

# Application of UNFC – 2009 to Mineral Resources in Thailand



Department of Mineral Resources (DMR)  
of Thailand

*UNECE Group on Resource Classification  
Fifth Session, Geneva, 29 April-2 May 2014*



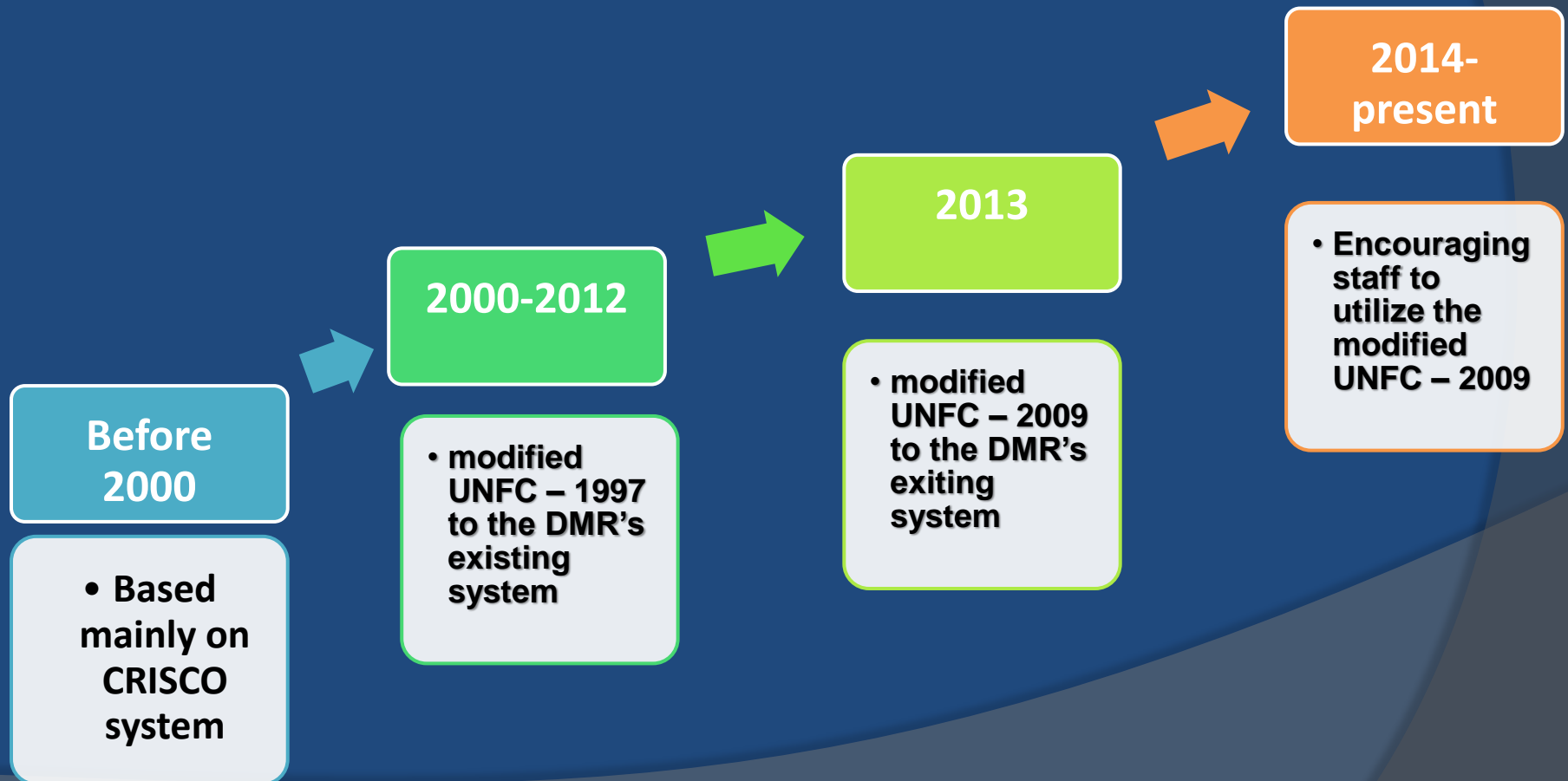
# Department of Mineral Resource of Thailand (DMR)

## Mandates

- Geological and mineral surveying, researching, and cooperating in geology and mineral resources with other countries and international organizations

# Application of UNFC to DMR work

- To develop DMR's Mineral resources classification following the international Framework, UNFC 2009



# DMR Activities on UNFC



## □ Participated international workshop

### *The Expert Group on Resource Classification Geneva*

- *The 3<sup>rd</sup> Session, 2-4 May 2012*
- *The 4<sup>th</sup> Session, 23-26 April 2013*
- *The 5<sup>th</sup> Session, 29 April -2 May 2014*



# DMR Activities on UNFC

## □ Workshop and Seminar to promote UNFC

- *Workshop on UNFC resources classification at Bangkok on 9<sup>th</sup> – 10<sup>th</sup> February 2012*
- *Workshop on new UNFC – 2009 at DMR Bangkok in June 2012*
- *Seminar on mineral resources classification at DMR Bangkok on 7<sup>th</sup> – 8<sup>th</sup> November 2012*
- *Seminar on the modified UNFC 2009 to DMR's mineral exploration project, 5<sup>th</sup> – 7<sup>th</sup> June 2013*

# □ Co-organized seminar and excursion DMR-DPIM-CCOP

28-30 May 2013

- 9 participants from CCOP member countries
- Discussion on UNFC 2009
- Share experiences on mineral resources mining and public engagement



# DMR Activities on UNFC



- Published the guidelines on the application of UNFC-2009 to DMR mineral exploration project September, 2013



**An Example**

**Implementation of**

**UNFC Resources Classification :**

**To DMR work**

# CASE 1 : Overall Mineral Reserve / Resource



Mineral Type	Remained Minable Reserves/Resource (Tons) 1	Remained Mineral Resources (Tons) 2
<b>Industrial rocks</b>		
Limestone (construction)	1,789,050,904	294,778,879,283
Basalt	86,650,640	42,177,311,881
Granite	253,550,666	11,252,837,576
Andesite	149,474,371	16,148,987,918
Sandstone	29,699,322	31,030,080,293
Limestone (cement)	624,851,613	612,425,293,327
Shale (cement)	76,621,296	115,076,541,848
<b>Non-metallic minerals</b>		
Gypsum	150,882,747	350,247,177
Sodium feldspar	233,172,373	4,732,468,454
Clay	139,256,469	839,183,653
Rock salt	24,999,060	18,000,024,491,479
Barite	1,210,340	30,785,642
Fluorite	3,601,748	13,858,234
Potassium feldspar	916,367	900,969,628
Quartz	4,212,472	54,133,562
Potash	-	400,000,000,000
<b>Metallic minerals</b>		
Gold	25	143
Zinc	2,662,563	4,336,958
Iron	35,187,930	184,841,998
Tungsten	121,380	998,663
Tin	63,654	999,143
Copper	1,119,537	983,477
<b>Total</b>	<b>3,607,305,477</b>	<b>19,530,028,230,337</b>

## Summary Annual Report

Thailand  
Total area  
~ 518,000 km<sup>2</sup>

Potentially mineral  
area  
~ 99,670 km<sup>2</sup>  
(19 %)

About 20 mineral types  
were evaluated

Data sources: 1. Department of Primary Industries and Mines (DPIM)  
2. Department of Mineral Resources (DMR)

# Case 2: Currently DMR Exploration Projects (fiscal year 2013)

## 1. Regional mineral exploration

### All potential mineral types

- Nakhonsrithamarat Province
- Surat-Thanee Province

## 2. Semi-detailed mineral exploration

### Tin

- Phang-Nga Province

### Rare Earth

- Ranong Province

### Quartz

- Kanchanaburi Province

## 3. Mineral zoning and management

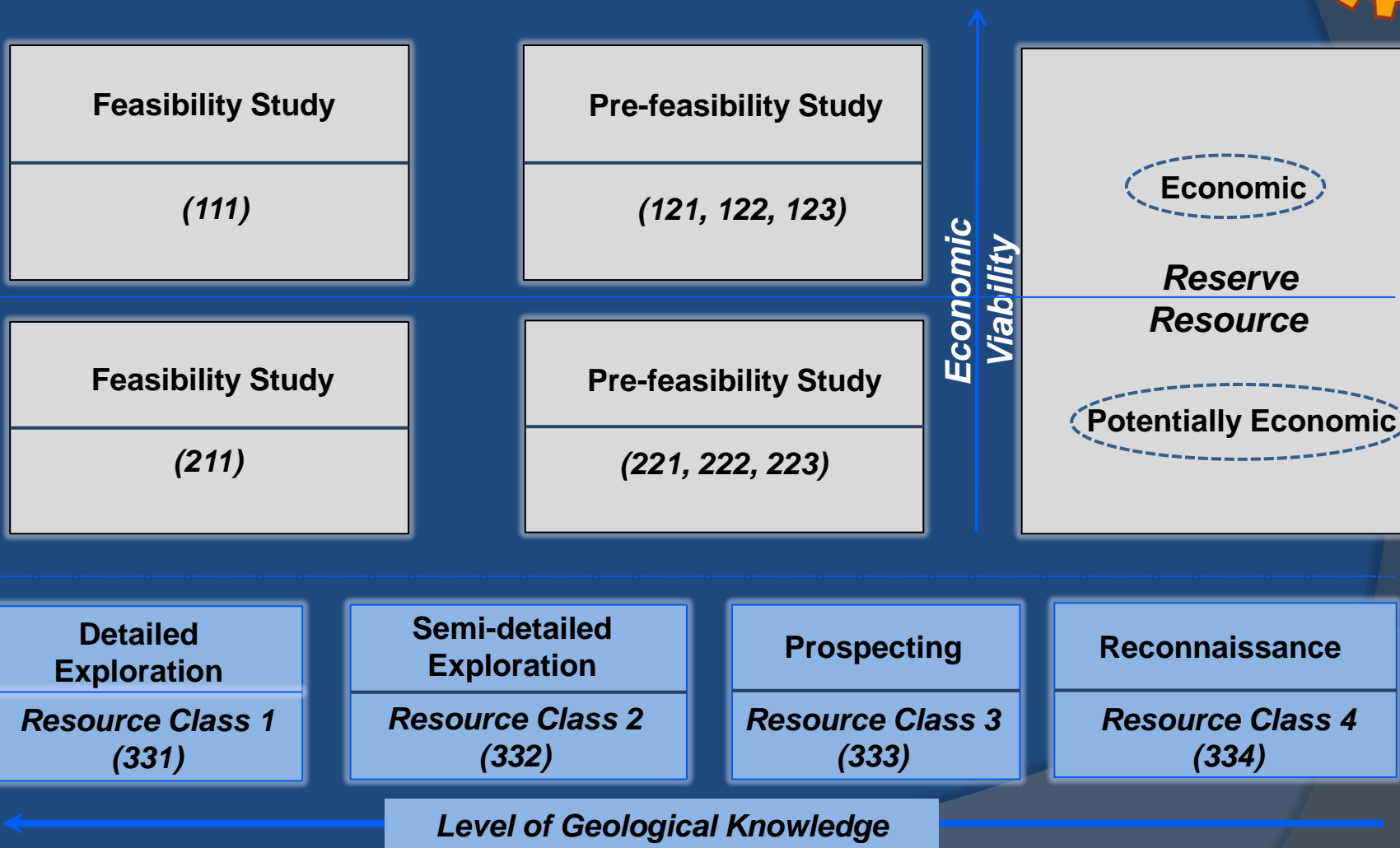
### Building stone

- Ubonratchathani Province
- Srisaket Province



# Current DMR's Mineral Resource Classification:

*adapted from UNFC-2009*



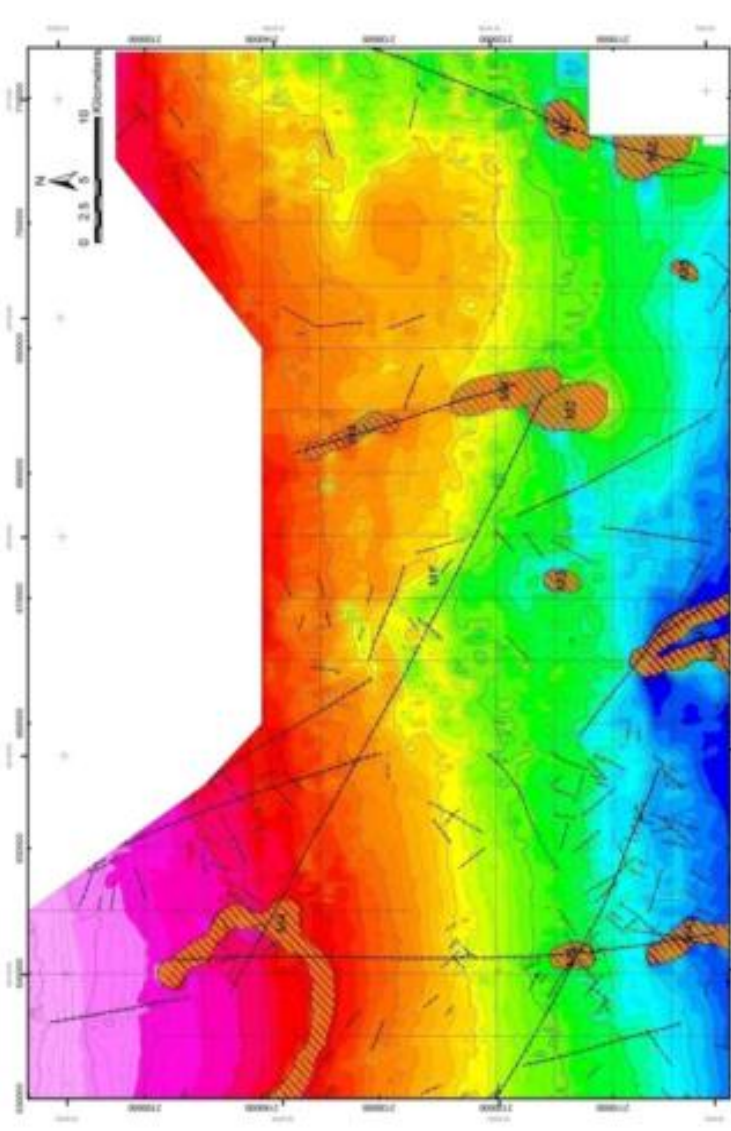
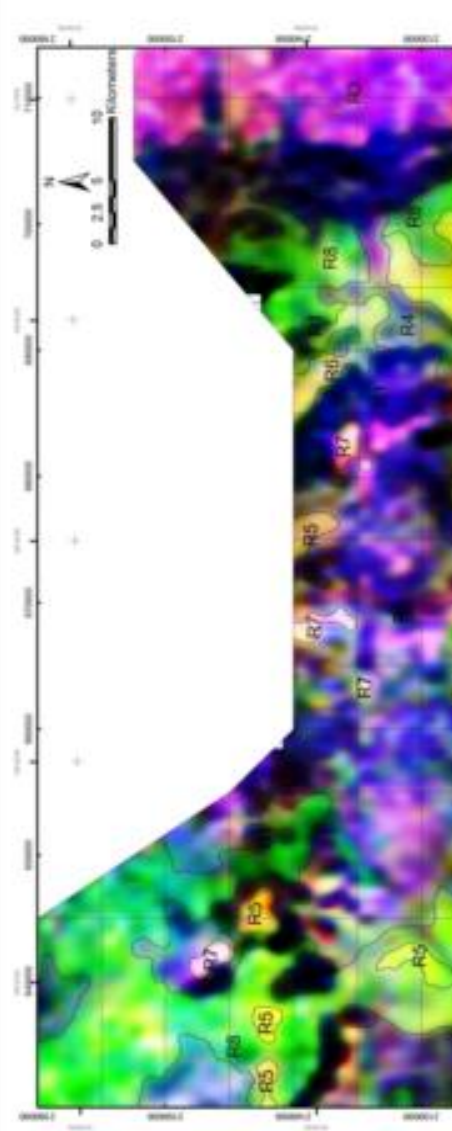
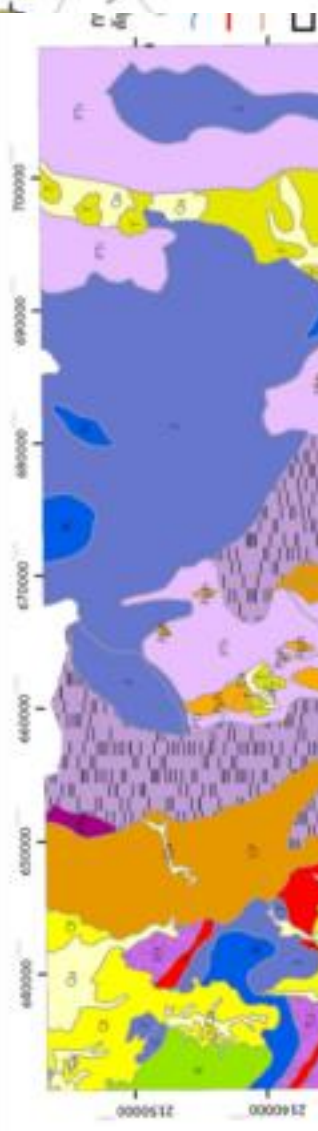
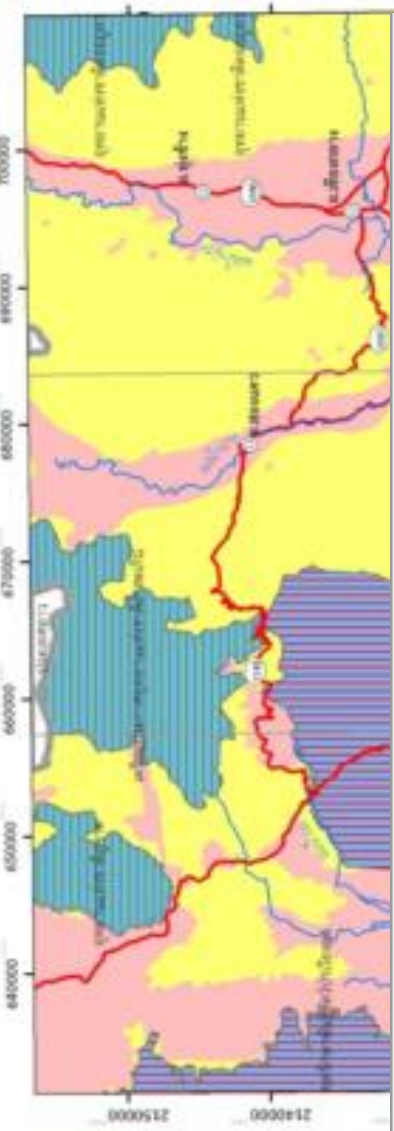
# Example of regional mineral exploration assessment

Landuse

Geology

Radiometric

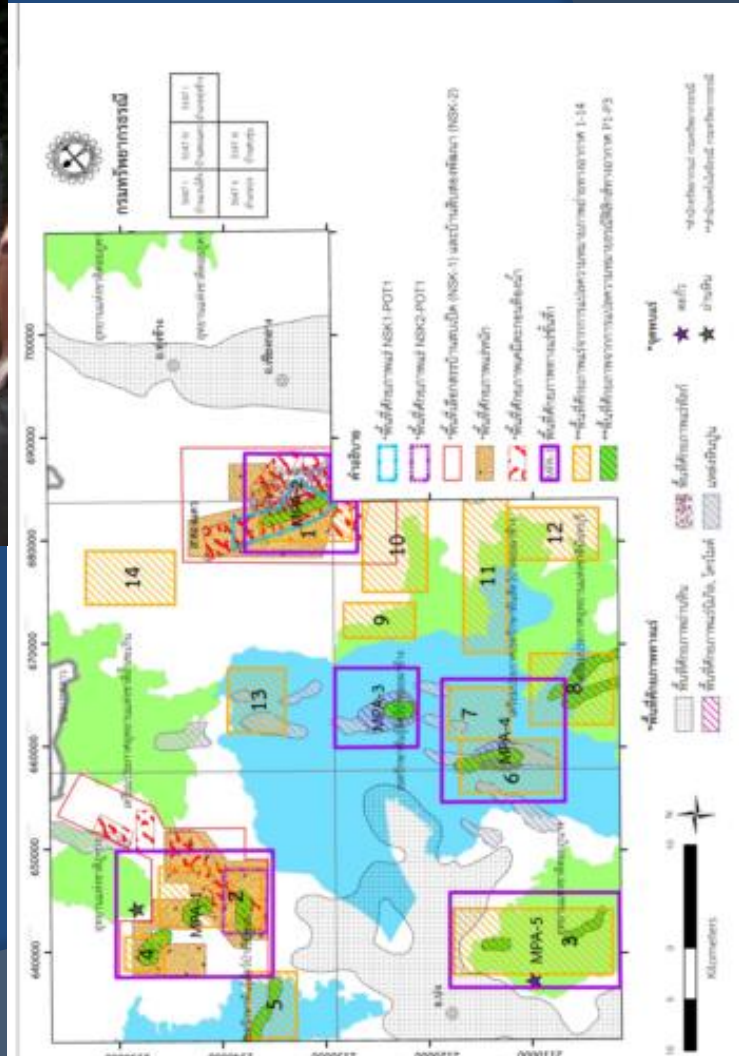
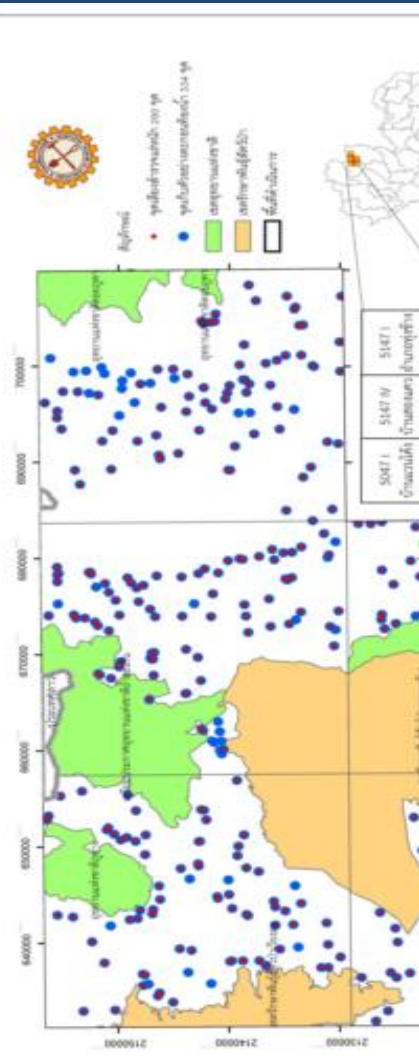
Magnetic



# Regional mineral exploration

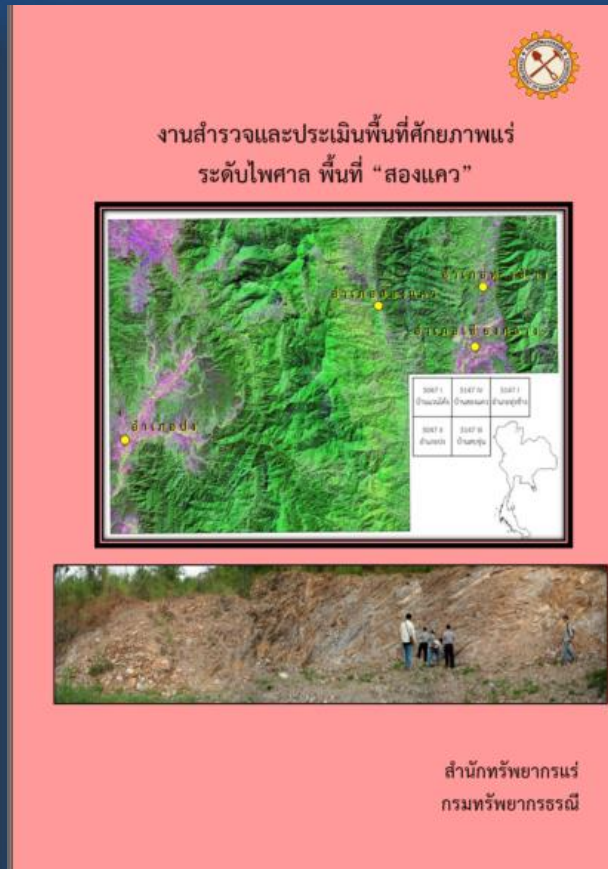
Geochemistry investigation  
(e.g. stream sediment sampling and panning)

Mineral potential area  
EFC 334



# DMR Publications 2013

## Regional mineral exploration



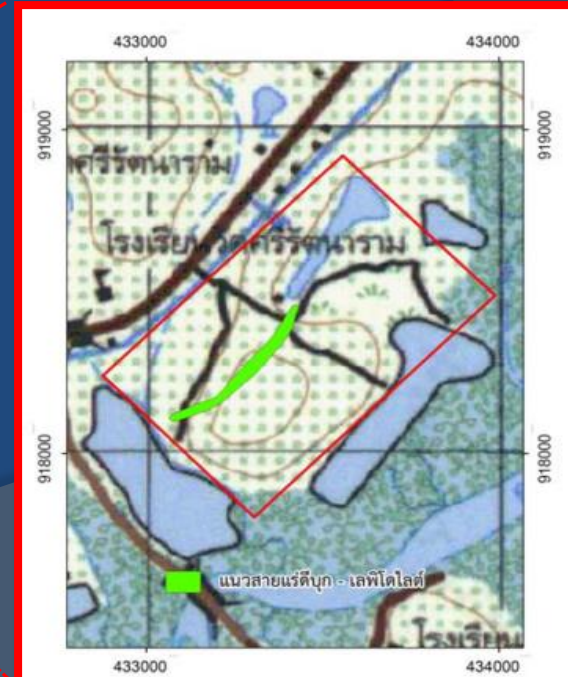
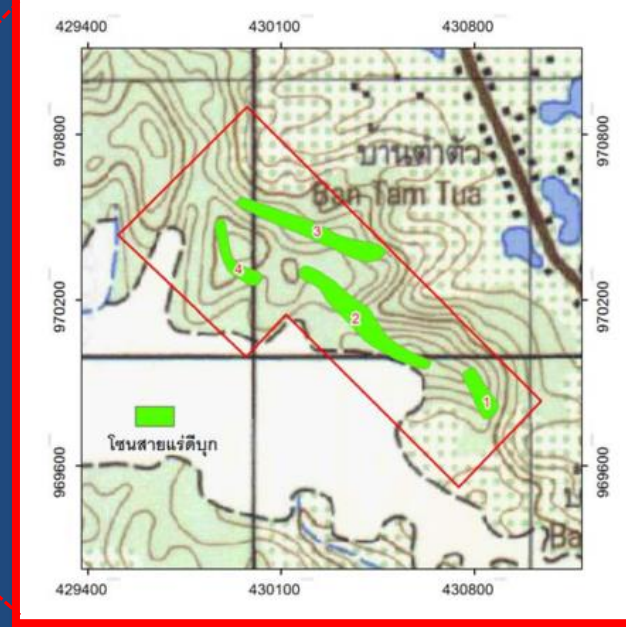
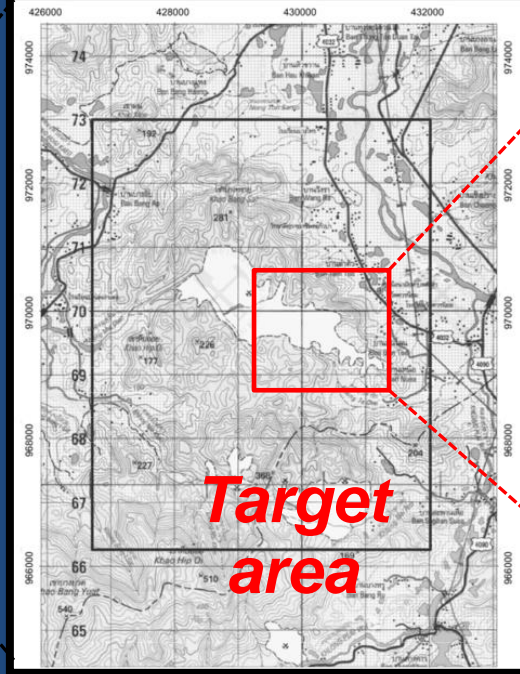
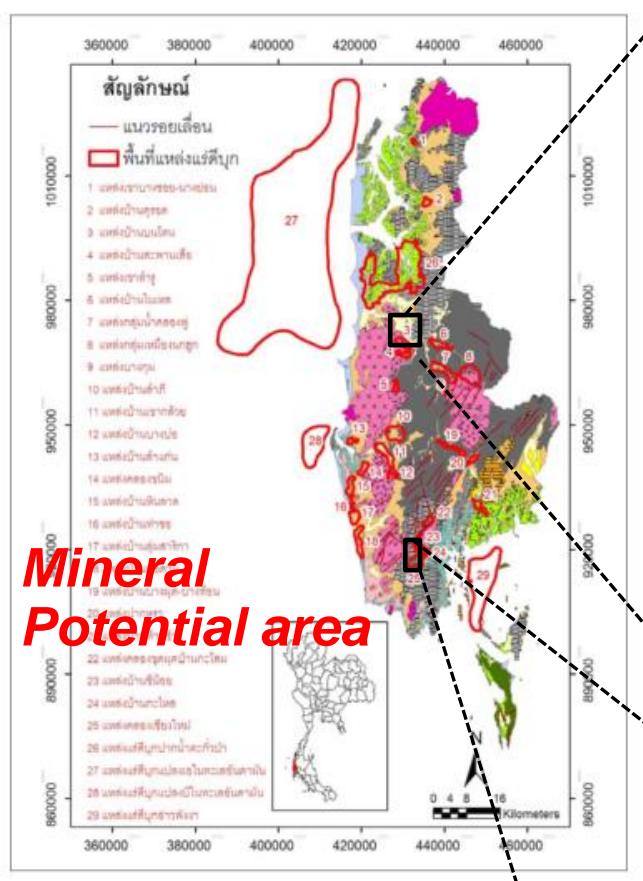
- zoning potential mineral area (EFC 334)

- recommend mineral potential I area for further semi-detail exploration

EFC 334

EFC 334








# DMR Publications 2013

## Semi-detailed exploration project

รายงานการสำรวจ  
ฉบับสมบูรณ์

งานสำรวจและประเมินศักยภาพทรัพยากรแร่  
ชั้นรายละเอียด แร่ดีบุก จังหวัดพังงา



สำนักทรัพยากรแร่  
กรมทรัพยากรธรณี

Tin  
EFC 332

รายงานการสำรวจ  
ฉบับสมบูรณ์

การสำรวจและประเมินศักยภาพทรัพยากรแร่  
ชั้นรายละเอียด แร่หนัก-ธาตุหายาก  
จังหวัดระนอง




พื้นที่ "เขาทรายแดง"

สำนักทรัพยากรแร่  
กรมทรัพยากรธรณี

Rare Earth  
EFC 332

รายงานการสำรวจฉบับสมบูรณ์

งานสำรวจและประเมินศักยภาพทรัพยากรแร่ชั้นรายละเอียด  
แร่ควอตซ์ จังหวัดกาญจนบุรี

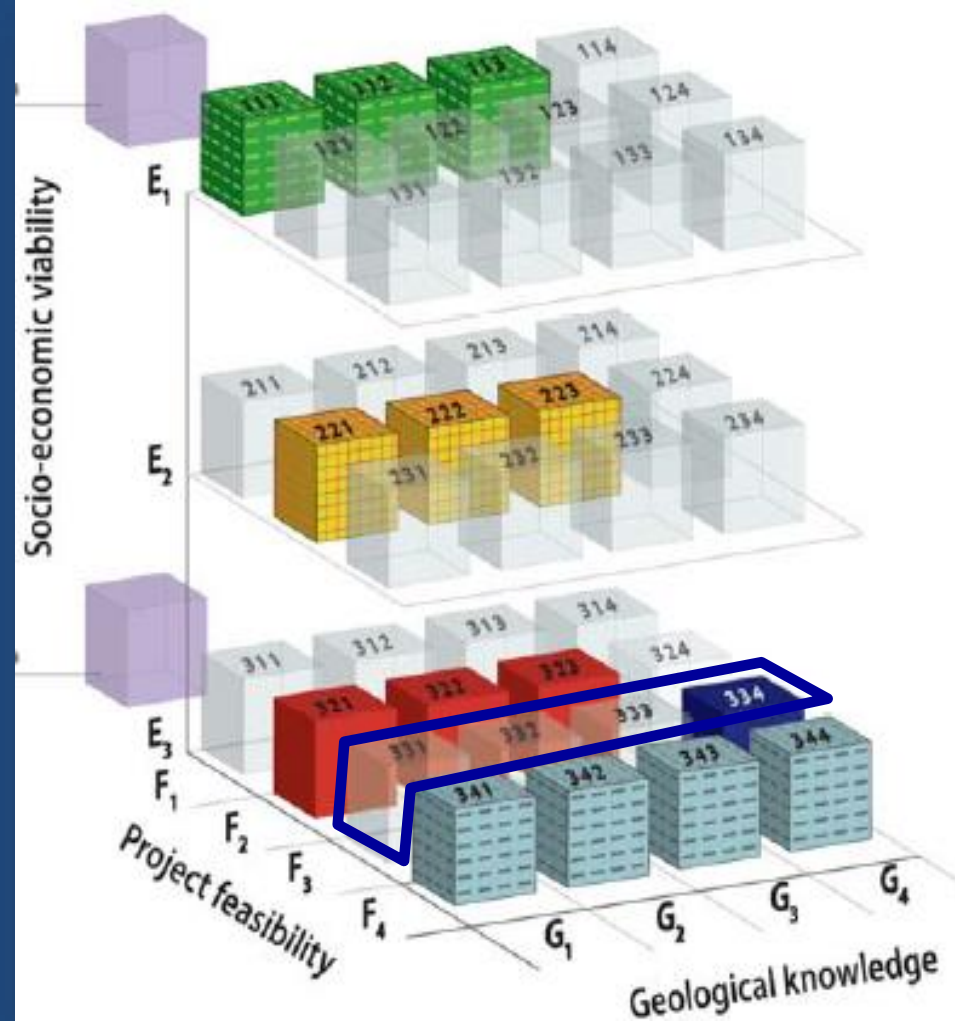


สำนักทรัพยากรแร่ กรมทรัพยากรธรณี  
ปีงบประมาณ พ.ศ. 2556

Quartz  
EFC 332

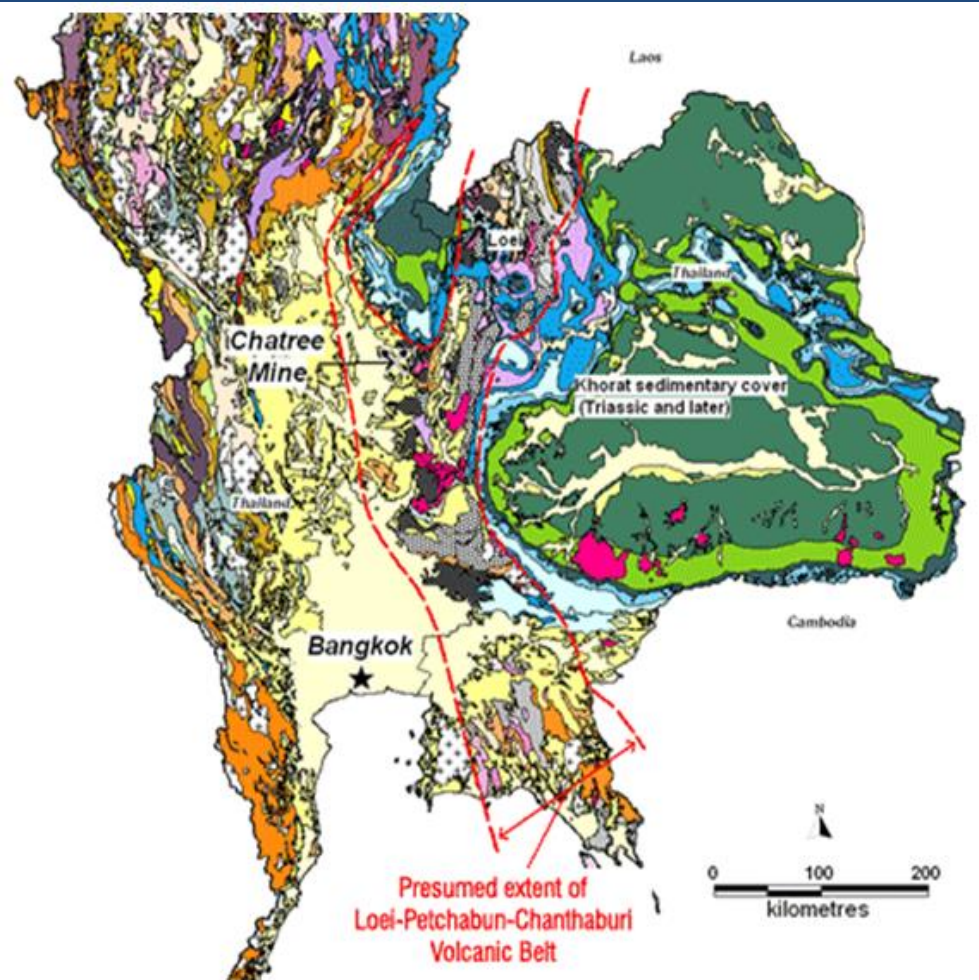
# DMR's Mineral Resource Classification

- DMR mainly focused on G (geological knowledge)
- E and F working with others agency/ company



- ❖ Mining Industry Council
- ❖ Department of Primary Industries and Mines (DPIM)
- ❖ Department of National Parks, Wildlife and Plant Conservation (DNP)
- ❖ Department of Environmental Quality Promotion (DEQP)
- ❖ Pollution Control Department (PCD)

Geological knowledge (G) and project feasibility (F)  
→ Developed so far



## Lesson from Akara Mining Chatree Gold Mine

- Located in central Thailand, 280km north of Bangkok
- Associated with the Permo – Triassic Loei-Petchabun-Chanthaburi volcanic belt
- Epithermal low sulfidation veins
- Resource estimate  
81,721 million tonnes



-Open cut and using "Carbon in Leach" takes low-grade gold mineralised rock containing 1-2 grams of gold per tonne of rock



# Socio-economic viability (E) → most challenge

## Lesson from Tungkam Limited (Gold mining)



# Summary

- ❑ **Advantage : UNFC-2009 support DMR work providing international standard system for mineral exploration assessment**
- ❑ **Limitation: E and F ->need more participation from other agency**

# DMR FUTURE PLAN

- Using UNFC-2009 system for DMR mineral exploration project
- Workshop and training on the application of UNFC-2009
- Organizing a meeting with other agencies (e.g. DPIM and mining company)
- Participate next UNECE Group on resource classification 6<sup>th</sup> session 2015