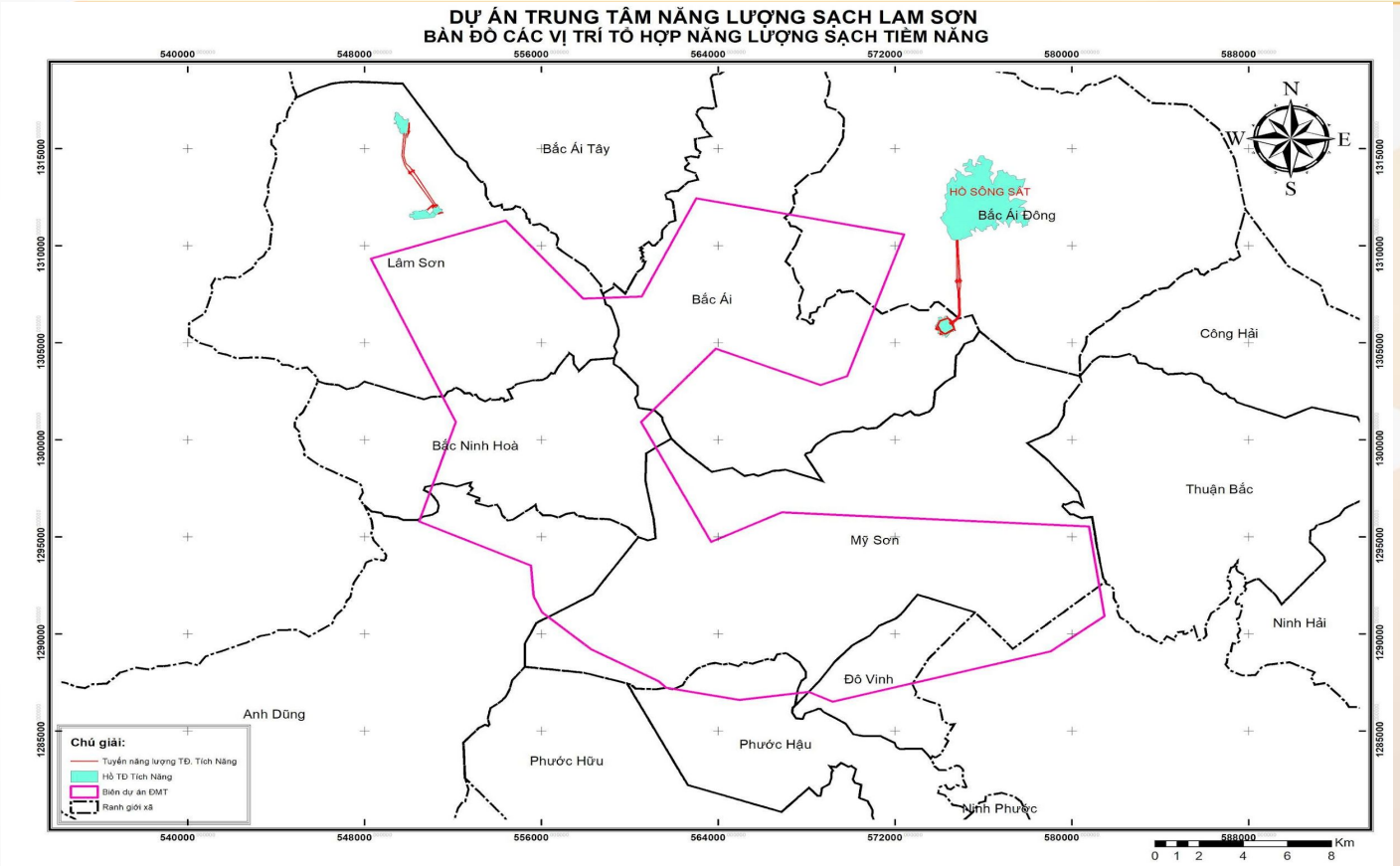


IMPLEMENTATION METHOD & PRELIMINARY RESULTS



IMPLEMENTATION METHOD & PRELIMINARY RESULTS

Potential area for solar power



IMPLEMENTATION METHOD & PRELIMINARY RESULTS

Solar energy at the project site

LS_3.5Gwp - Ver 2;

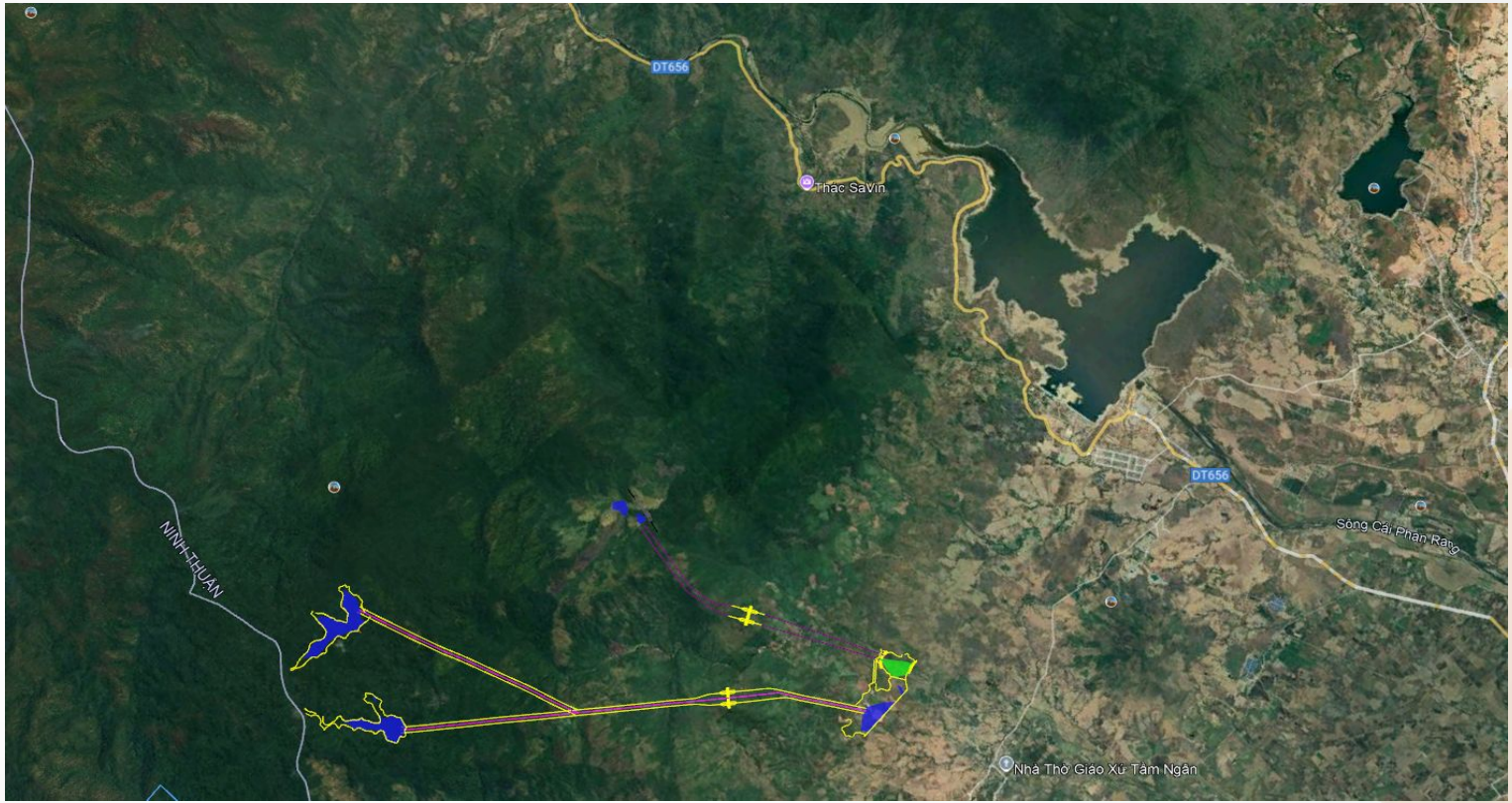
P50 Số gốc

Monthly Hourly averages for E_Grid [MW]

	0H	1H	2H	3H	4H	5H	6H	7H	8H	9H	10H	11H	12H	13H	14H	15H	16H	17H	18H	19H	20H	21H	22H	23H
January	0	0	0	0	0	0	11	643	1232	1649	1905	1958	1901	1783	1554	1078	487	1	0	0	0	0	0	0
February	0	0	0	0	0	0	15	714	1447	2019	2278	2465	2367	2402	2010	1445	720	21	0	0	0	0	0	0
March	0	0	0	0	0	0	145	814	1415	1904	2256	2342	2321	2081	1740	1256	645	27	0	0	0	0	0	0
April	0	0	0	0	0	0	310	1031	1722	2256	2514	2452	2410	2165	1793	1258	644	24	0	0	0	0	0	0
May	0	0	0	0	0	0	309	884	1413	1848	2234	2116	2053	1859	1533	1060	520	31	0	0	0	0	0	0
June	0	0	0	0	0	0	304	916	1537	1933	2232	2220	2140	1963	1665	1216	598	79	0	0	0	0	0	0
July	0	0	0	0	0	0	241	791	1273	1750	1977	2012	1975	1793	1432	1045	543	98	0	0	0	0	0	0
August	0	0	0	0	0	0	178	601	1007	1256	1426	1461	1418	1338	1140	841	430	45	0	0	0	0	0	0
Septembe	0	0	0	0	0	0	279	833	1336	1782	1978	1846	1710	1474	1242	806	397	6	0	0	0	0	0	0
October	0	0	0	0	0	0	280	737	1225	1544	1737	1719	1636	1589	1283	832	331	0	0	0	0	0	0	0
Novembe	0	0	0	0	0	0	177	684	1137	1424	1637	1518	1274	1132	855	500	138	0	0	0	0	0	0	0
Decembe	0	0	0	0	0	0	88	721	1249	1668	1933	1999	1983	1799	1462	943	332	0	0	0	0	0	0	0
Year	0	0	0	0	0	0	195	780	1331	1750	2006	2005	1929	1778	1472	1021	480	28	0	0	0	0	0	0

IMPLEMENTATION METHOD & PRELIMINARY RESULTS

Location of Lam Son pumped-storage hydropower

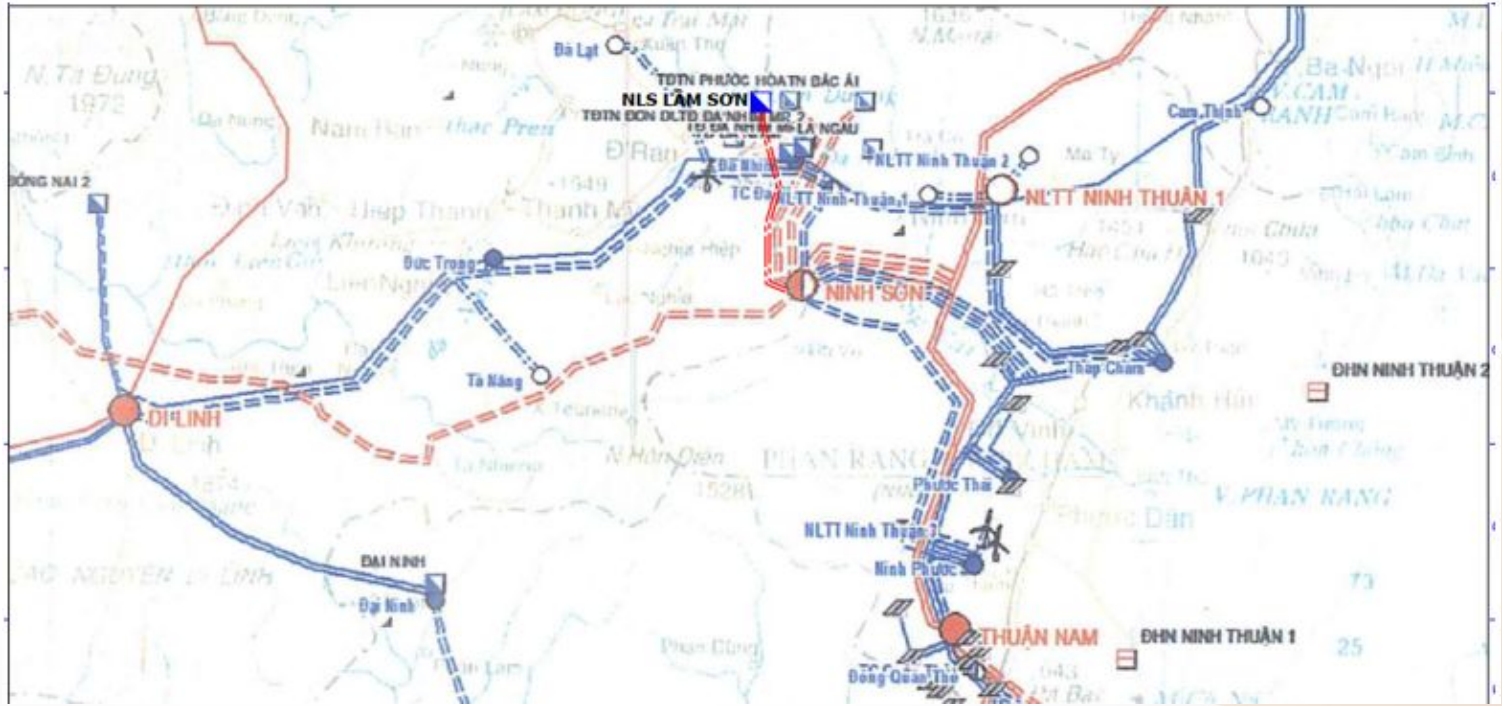


IMPLEMENTATION METHOD & PRELIMINARY RESULTS

Location of Ho Song Sat PSH

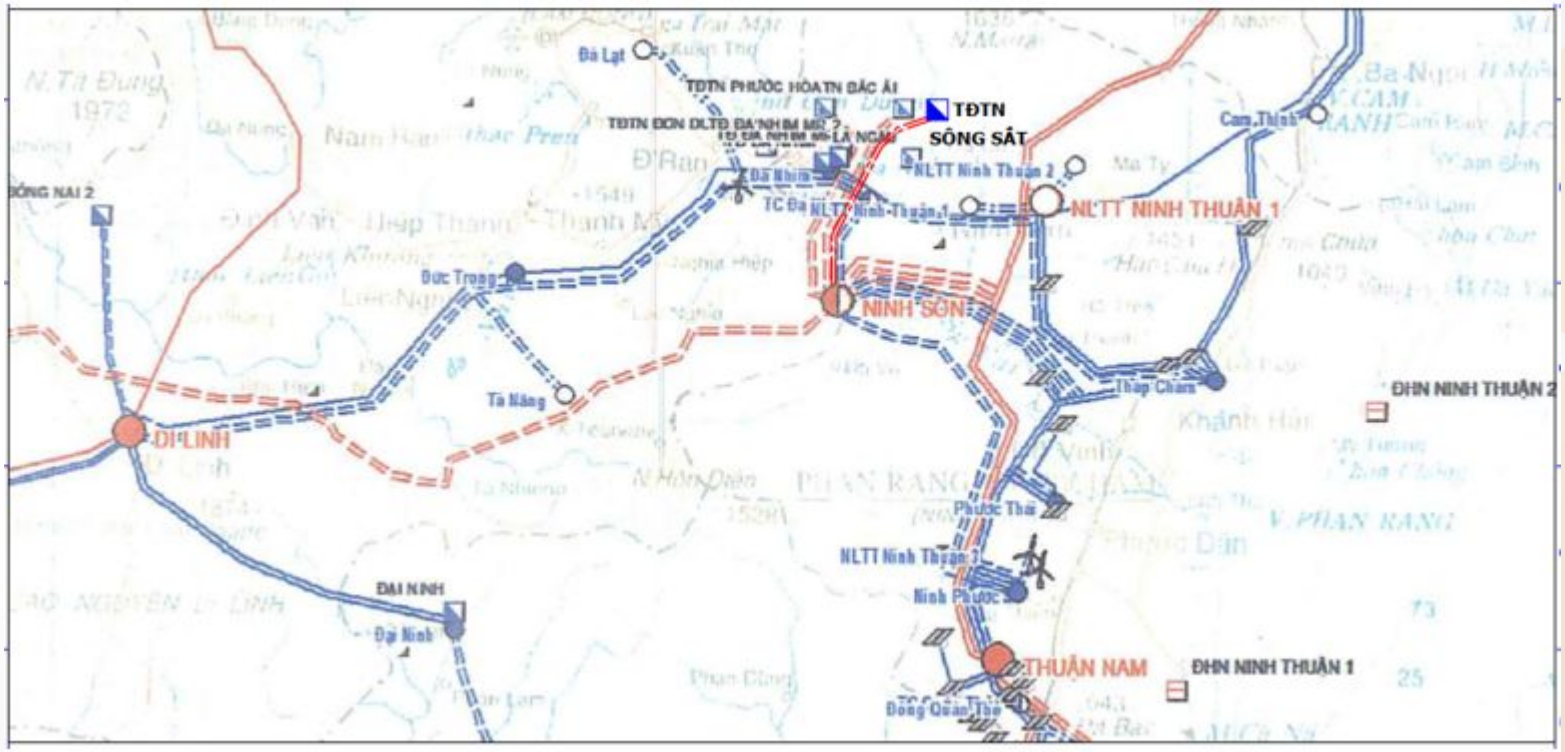
IMPLEMENTATION METHOD & PRELIMINARY RESULTS

Preliminary connection option of Lam Son PSH location



IMPLEMENTATION METHOD & PRELIMINARY RESULTS

Preliminary connection option of Song Sat PSH location



SOME PHOTOS

Director of DOIT, Mr. Ho Xuan Ninh chaired the meeting

SOME PHOTOS

Current status of solar power study area

SOME PHOTOS

Proposed location of outlet gate of Song Sat PSH


Thank you very much!