An Approach to Sufficiency Carbon Society: A case study of Thailand

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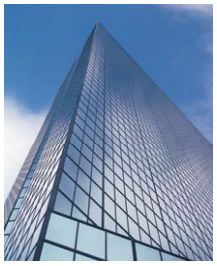
Low carbon society in Thailand: urban and rural area

Urban area

- Bangkok metropolitan
  - 15 per cent reduction by 2012
- Khon Kaen Province
  - 10 percent in the next 10 year form the current year
  - Transportation, Energy efficiency, waste management etc
  - Carbon label

Rural area

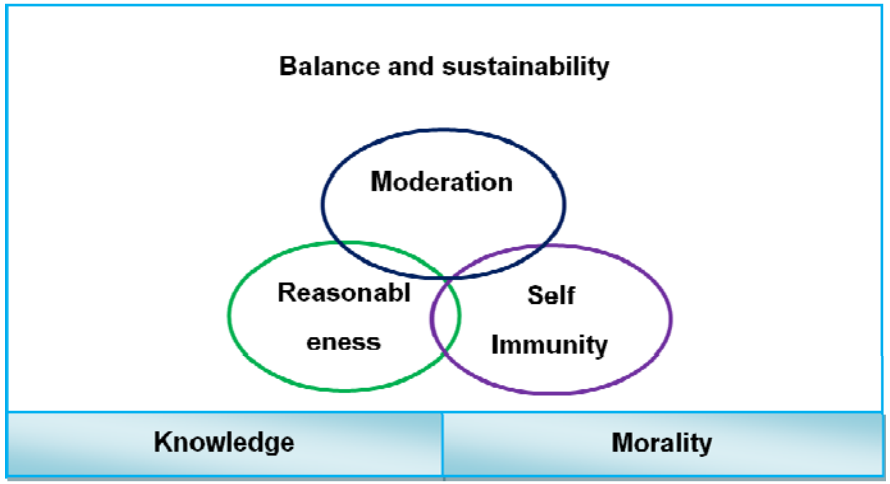
- More than 60 percent of population live in rural area
- Many communities have introduce ‘sufficiency economic principle’ in their way of living and to co-existing with nature.
- Mindset of consumption through eco-thinking and routine activities are different from urban communities







Principle of sufficiency economy



Three levels of Sufficiency Economy Indicators

Partial Practice (Doing)

- Community activities to conserve and restore natural resources
- Application of rules in using and managing natural resources and the environment
- Human Resource Development and Networks
- Awareness among community members of environmental conservation

Comprehensive (Thinking)

- Application of Local Wisdom and Innovation
- Integrated practice in natural resource and environmental management
- Recognition of Carrying Capacity and Ecological Balance

Inspiration (Living)

- An adjustment of lifestyles in consistency with nature

Simpler and richer quality of life

Coexistence with nature

Carbon Minimization

A case study of Thai practice

- Sufficiency Economy Implementation :
  - Community sector- Ban Pred Nai
  - Service sector- Chumporn Cabana Resort and Spa




Implementation of actions
Sufficiency economy that support action of low carbon activity

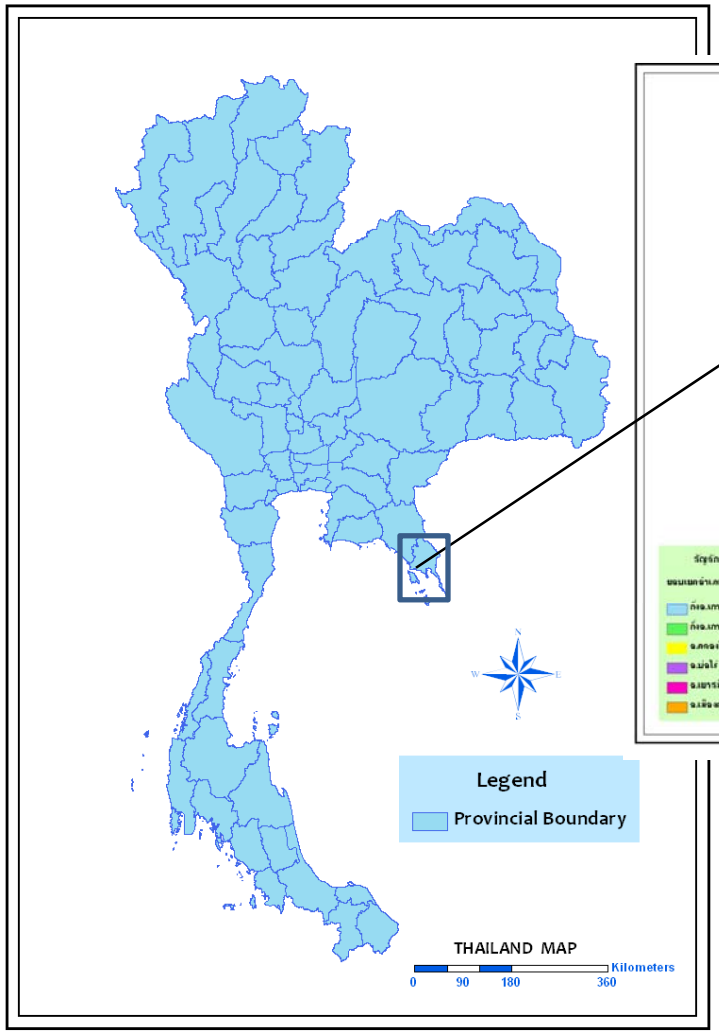
Ban Pred Nai Village, Trad Province

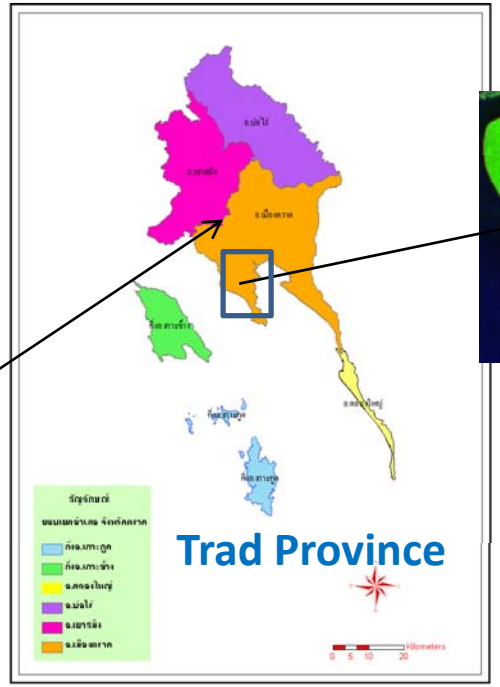
- Problem : coastal erosion and mangrove deforestation

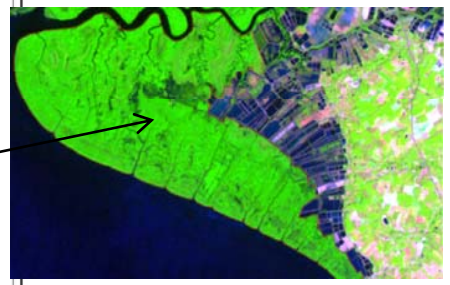
- Impact : loss of shoreline, Loss of mangrove , Loss of biodiversity, Loss income from fishery and crab catching

Action :
Doing- apply community law, networking mangrove conservation club
young eco tour guide
Thinking- using rubber wave blockade to prevent erosion

A Case of Sufficiency Economy in Pred Nai Village, Trad Province





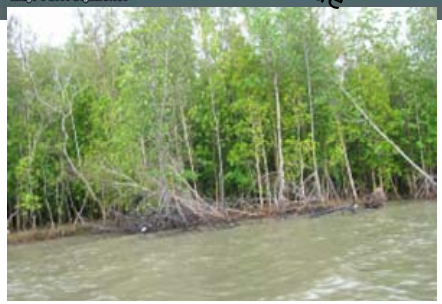


Pred Nai Village

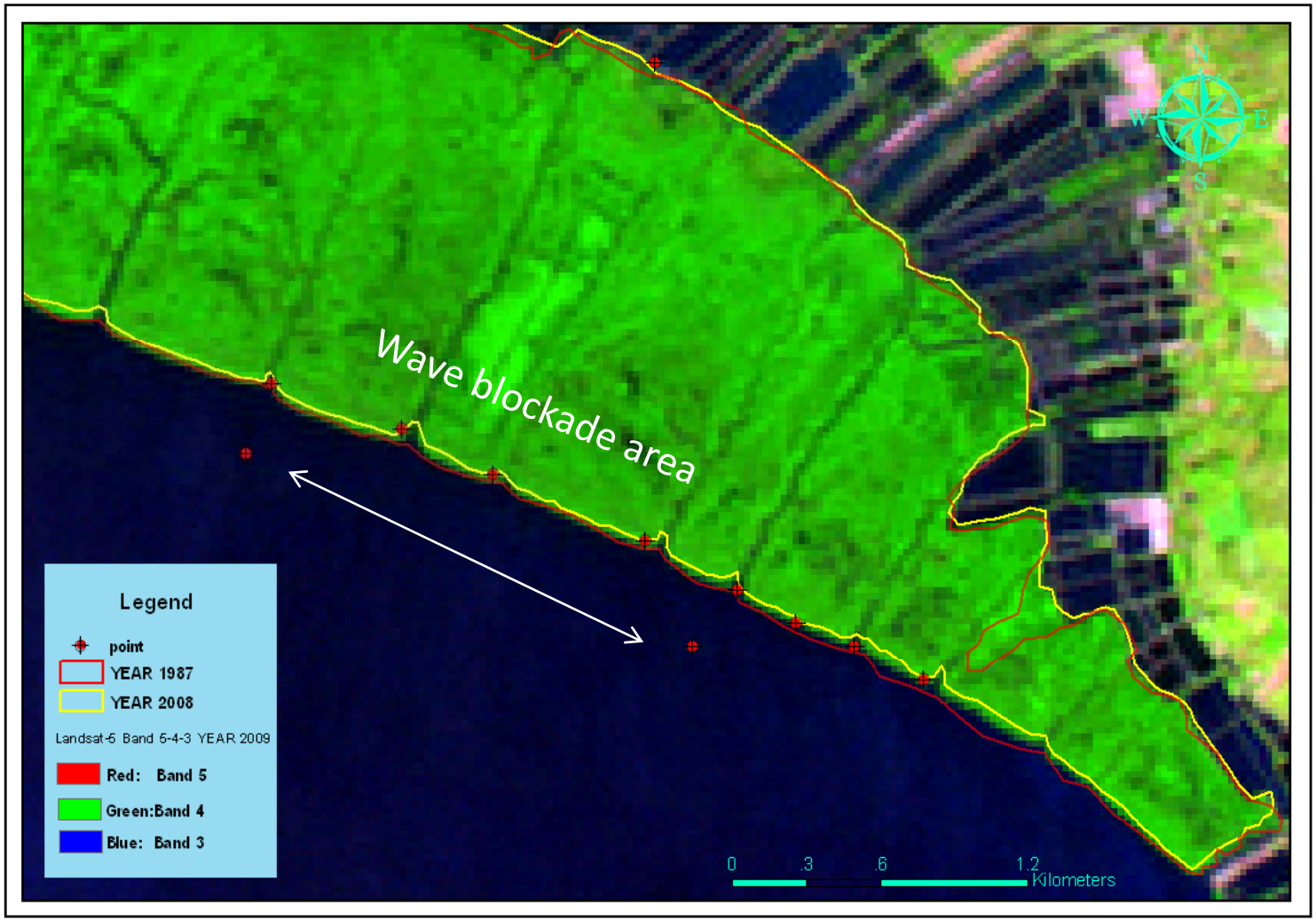
Activities

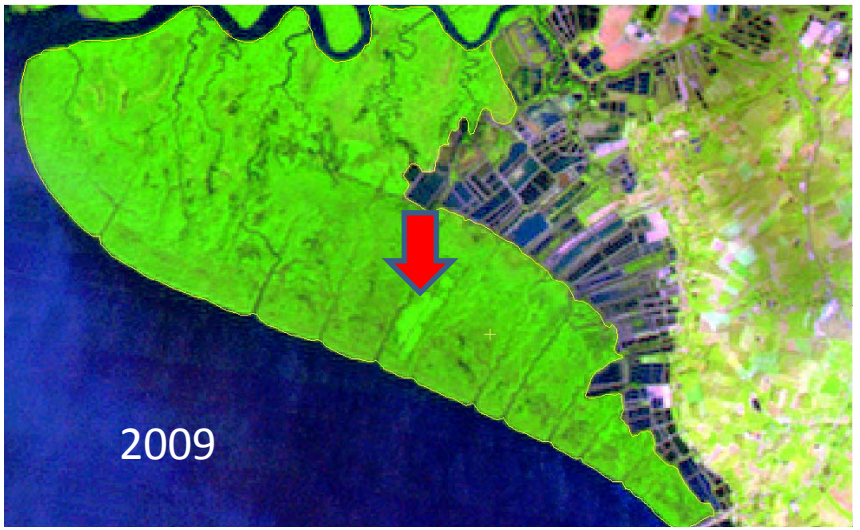
-Protection of coastal area erosion

Protection of coastal area erosion



- Coastal area was destroyed by strong wave
  - erosion occurred
- Mangrove forest was degraded
  - Biodiversity loss
  - Less income

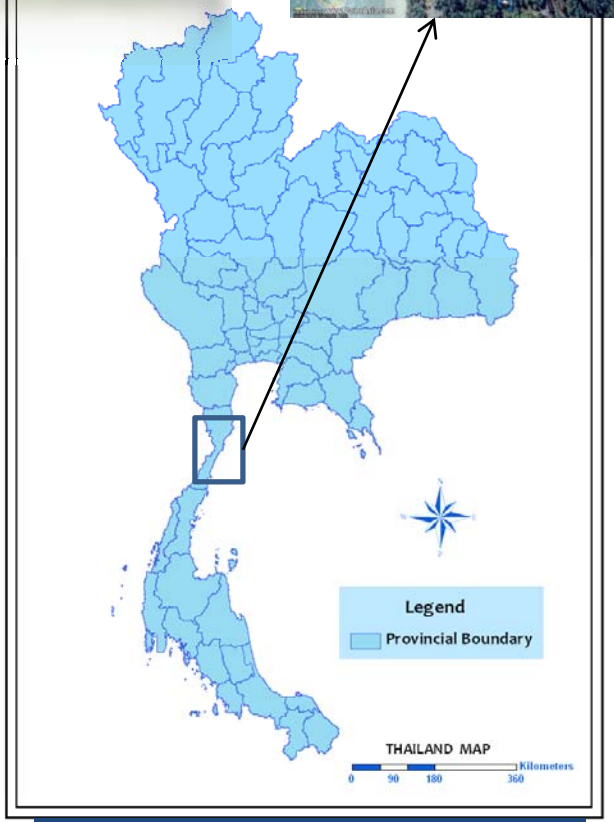

Wave blockade area
Legend
point
YEAR 1987
YEAR 2008
Landsat-5 Band 5-4-3 YEAR 2009
Red: Band 5
Green:Band 4
Blue: Band 3
0 .3 .6 1.2
Kilometers
N
W
E
S



LANDSAT-5

Increasing 102 rai of mangrove area and managing 301 rai
Removal of CO_2 approx. 1205.1 t/yr= 2.03 tonnes CO_2/ head/year

Sufficiency Economy and Low Carbon Society :
Sufficiency Carbon Economics Society



Chumporn Cabana Resort

Energy Recovery

Waste water treatment

Employee production

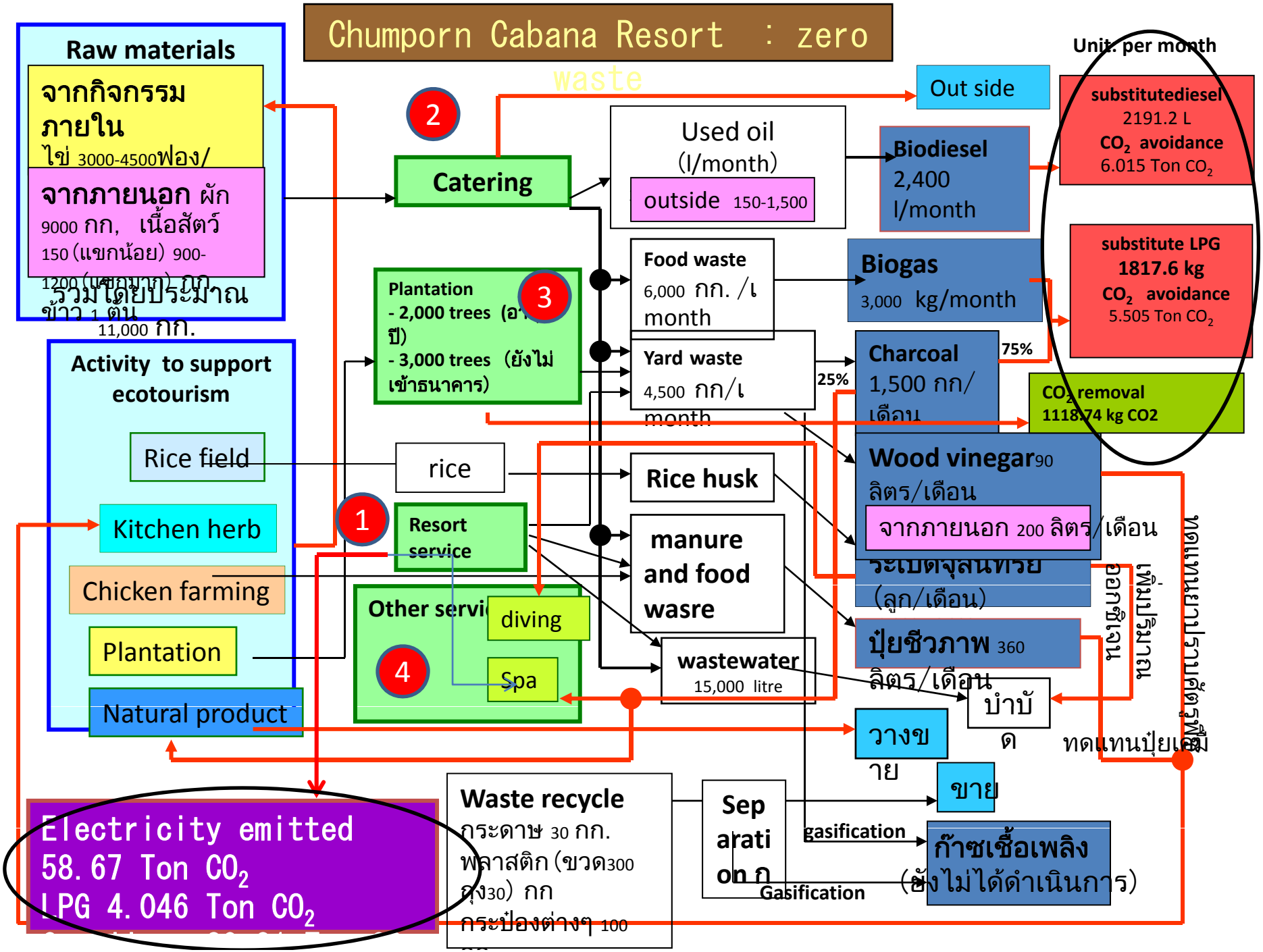
Implementation of actions
Sufficiency economy that support action of low carbon activity

Chumporn Cabana resort Chumporn province

- Problem : Investment during economics collapse

- Impact : 300 Million Baht dept, employee lay out

Action :
Doing- Zero waste implementation, Eco driving activity, Energy recovery
Thinking- Employee business , helping each other
Living : Demonstration site, knowledge center


Chumporn Cabana Resort : zero
Raw materials
จากกิจกรรมภายใน
ไข่ 3000-4500ฟอง/
จากภายนอก ผัก 9000 กก, เนื้อสัตว์ 150 (แขกน้อย) 900-1200 (แขกมาก) กก
ข้าว 1 ตัน
รวมโดยประมาณ 11,000 กก.
Activity to support ecotourism
Rice field
Kitchen herb
Chicken farming
Plantation
Natural product
Catering
Plantation
- 2,000 trees (อ
ปี)
- 3,000 trees (ยังไม่เข้าธนาคาร)
Resort service
Other servi
diving
Spa
rice
waste
Out side
Used oil (l/month)
outside 150-1,500
Food waste 6,000 กก. /เ month
Yard waste 4,500 กก/เ month
Rice husk
manure and food wasre
wastewater 15,000 litre
Biodiesel 2,400 l/month
Biogas 3,000 kg/month
Charcoal 1,500 กก/เดือน
75%
25%
Wood vinegar 90 ลิตร/เดือน
จากภายนอก 200 ลิตร/เดือน
ระเบิดจุลินทรีย์ (ลูก/เดือน)
ปุ๋ยชีวภาพ 360 ลิตร/เดือน
บำบัด
วางขาย
ขาย
Unit: per month
substitutediesel 2191.2 L
CO2 avoidance 6.015 Ton CO2
substitute LPG 1817.6 kg
CO2 avoidance 5.505 Ton CO2
CO2 removal 1118.74 kg CO2
Electricity emitted 58.67 Ton CO2
LPG 4.046 Ton CO2
Waste recycle
กระดาษ 30 กก.
พลาสติก (ขวด300 ถุง30) กก
กระป๋องต่างๆ 100
Separation
gasification
Gasification
ก๊าซเชื้อเพลิง
(ยังไม่ได้ดำเนินการ)
ทดแทนปุ๋ยเคมี

CO2 avoidance

Activity	Ton CO2/month	kg CO2/guest night
Avoided CO2		
Charcoal and biogas	5.505	0.98
Biodiesel	6.015	1.07
CO2 removal		
Hard wood plantation	539.24	0.10
Soft wood plantation	579.5	0.10
Total CO2 avoidance		2.26

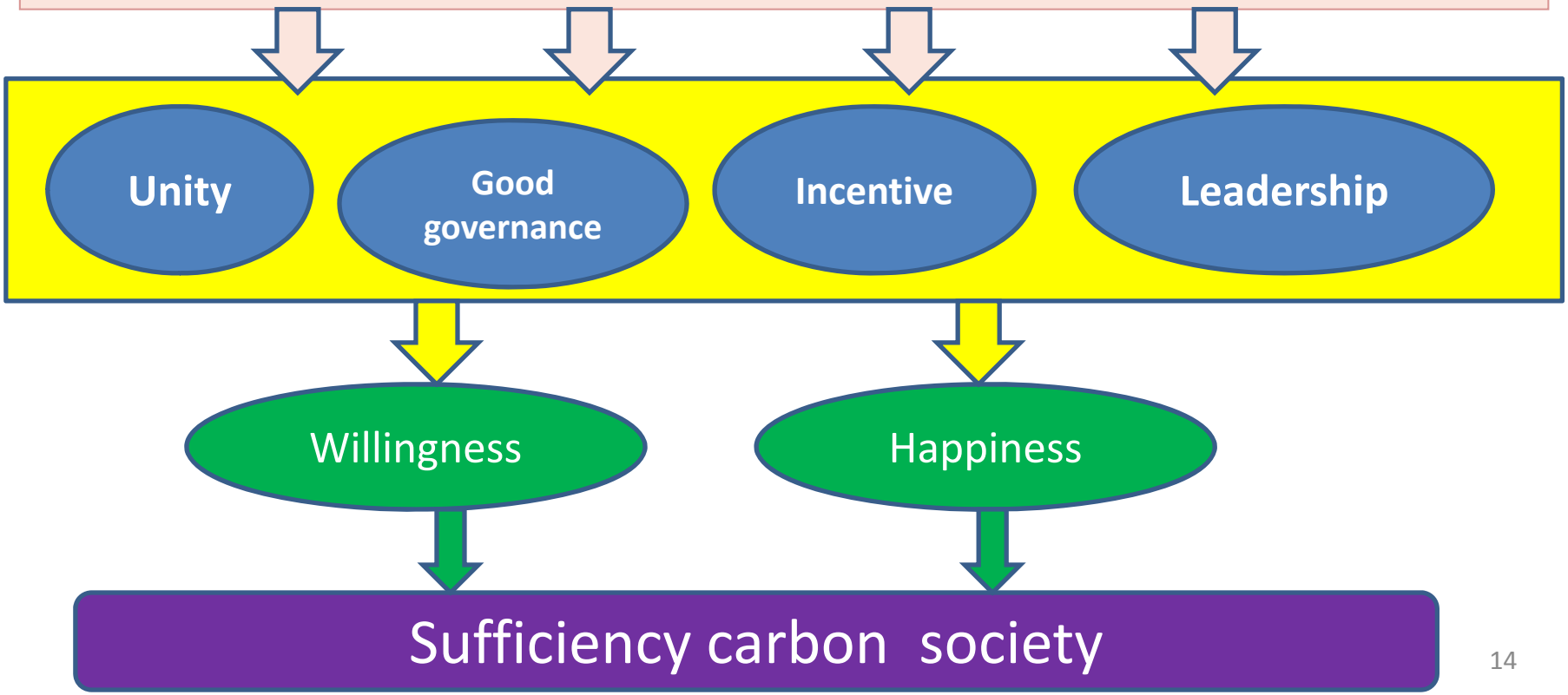
CO2 emission

Activity	Ton CO2/month	kg CO2/guest night
Electricity		10.48
Diesel	15.08	2.69
Benzene	2.71	0.48
LPG (car)	3.02	0.54
LPG (cooking)	4.05	0.72
Total CO2 emission		14.92

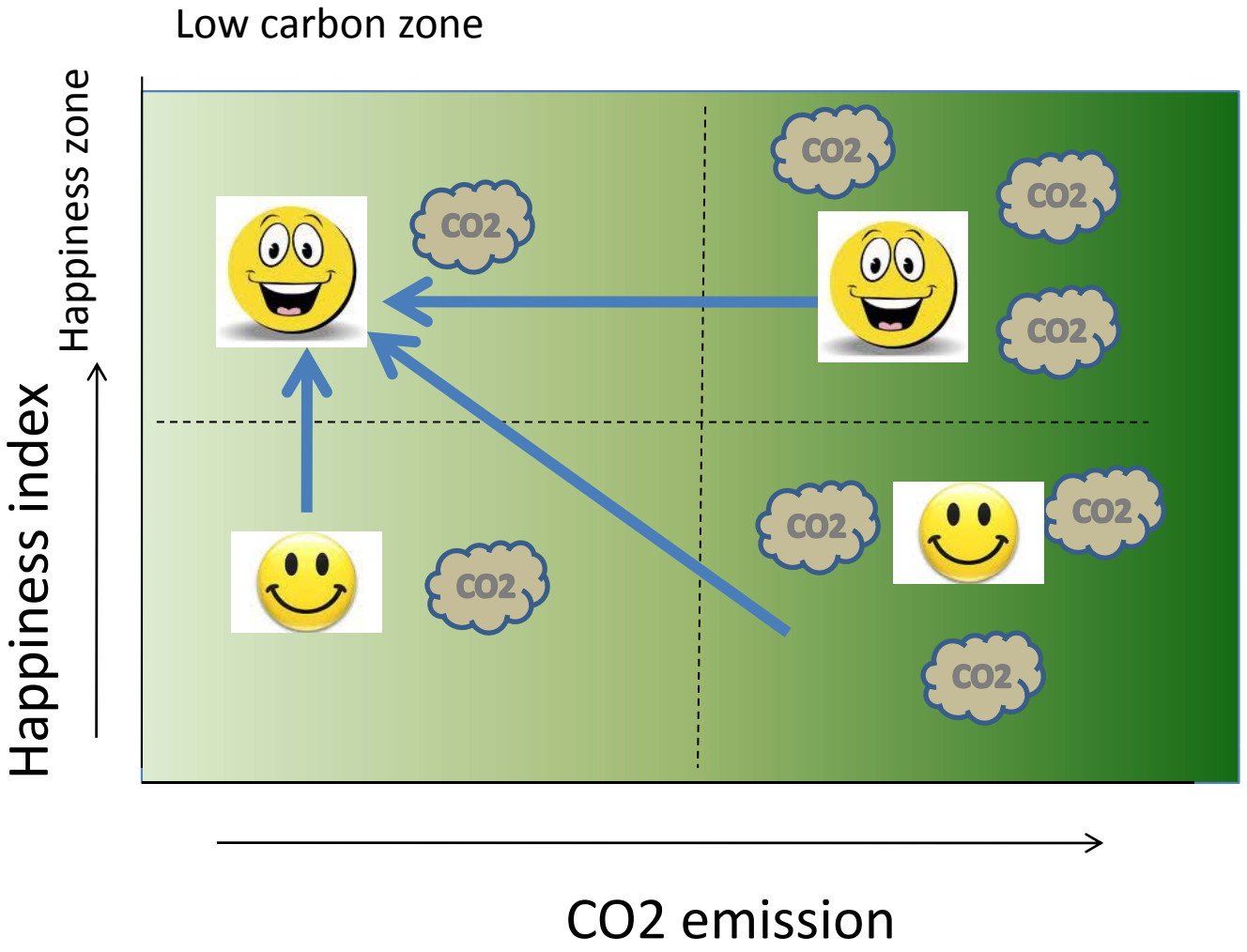
Average Hotel emission per guest night of Word Tourist Organization = 20.6 kg Co2 /guest night

LCS driven by sufficiency approach

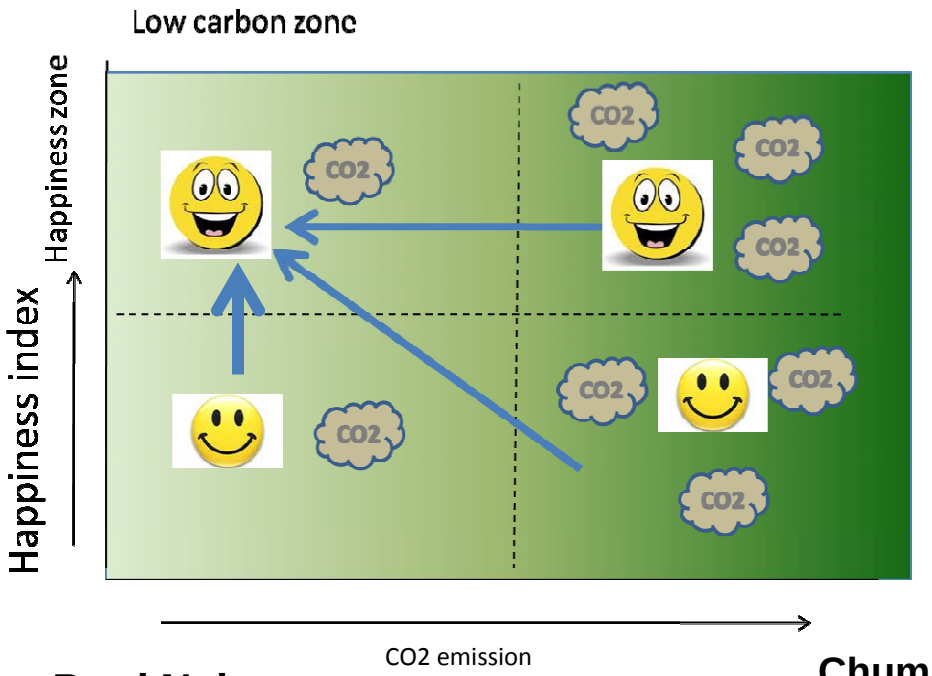
- Community activities to conserve and restore natural resources
- Application of rules in using and managing natural resources and the environment
- Human Resource Development and Networks
- Awareness among community members of environmental conservation
- Application of Local Wisdom and Innovation
- Integrated practice in natural resource and environmental management
- Recognition of Carrying Capacity and Ecological Balance
- An adjustment of lifestyles in consistency with nature



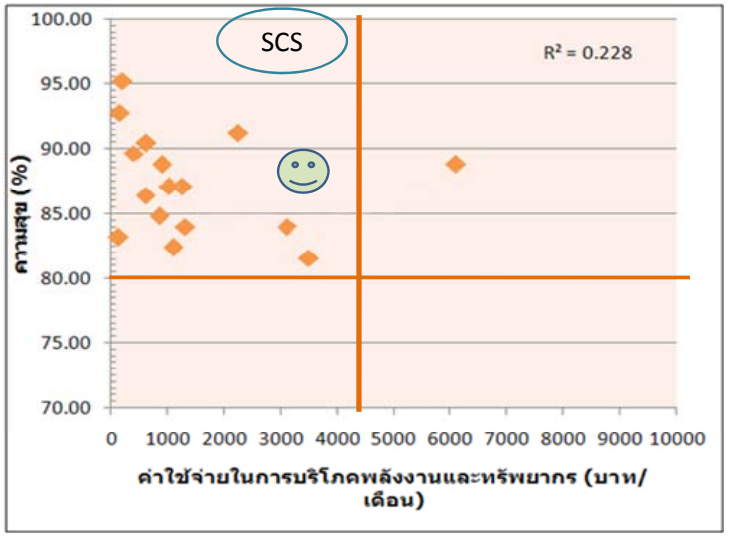
Emission and Happiness



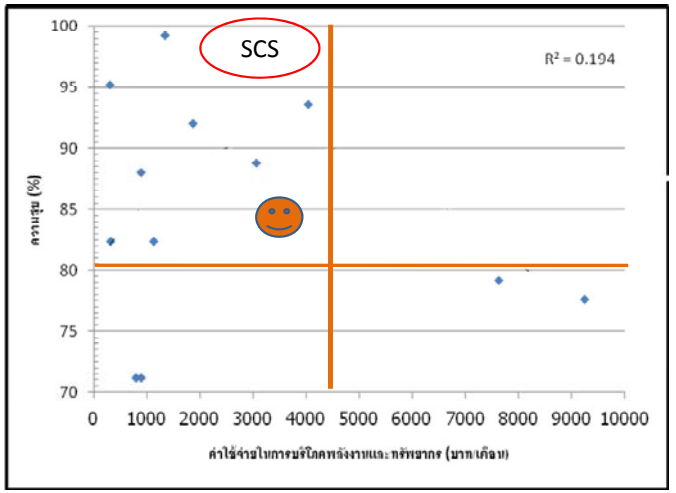
Towprayoon and Kadkarnkrai 2010



Ban Pred Nai

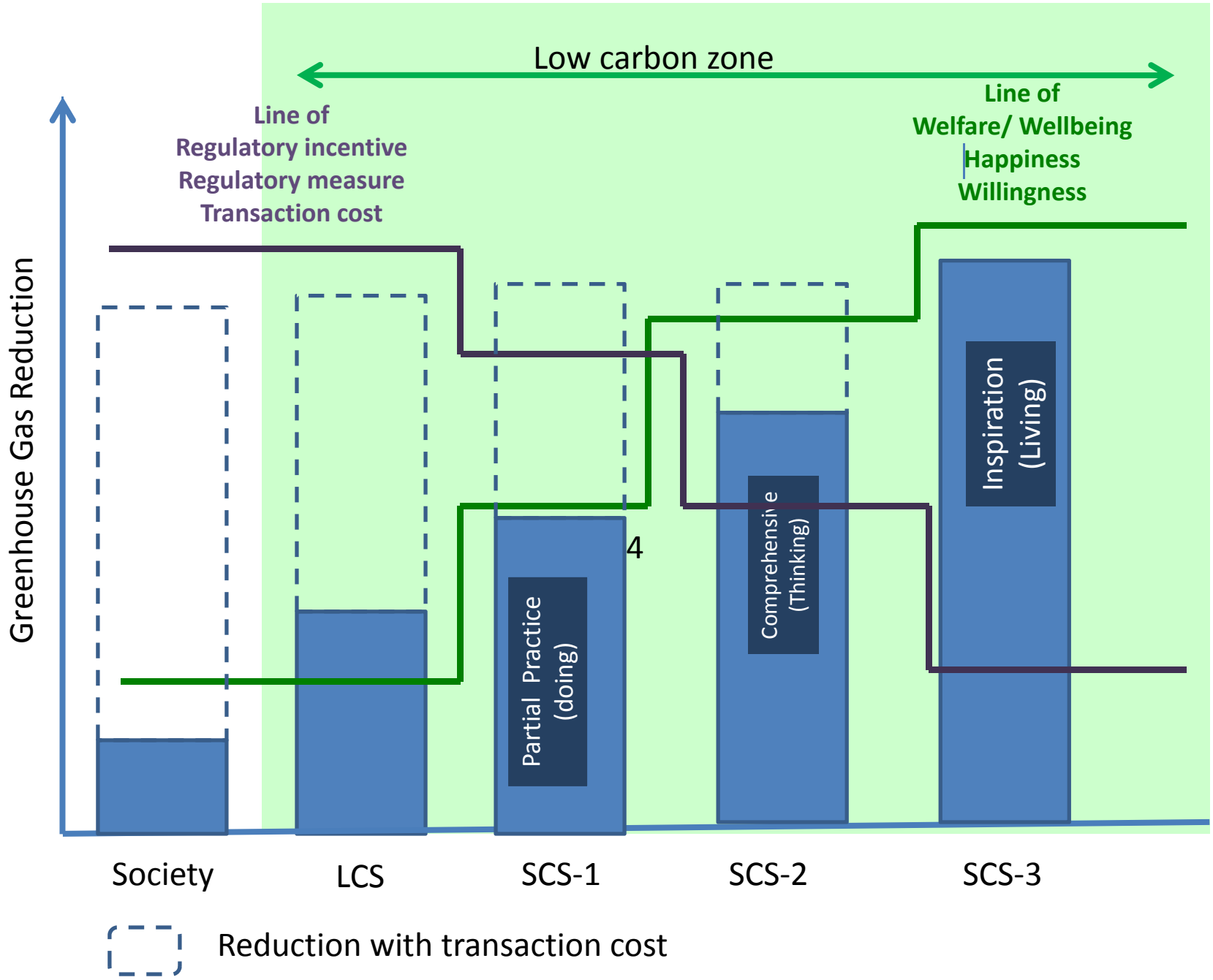


Chumporn Carbana



Sufficiency Carbon Society : SCS

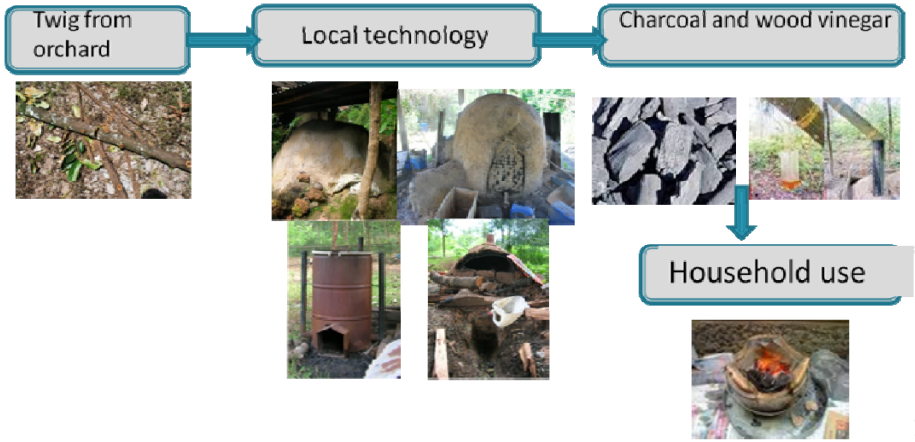
Kadkarnkrai and Towprayoon 2010


Low carbon zone
Line of
Regulatory incentive
Regulatory measure
Transaction cost
Line of
Welfare/ Wellbeing
Happiness
Willingness
Greenhouse Gas Reduction
Partial Practice
(doing)
4
Comprehensive
(Thinking)
Inspiration
(Living)
Society
LCS
SCS-1
SCS-2
SCS-3
Reduction with transaction cost

Sufficiency carbon society, adaptation and sustainability

Mitigation	Adaptation	Sustainability
• Carbon dioxide removal (2.037 ton per head per year) • Potential to be a sink of GHG	• High coping capacity with climate change • Adaptation to coastal erosion	•Forest management •Increasing income •Self sustainability

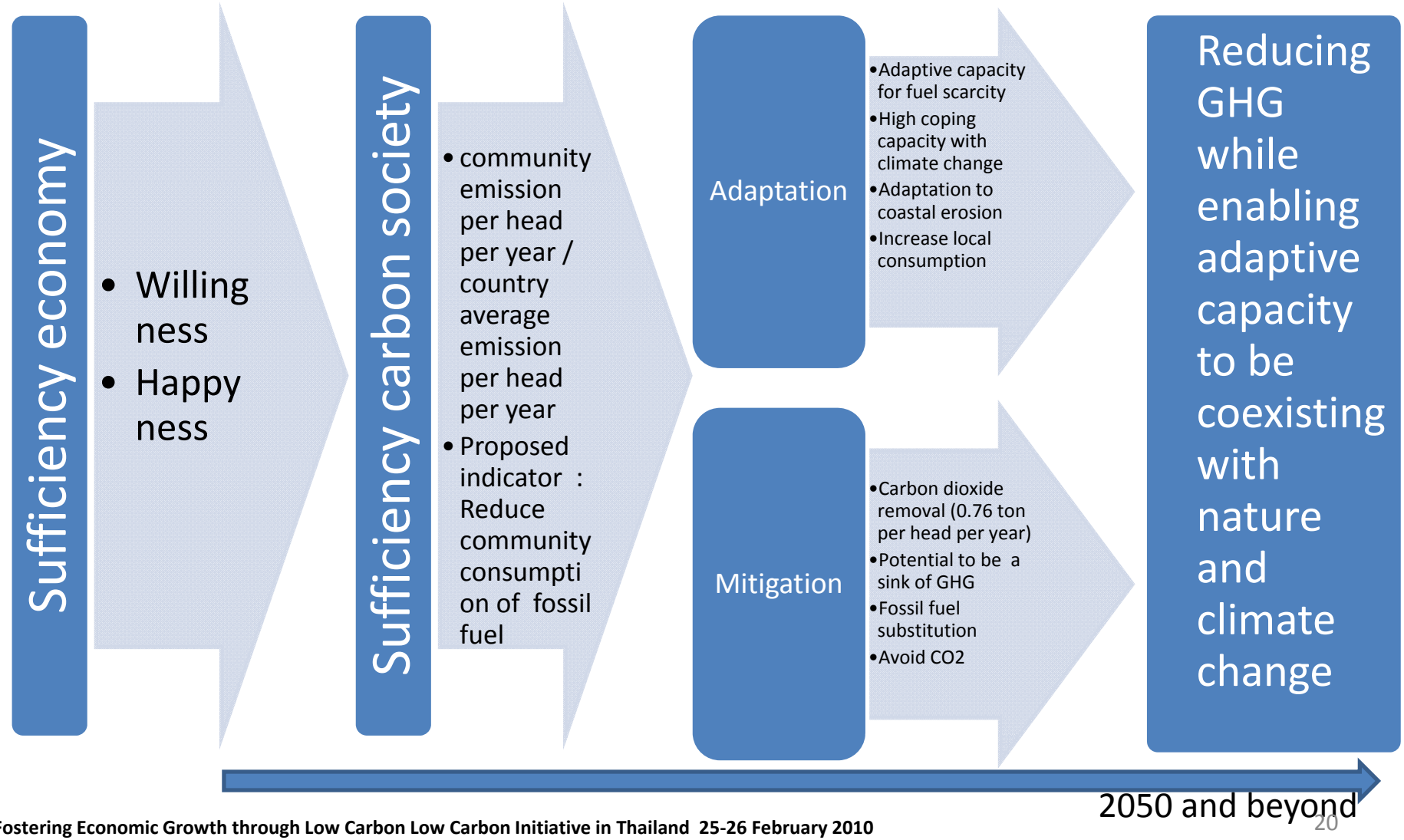
Mitigation	Adaptation	Sustainability
•Fossil fuel substitution •Avoid CO2 •	• Adaptive capacity for fuel scarcity • Increase local consumption	•Wood residue management •Fuel self sustainability



SCS Indicators

Type of indicator	Common indicators	SCS indicator (doing, thinking, living)
ID 1 GHG emission	Emission per unit	Emission from community management per unit
ID 2 Fossil fuel dependent	Amount of fossil fuel/electricity consumption per unit	Amount of fossil fuel/electricity consumption per unit reduced by community management/life style change
ID3 Renewable energy	Amount of renewable energy used	Increasing of renewable used that come from community management/life style change
ID4 Technology	Number of GHG reduction technologies selected by community	Number of GHG reduction technologies selected, promote and developed by communities
ID5 Awareness	Number of population that understand Global warming /number of projects on GHG	Number of projects on GHG that is networking to outside /project for the future positive impact
ID6 Expense on energy consumption	Expense used per unit time	Per cent increasing of expense used for local product and for GHG related issues
ID7 Happiness	Happiness index increase from participating in the GHG mitigation activities	Happiness index increase due to technology dependence and due to life style change and willing to help reduce CO2

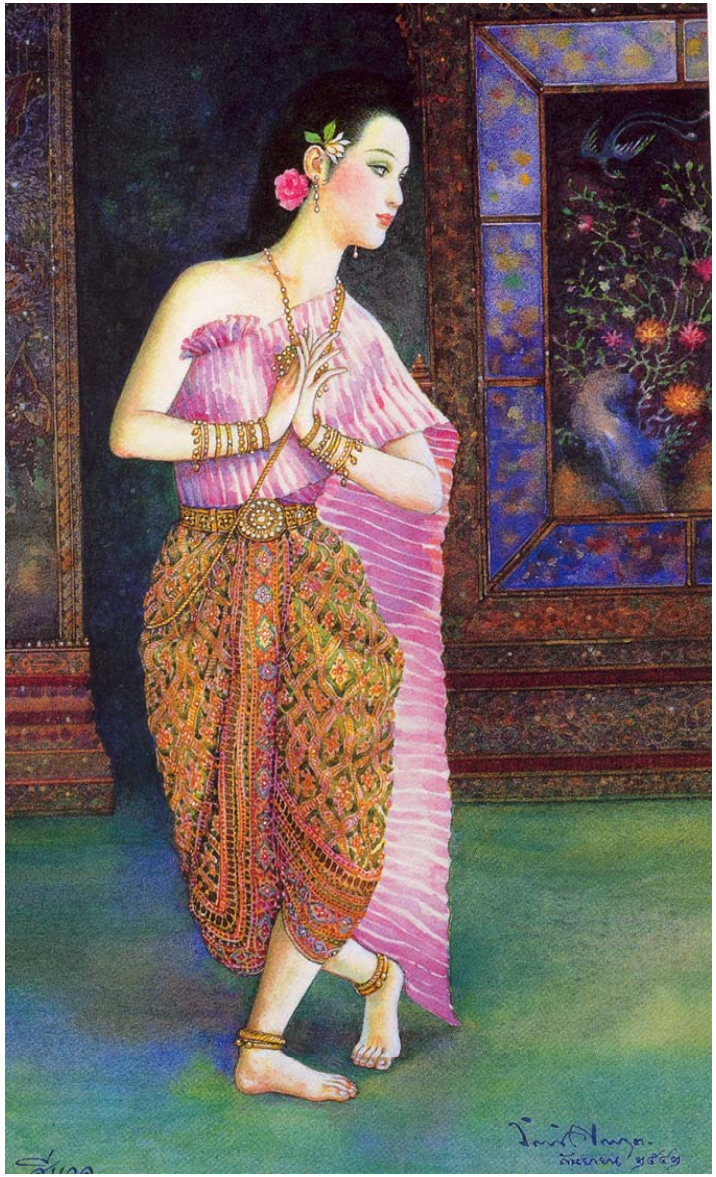
Sufficiency carbon society and beyond….



Conclusion

- Driving force for behavioral change can be different among communities and parties
- Change of behavior in these cases caused by external problem encountered and sufficiency economy implementation lead them to Sufficiency Carbon Society.
- Community with sufficiency economy implementation, their mindset of consumption through eco-thinking and routine activities are different from other communities.
- Low carbon society is not only driven by technologies but the consciousness of human for their living.
- Community with sufficiency economic concern is likely to drive towards low carbon society through their perception attitude and consciousness rather than those in other area where technology still play the role in mitigation.
- Merging this concept of mitigation with sufficiency concern with eco-technologies is the challenge for Thailand to drive forward low carbon society in the near future.

Thank you for your attention and Sawasdee Ka



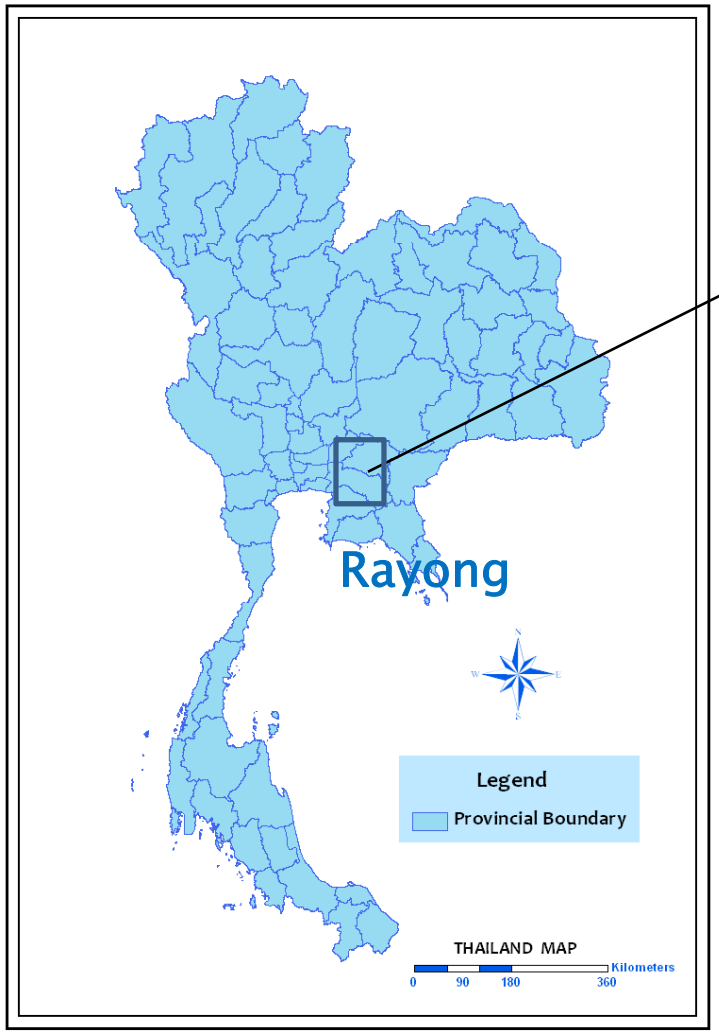
Acknowledgement

- Thailand Research Fund
- The Good Governance for Social Development and Environmental Foundation
- Ban Pred Nai Community
- Chumporn Cabana Resort and Spa

Policy relevant question

- Best policy for CO2 reduction may not be the best option for community
- Public participation and acceptance

Muang Klang Municipality

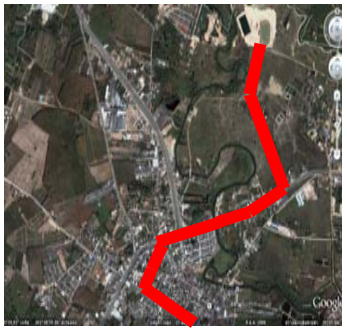


Muang Klang

Activities in Muang Klang

Energy

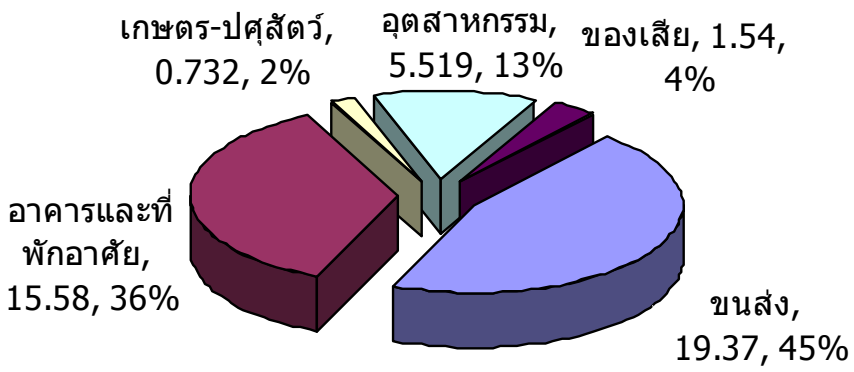
Fuel reduction



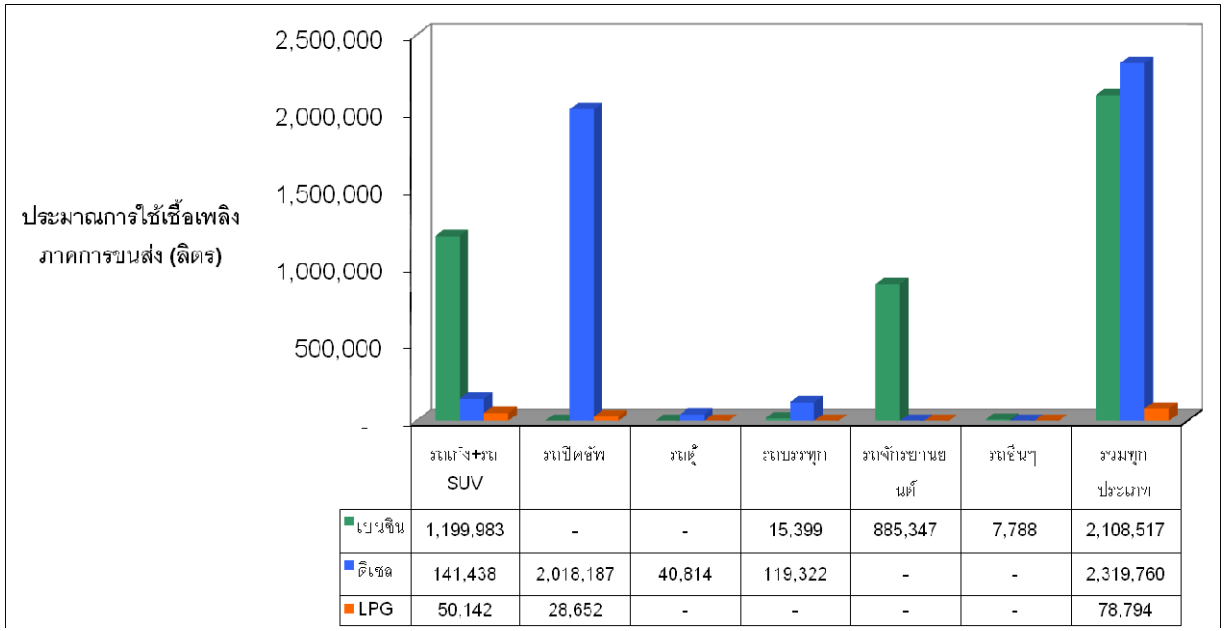
Increasing green area

Waste management

Emission of Muang Klang

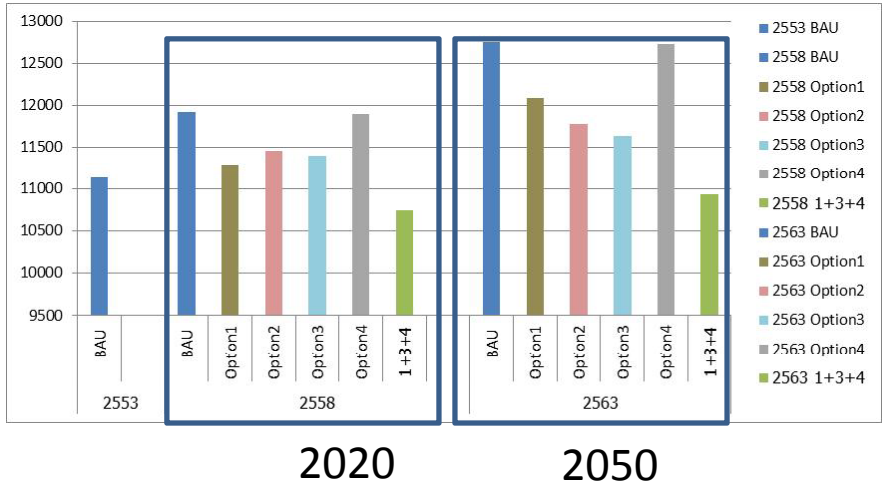


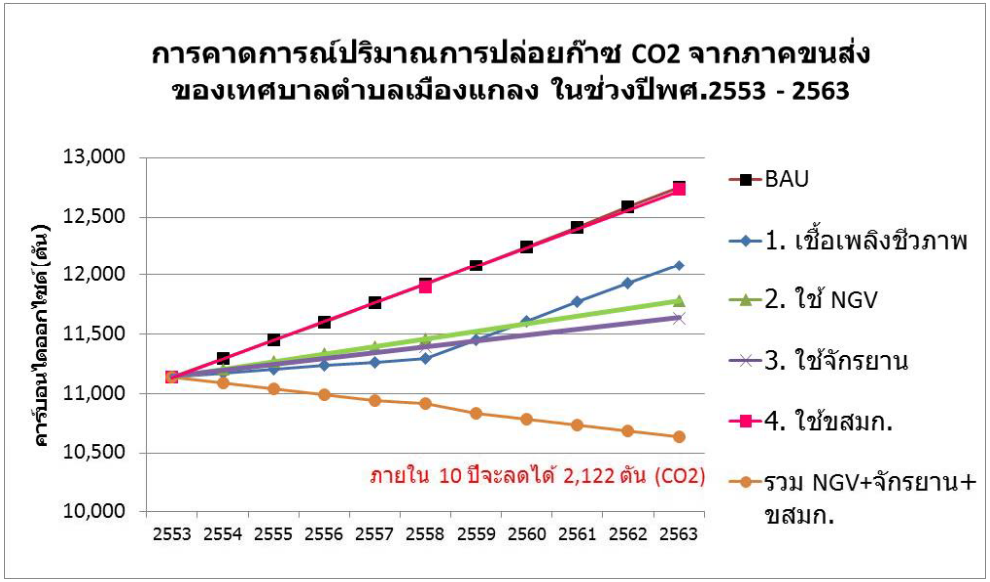
สาขาการปล่อย	แหล่งปล่อย	CO2 eq (Gg)
Transportation	T-Diesel	13. 34
	T-Gasoline	5. 99
	T-LPG	0. 03
Residential	R-electricity	14. 34
	R-LPG	0. 736
	R-Public electricity	0.509
Industry	Industry	5.52
Agriculture	A-livestock	0.009
	A-ricefield	0.158
	A-biomass burning	0.000000218
	A-soil	0.584
Waste	W-Landfill	0.667
	W-wastewater	0.869
LUCF	LUCF	-0.0167



	รถเก๋ง+รถ SUV	รถปิคอัพ	รถตู้	รถบรรทุก	รถจักรยานยนต์	รถอื่นๆ	รวมทุกประเภท
เบนซิน	1,199,983	-	-	15,399	885,347	7,788	2,108,517
ดีเซล	141,438	2,018,187	40,814	119,322	-	-	2,319,760
LPG	50,142	28,652	-	-	-	-	78,794

Option 1 Biofuel
Option 2 fuel shift to NGV
Option 3 bicycle lane
Option 4 Mass transit





Items and ideas for future research questions

- How the communities can cope and manage new technologies
- What are the good governance structure for them to maintain sustainability in term of mitigation and adaptation