

GEOLOGICAL STORAGE SELECTION CHARACTERIZATION IN LAO PDR.



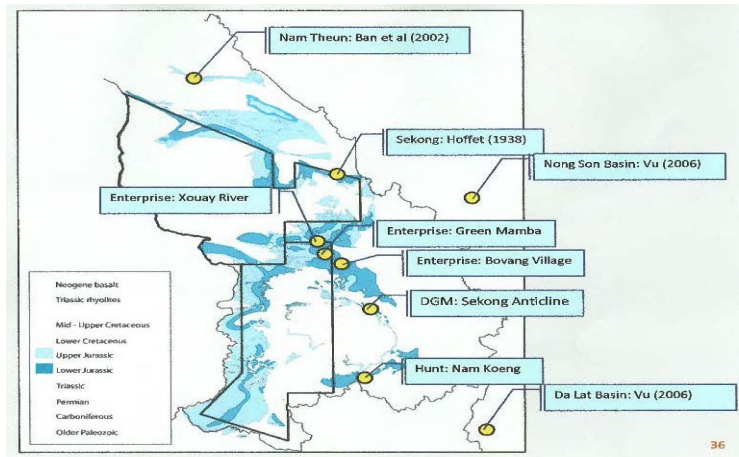
Bali, Indonesia
12 April-03 May 2013

Outline

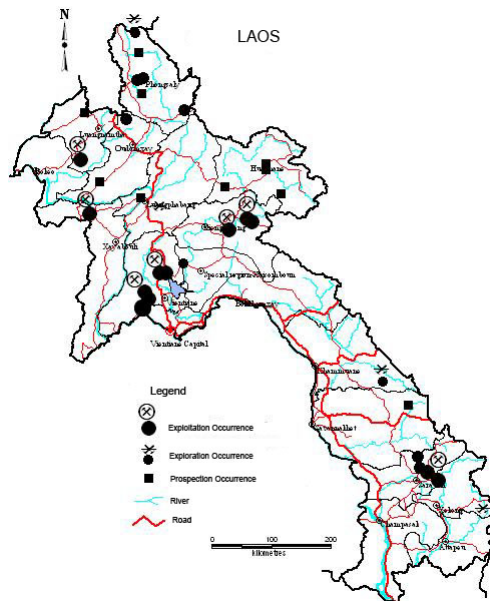
- I. INTRODUCTION
- II. GEOLOGICAL STORAGE OF CO₂
- III. OPTIMAL POWER PLANT
INTEGRATION OF POST-
COMBUSTION CO₂ CAPTURE
- VI. CONCLUSION

I. Introduction

Preview of oil and gas exploration



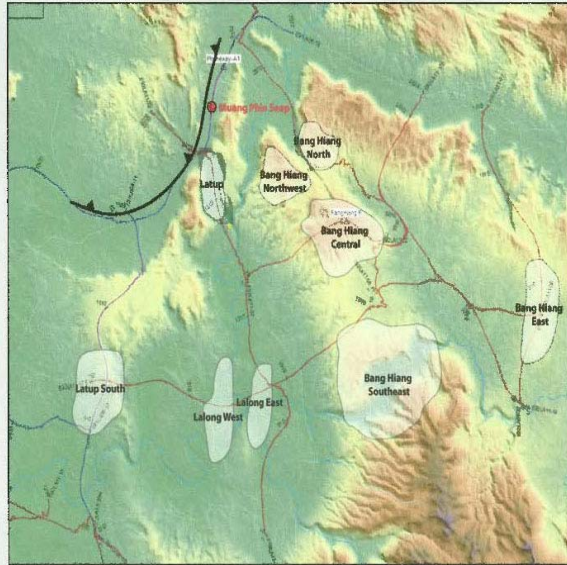
Preview of coal exploration and mining



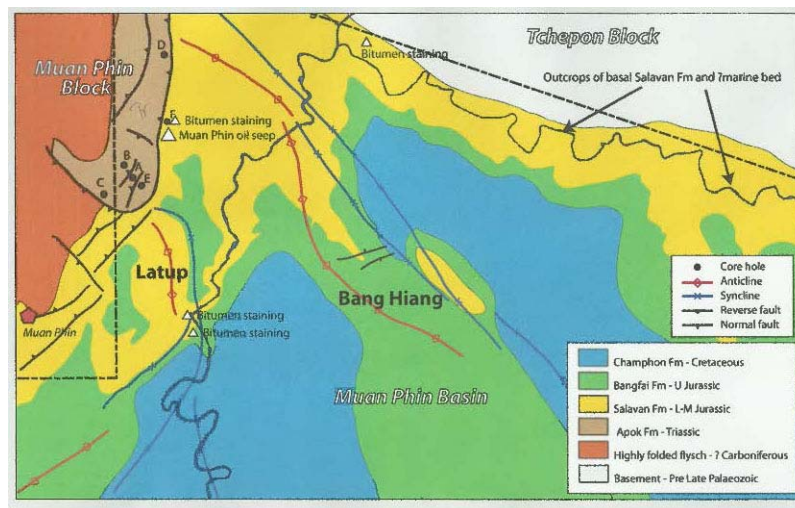
II. GEOLOGICAL STORAGE OF CO₂

1. Geological Potential for Oil and Gas in the Subsurface

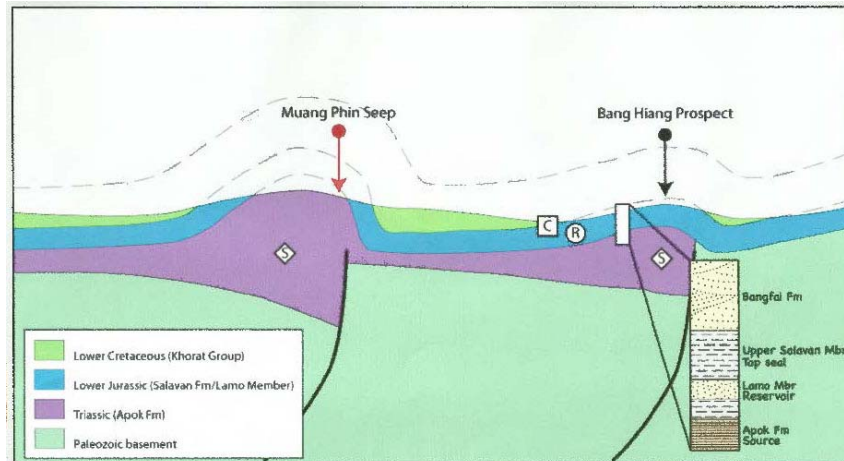
- (1) BANG NOUAN AREA.
- (2) NON CHANE.
- (3) MUANG PHIN.
- (4) SALAVANE-CHAMPASAK



geological structure



Consists the geo-tectonic



2. Coal Exporation and Mining Activities

Mining Project

- **Hongsa Lignite Project**
- **Vieng Phoukha project**

III. Optimal Power Plant Integration of Post-Combustion CO₂ Capture

1. Power plant components affected by CO₂ capture

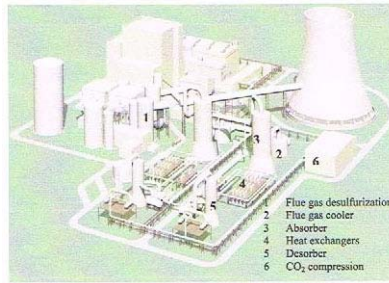


2. Coal Mining Activity of Hongsa Project



3. Further plant components affect by CO₂ Capture

- . Turbine building influence
By the out line of adapted
Stream turbine
- . Cooling system connected
and charged with additional
Heat loads
- . Water logistics consisting of raw water supply



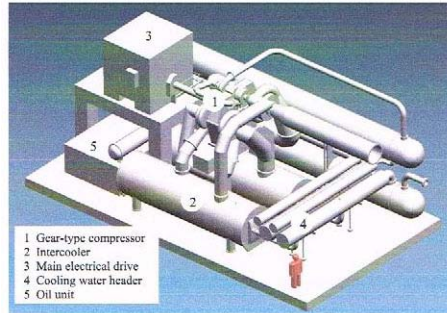
4. Table Recent Air Pollution Control Removal Requirement

Parameter	Units	Recent AQCS
SO ₂	% Removal	95-99
SO ₂	mg/Nm ³	< 100
SO ₃	mg/Nm ³	< 5
PM	mg/Nm ³	13.5
HCL	mg/Nm ³	1.5
HCL	% Removal	98-99%+
HF	mg/Nm ³	0.35
Mercury	ug/Nm ³ wet	0.4
Lead	ug/Nm ³ wet	1.2

5. CO₂ Compressor Design for CCS Application

A. Technical solution

The latest step of CO₂ compression integration into the power plant is the intercooler heat recovery



Gear-type compressor module for heat recovery

B. Improved configuration of siemens CO₂ capture process

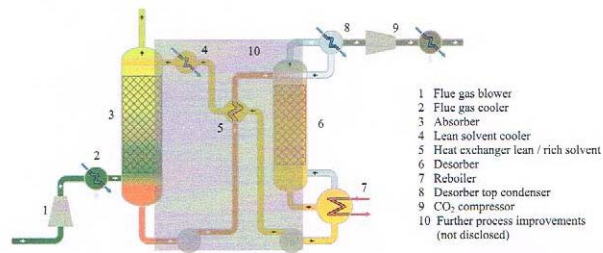
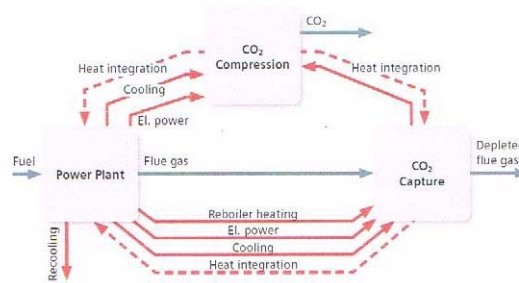


Figure 3: Standard process configuration with several improvements (indicated as a gray box)

6. Optimized Power Plant Intergration

Simplified overview of main interfaces within a power plant with CO₂ capture



VI. CONCLUSION

- **The CO₂ capture process cannot be fully optimized without considering its integration into the power plant and the adaptation of existing process unit to the new requirement defined by the CO₂ capture process.**
- **Siemens coordinates the in-house development and improvement of CCS-relevant technologies such as upgraded Flue gas desulfurization, compression, low layout in order to optimally integrate the capture process into the power plant and achieve maximum plant efficiency.**

