



Strengthening CSIs- Lessons from Smart Villages Project of TISTR

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Planning and Managing Technology Transfer for Inclusive Development, Thimphu, July 16 to 18, 2019



Thailand tops UN Sustainable Development Goals (SDGs) rank in ASEAN

Other ASEAN countries have also been ranked for their SDGs achievements, namely Vietnam at the 54th, Singapore at the 66th, Malaysia at the 68th, the Philippines at the 97th, Indonesia at the 102nd, Myanmar at the 110th, the Lao PDR at the 111th, Cambodia at the 112th



Published 3 days ago on July 2, 2019
By National News Bureau of Thailand



Deputy Government Spokesman Lt Gen Werachon Sukondhapatipak said the Prime Minister has acknowledged and is satisfied with Thailand's latest position on the [UN SDGs](#) ranking this year, on which the [country's](#) ranking advanced by [19 positions](#).

The ranking, published by the Sustainable Development Solutions Network (SDSN) and Bertelsmann Stiftung Foundation, places Thailand as the top country among ASEAN members ranked.

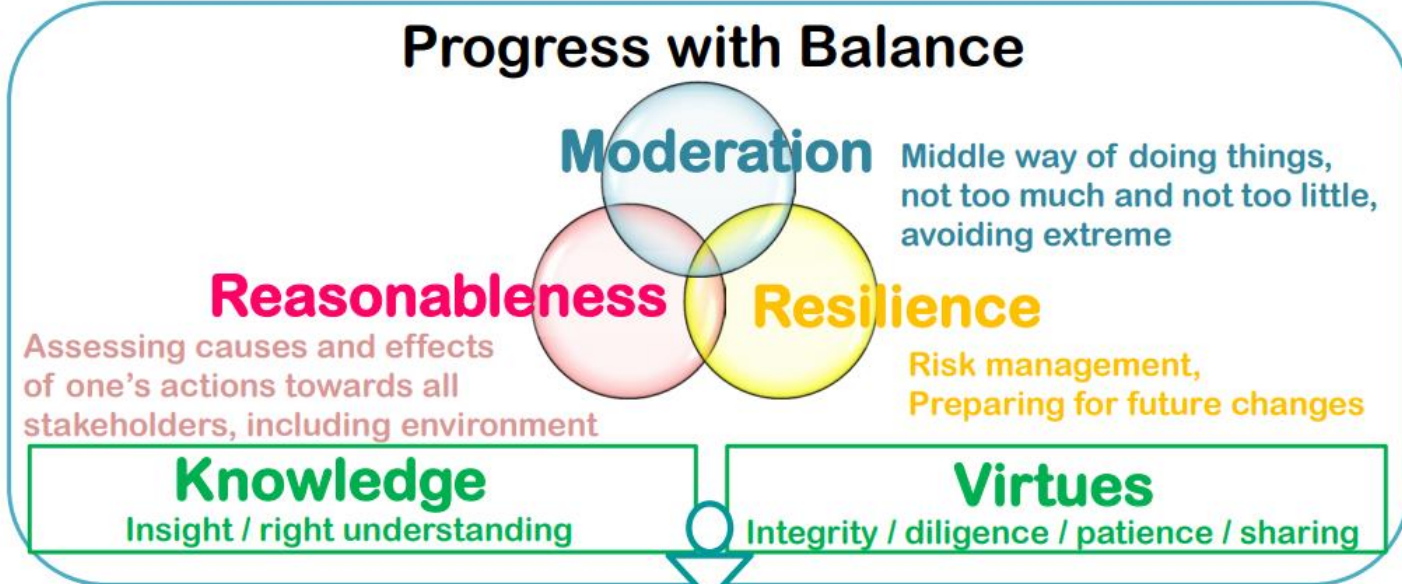
“The Prime Minister said this success was achieved through determination and cooperation between the government, private and public sectors, as the government has given high priority to a balanced development between human resources and the environment, human resources and the reduction of inequality and human resources and technology, under the Sufficiency Economy Philosophy.”

Other ASEAN countries have also been ranked for their SDGs achievements, namely Vietnam at the 54th, Singapore at the 66th, Malaysia at the 68th, the Philippines at the 97th, Indonesia at the 102nd, Myanmar at the 110th, the Lao PDR at the 111th, Cambodia at the 112th, while Brunei has not been ranked.



Ranked 40th

SEP is a Thinking Process



Four Pillars of Bhutan GNH

- Good Governance
- Sustainable Socio-Economic Development
- Cultural Preservation
- Environmental Conservation





South-South Cooperation

กรอบความร่วมมือได้ - ได้

กรอบความร่วมมือไตรภาคี

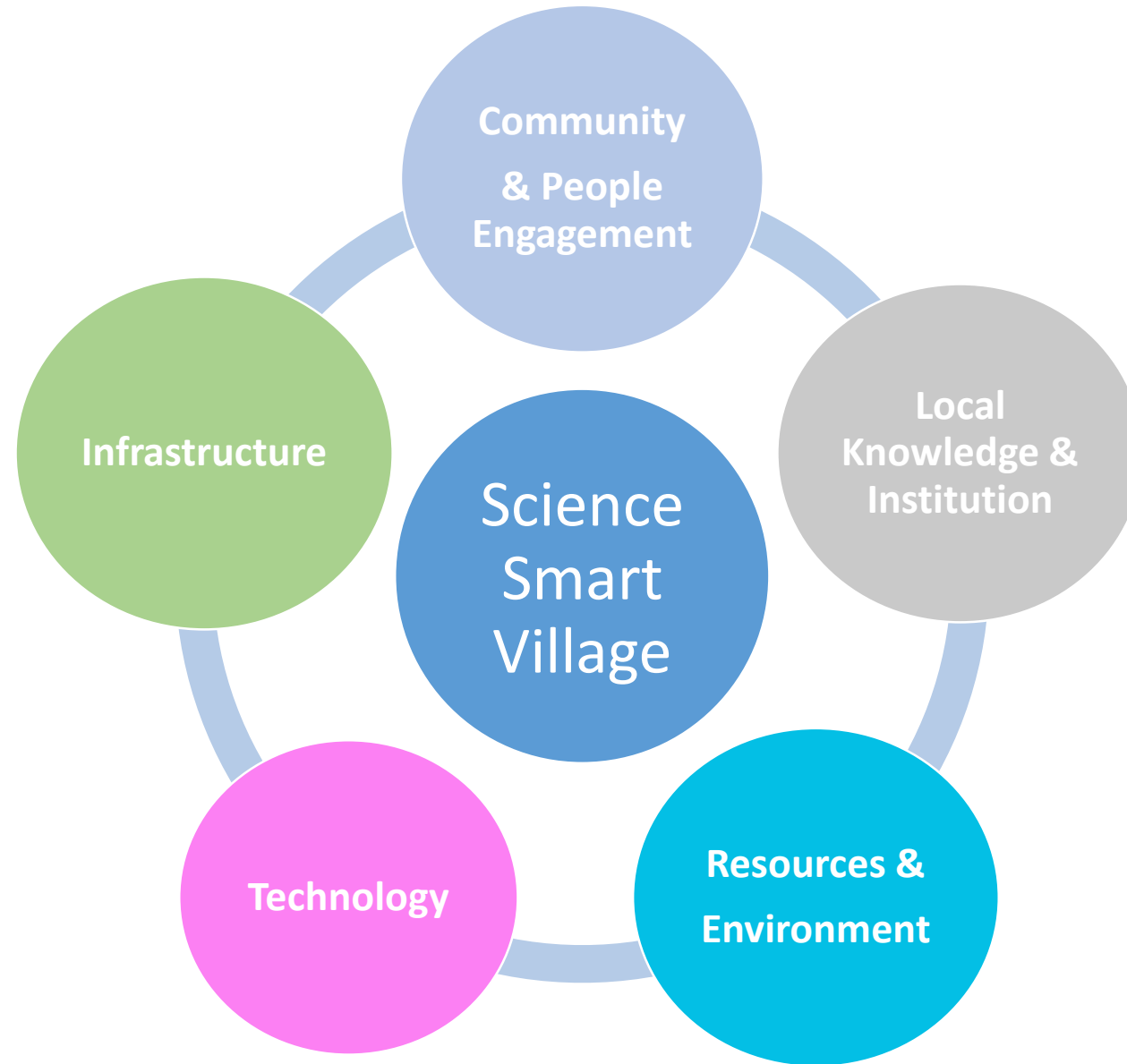
ประเทศที่มีโครงการ SEP แล้ว/ กำลังริเริ่มดำเนินโครงการ		ประเทศที่แสดง ความประสงค์จะร่วมมือ เพื่อดำเนินโครงการ SEP	ประเทศที่มีโครงการ SEP แล้ว
1. เลโซโท	11. โตโก		1. เยอรมนี (GIZ)
2. กัมพูชา	12. เซเนกัล	1. ไนเจอร์	2. สหรัฐฯ (USAID)
3. ทิมอร์-เลสเต	13. คีร์กีซสถาน	2. คอสตาริกา	3. เกาหลีใต้ (KOICA)
4. ซิลี	14. มาดากัสการ์	3. บูร์กินาฟาโซ	4. สำนักเลขาธิการแผนโคลัมโบ
5. สเปน.ลาว	15. เบนิน	4. ทาจิกิสถาน	5. UN Volunteers (UNV)
6. ตองกา	16. คอโมโรส	5. ปารากวัย	6. UN Office for South-South Cooperation (UNOSSC)
7. ฟิจิ	17. บังกลาเทศ	6. วานูอาตู	7. กองทุน PGTF ของกลุ่ม 77
8. ศรีลังกา	18. เมียนมา	7. ภูฏาน	ประเทศที่แสดงความประสงค์ จะร่วมมือเพื่อดำเนินโครงการ SEP
9. โมซัมบิก	19. หมู่เกาะโซโลมอน	8. เวียดนาม	
10. มองโกเลีย	20. ฟิลิปปินส์		2. ฝรั่งเศส (AFD)



Science Smart Village

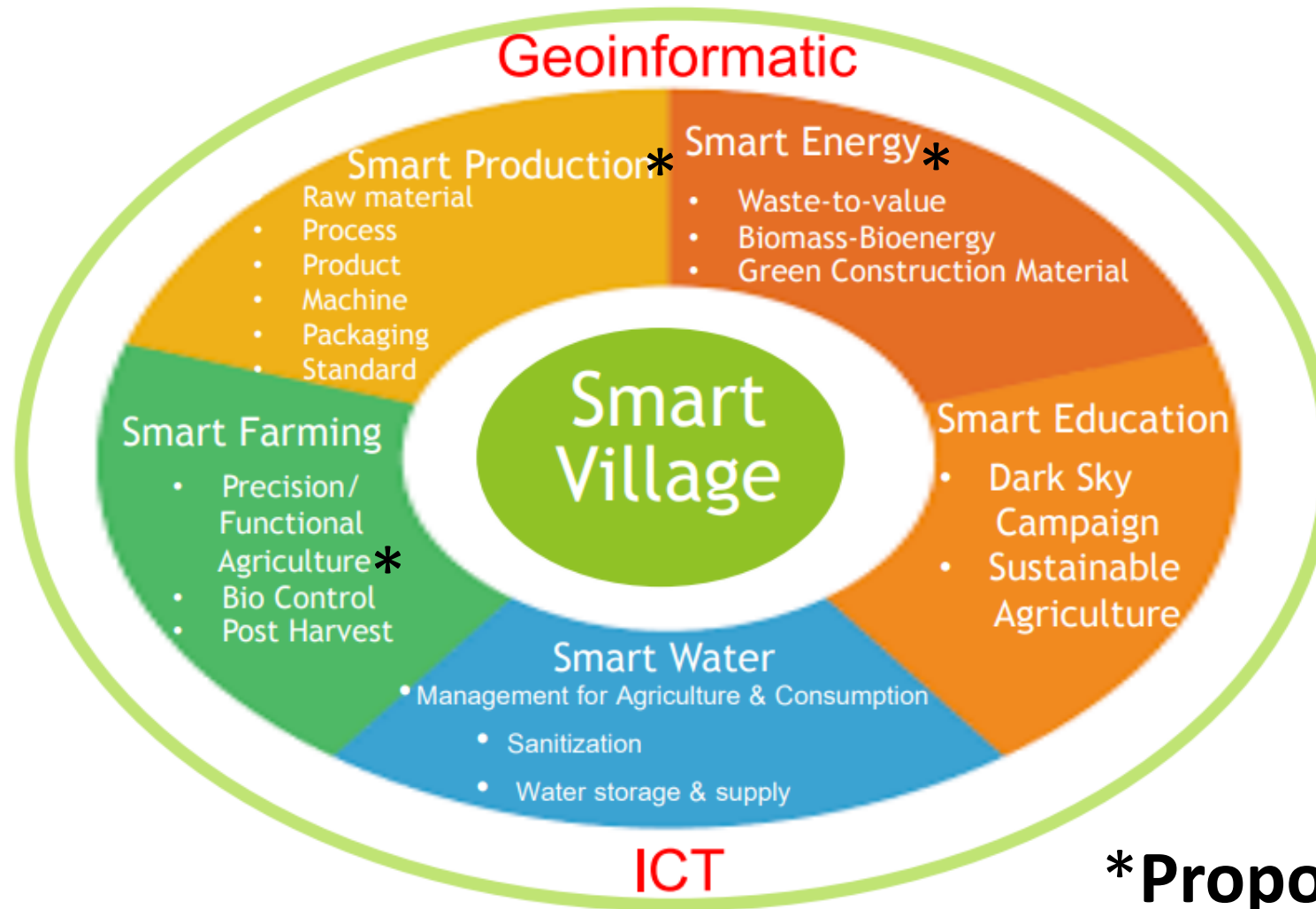


- STI project using appropriate technology to improve quality of life & economy of the people in community
- Focus on people participation on community development *via* MSMEs (CSIs)
- Multidisciplinary approach for establishment of network and information connection e.g. infrastructure/education/medical service/natural resource/production/logistics
- Sustainable Smart Village





STI for Smart Village Development with Lao PDR



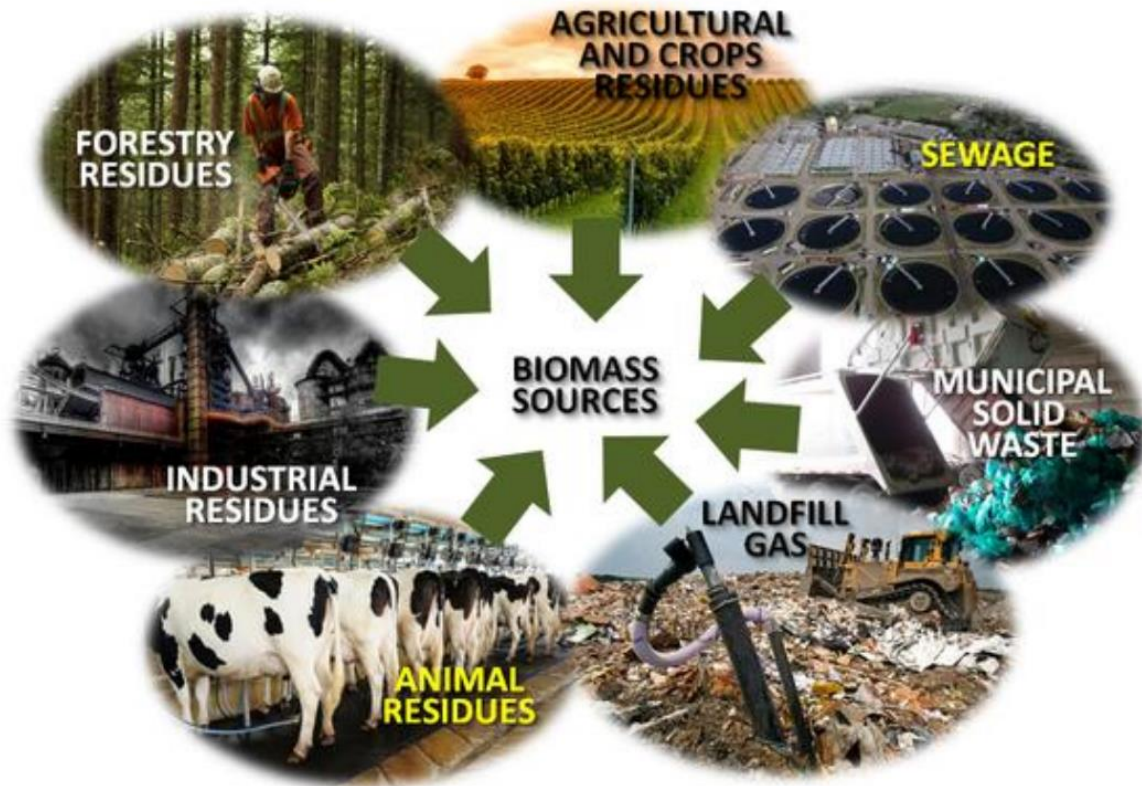
***Proposed by TISTR**



TISTR Biomass Stoves for the Improvement of CSIs Business

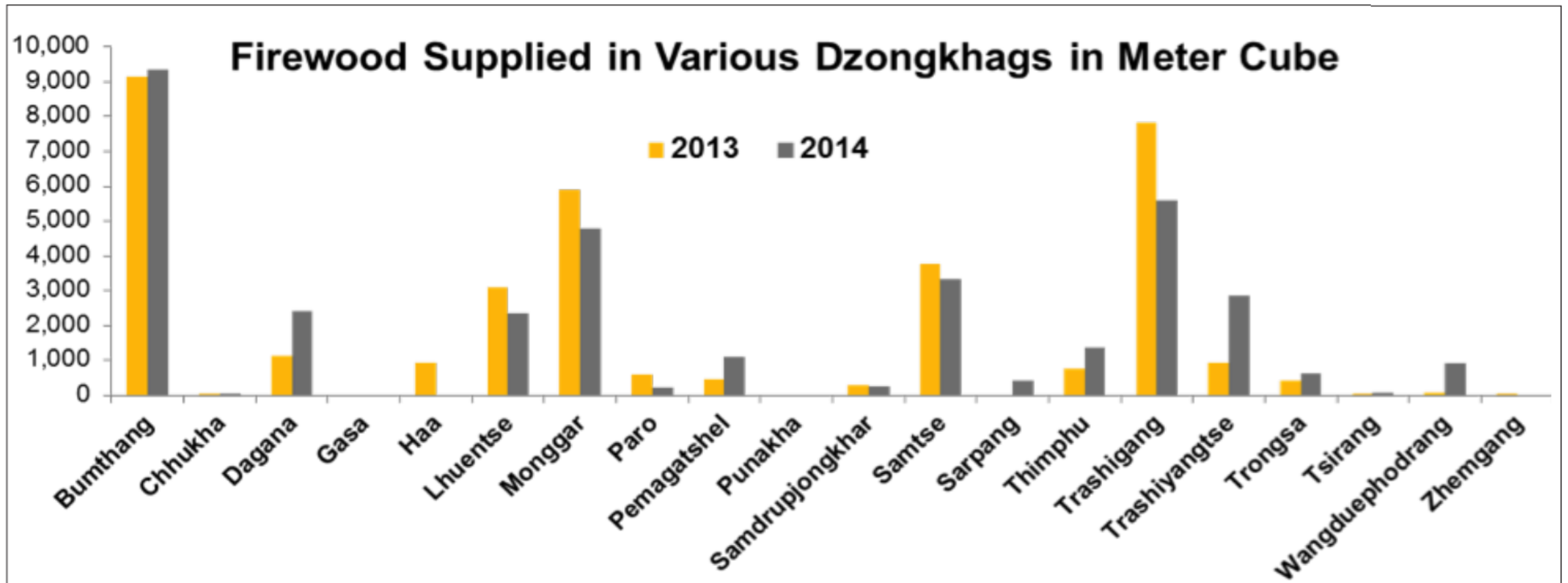


Biomass Stove for CSIs



- Largest share of biomass fuel consumption in rural households in developing & LDCs
- Consumption pattern varies from region to region
- Biomass fuels mainly use for cooking purpose
- Monthly income, land ownership and family size are significantly influencing biomass energy expenditure
- Fuel wood usage very significant for Bhutan (~ 90% total energy usage in 2005) and not increased as much with population growth & energy requirements in various sectors

Timber & Firewood Supply in Bhutan

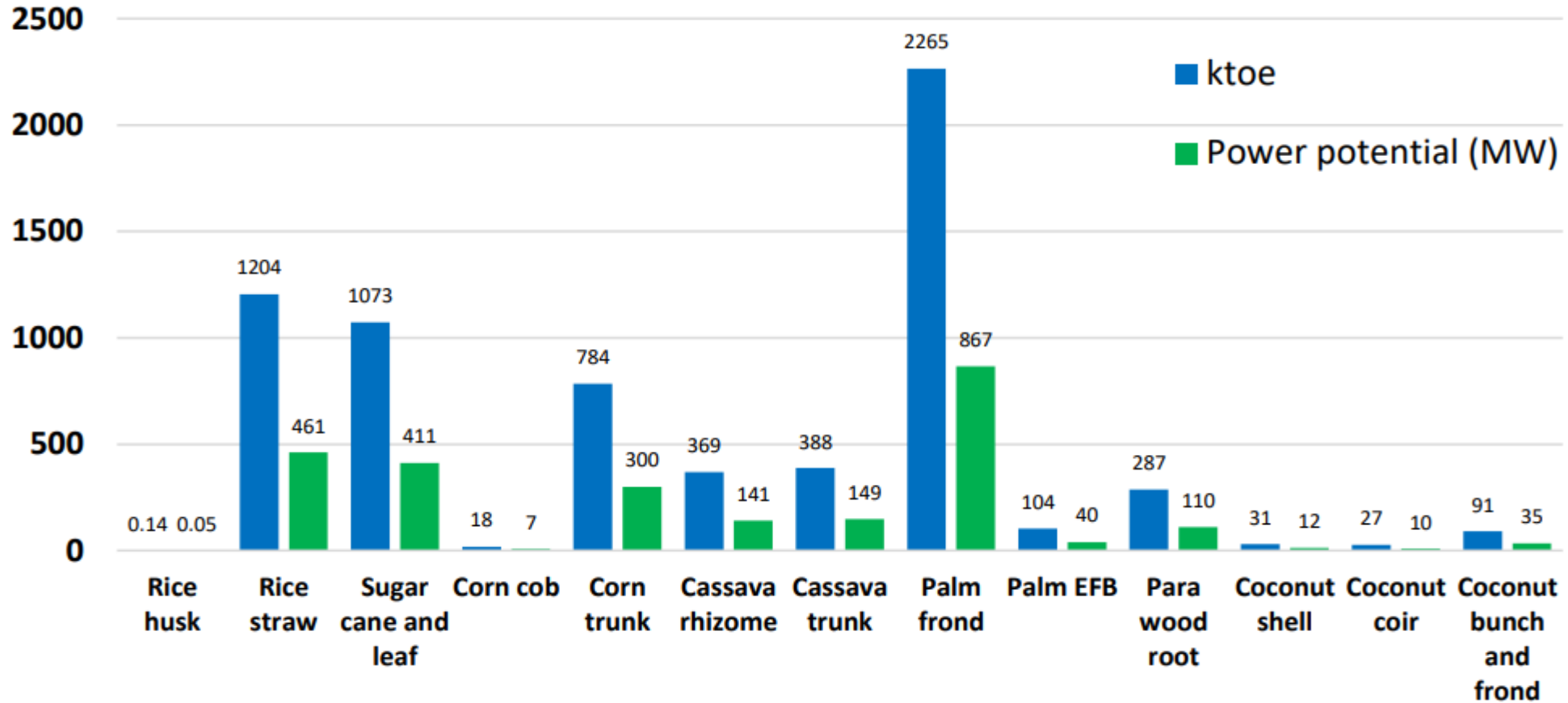


(Source: Developed from Bhutan RnR Statistics – 2015, Ministry of Agriculture and Forests)

Biomass Residue Potential in Thailand



Available Residue for Energy Purposes
in 2014 (ktoe, MW)



Rice



Sugar cane



Corn



Cassava



Palm oil tree



Para wood



Coconut

Promotion & Dissemination of Biomass Stoves in Thailand

- Technology transfer
- Technical assistant
- Advisory and Advocacy

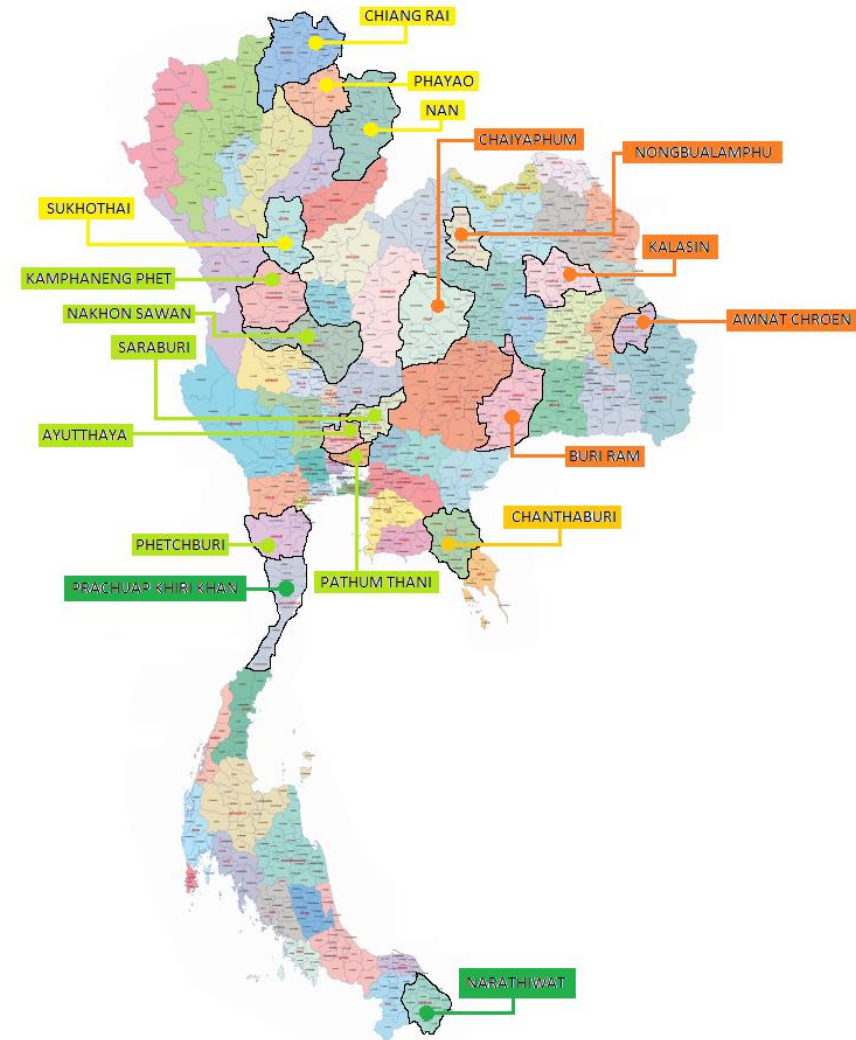


Promotion & Dissemination of Biomass Stoves in Thailand

TISTR transfer technology for biomass cooking stove in all regions of Thailand. Especially, in 10 poorest provinces.

200 stoves distribute in 18 provinces

- 56 in Northeast
- 95 in North
- 11 in Central Region
- 11 in East
- 27 in South





3 Types of TISTR Biomass Stoves



Biomass Stove Type 1



Biomass Stove Type 2



Biomass Stove Type 3



Biomass Stove Type1 for Cooking and Drying



Cooking



Drying

Biomass Stove Type 1 for Processing of Agricultural Products

Coconut peel waste as biomass fuel for drying coconut meat in cold pressed coconut oil production process



Biomass Stove Type 1 for Processing of Agricultural Products



Roasted Coffee Beans



Fried Bananas & Others



Baked Food



Biomass Stove Type 2 for Sterilization

Revenue Generation:

- Mushroom
- Mushroom Loaf (New Income Source)

Sterilization of Mushroom Cultivation Loaf



Biomass Stove Type 2 for Sterilization & Drying



Sterilization of Mushroom Cultivation Media



Dried Fruits



Biomass Stove Type 3 for Juice Concentration



Traditional stove used wood fuel about 50 kg /20 liters sugar cane juice



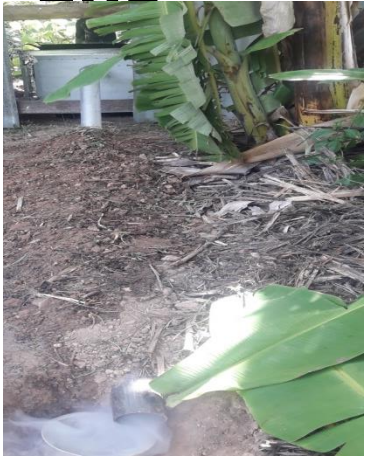
Sugarcane



Sugar Cane Syrup



Biomass stove type 3 used wood fuel about 50 kg /40 liters sugar can juice



Condensed Wood Vinegar





Advantages of Biomass Stove

Fuel feed slot is used
as smokestack

Smoke flows in one direction
easy to deal with emission

More complete
combustion with air
circulation inside





Economic Benefits

Parameters	Stove Type		Stove Type		Stove Type	
	Traditional	Type 1	Traditional	Type 2	Traditional	Type 3
Wood Consumption ¹ (kg/batch)	50	11	1,000	200	100	50
Wood Saving (%)	-	78	-	80	-	50
Time-Operation (hour)	1.30	1.14	8	7	5	2
Cost Saving ² (\$/batch)	-	0.82	-	16.88	-	1.06
Investment (\$/stove)	-	97.40	-	944.16	-	357.14
Payback Period (year)	-	0.25	-	0.39	-	1.4
Operation Times per Year	-	480	-	144	-	240
Convenience	X	√	X	√	X	√

¹Wood price 0.021 USD/kg

²Exchange rate 1 USD ~30.8 Baht



TISTR Interlocking Block from Business Model to Happiness Model

TISTR Interlocking Block: Diffusion of Business & Happiness to Communities Throughout Thailand

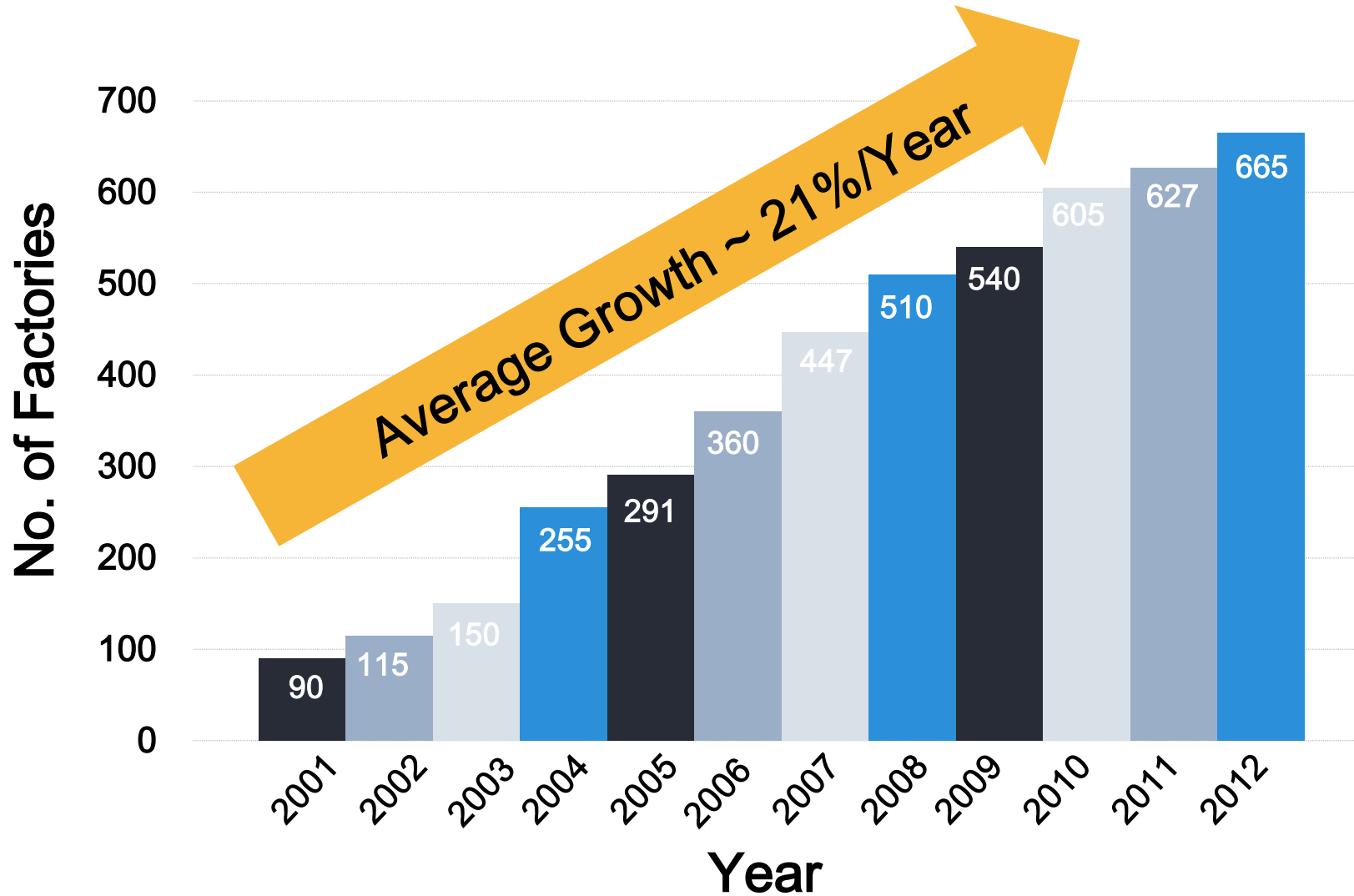


1999-2018: Technology transfer
206 times **10,498** participants

Technology transfer at TISTR headquarter
109 times **5,181** participants

On-site technology transfer throughout
Thailand **97** times **5,317** participants

No. of Interlocking Block Factories (2001-2012)

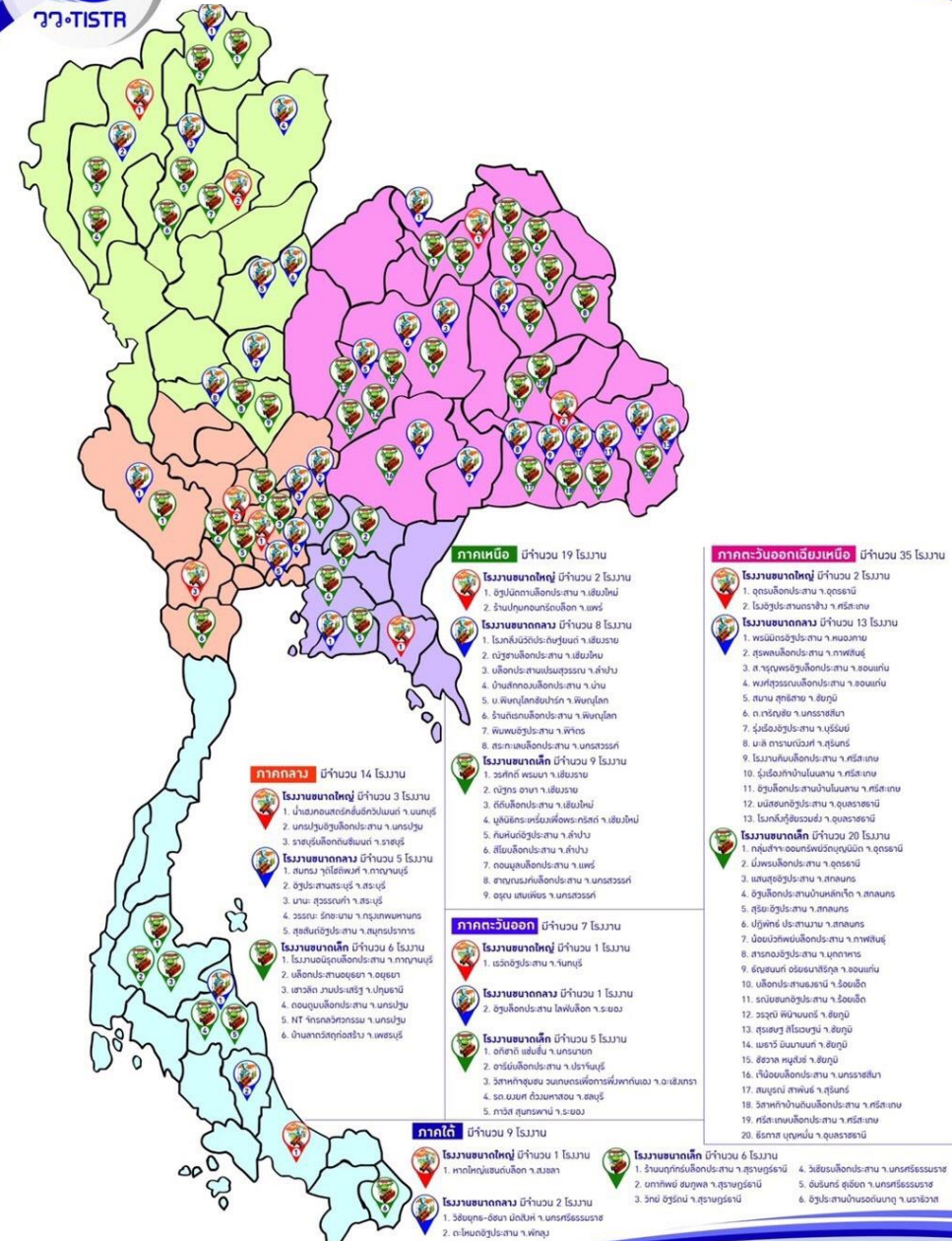


Distribution of Interlocking Block Factories

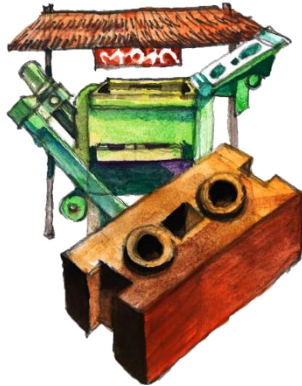


Region	No. of Factories	(%)
Northeast	223	33.53
North	141	21.20
South	106	15.94
East	73	10.98
West	47	7.07
Bangkok & Vicinity	41	6.17
Central	34	5.11
Total	665	100.00

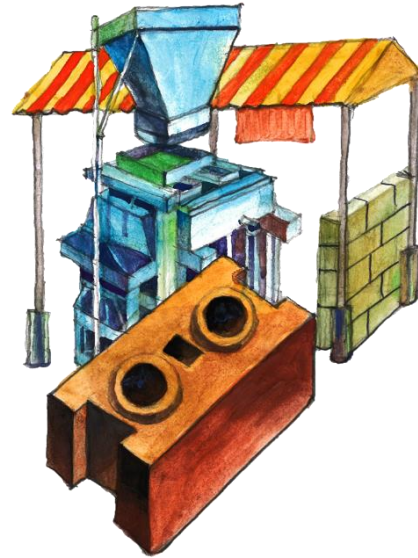
Map of Interlocking Block Factory in Thailand



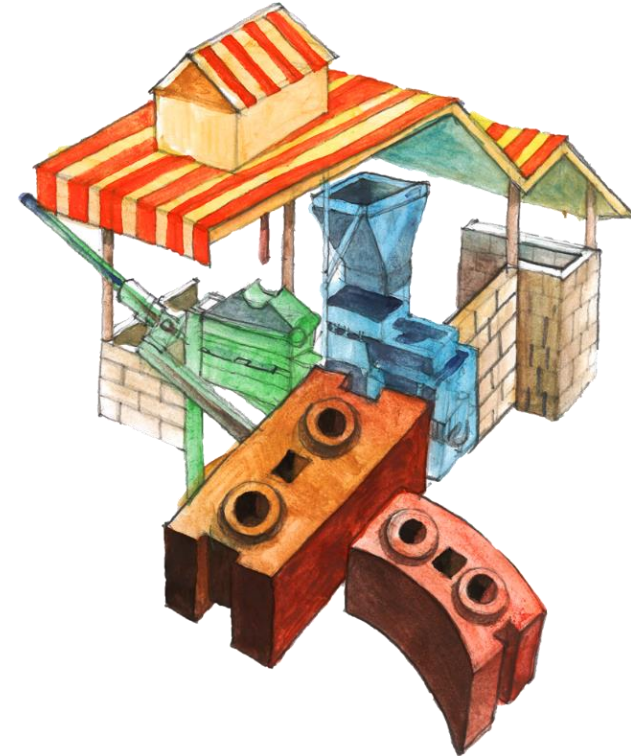
Size of Interlocking Block Factories



Small Size

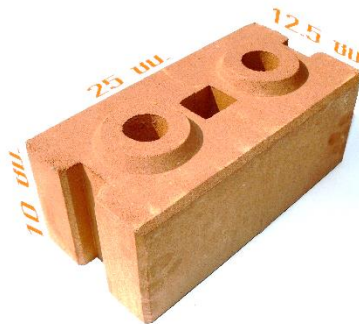


Medium Size

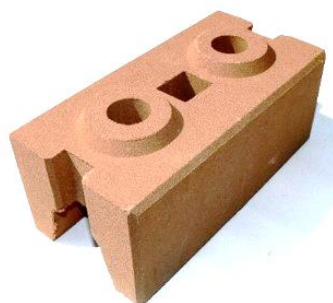


Large Size

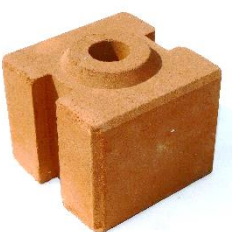
Types of Interlocking Block



Regular
(12.5x25x10



U-shape
(12.5x25x10
cm.)



Regular Half
(12.5x12.5x10 cm.)



U-shape Half
(12.5x12.5x10 cm.)



Business Model & Happiness Model



National Strategic (2018-2037)

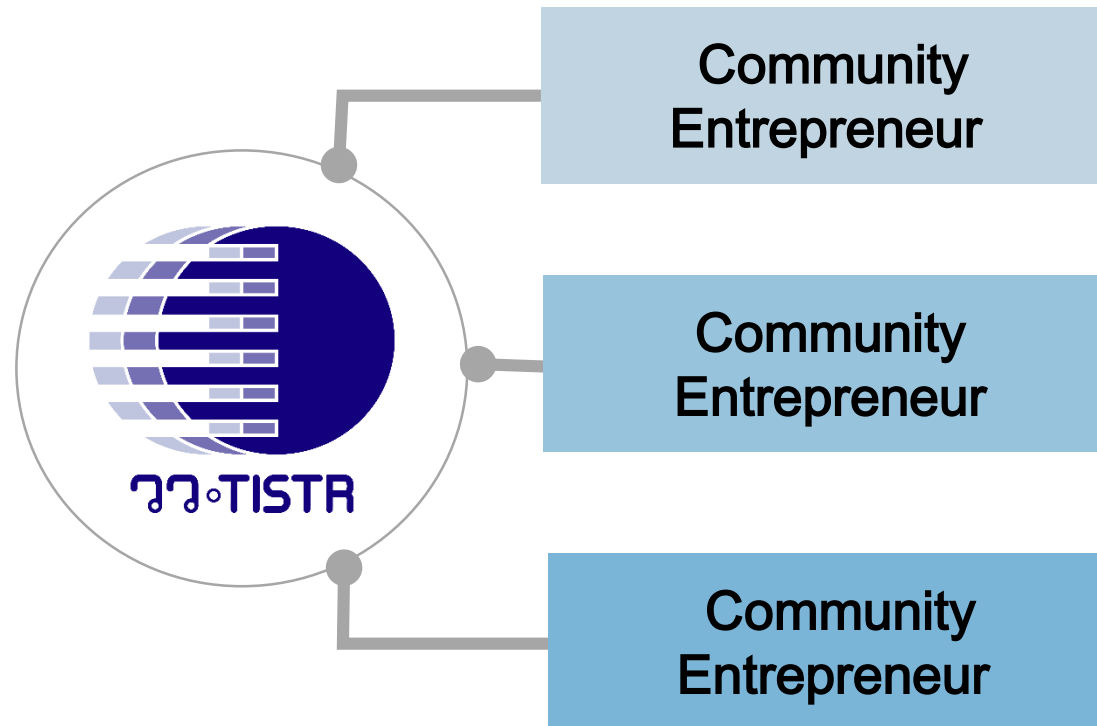


- Aim of “Turning Thailand into a Developed Country by 2037”
- Visions on “Security, Prosperity & Sustainability” through Developments Based on the “Sufficiency Economy Philosophy”
- Interlocking Block Business Model for “Prosperity”
- Interlocking Block Happiness Model for “Security & Sustainability”
- Interlocking Block: “Appropriate Technology for All Communities”

Business Model



“One to Many”



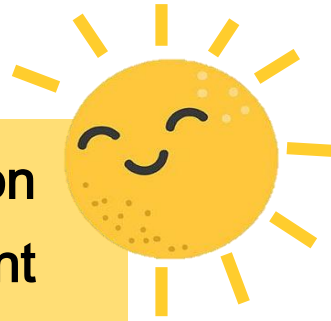
Market

- Retail
- Whole Sale
- Whole Sale + Retail
- Construction Package
- Export

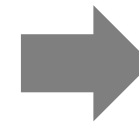
Happiness Model I



Donation
for Equipment



Karens for Christ
Foundation,
Chiang Mai



Karen Christian
Communities



CSI





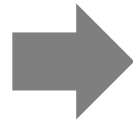


New 1 = Old 6

21 m³



Happiness Model II

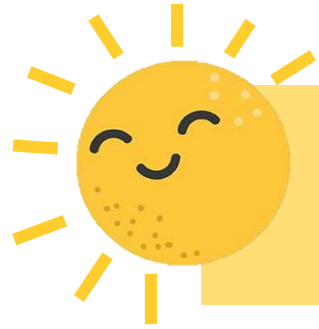


Temple,
Udon Thani





Happiness Model III

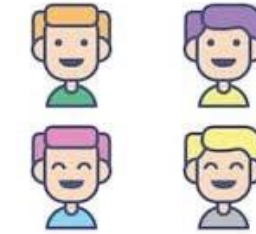


Subdistic Municipality,
Nonburee, Kalasin
Supported



**Communities
Training on
Interlocking Block
Production**

**Community
Entrepreneur**



**Public Toilet
at Tourist Spot**



**Furnace for
Pottery
Production**



Public Toilet & Furnace



Bhutai



Dino in Bhutai Dressing



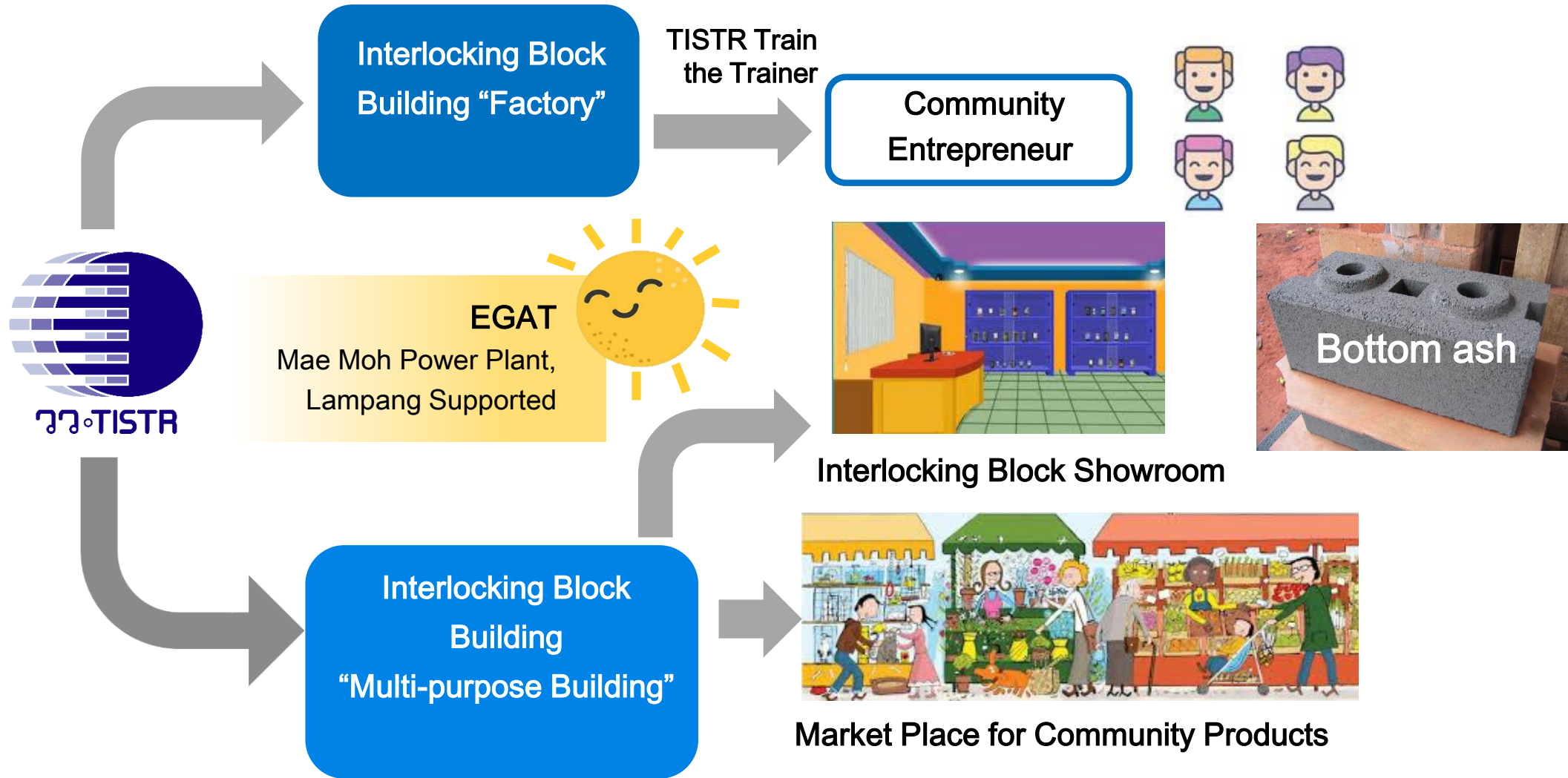
OTOP Mid Year Sale 2018



77 Local Administration Organizations Visited



Happiness Model IV



Interlocking Block Learning Center, Lampang

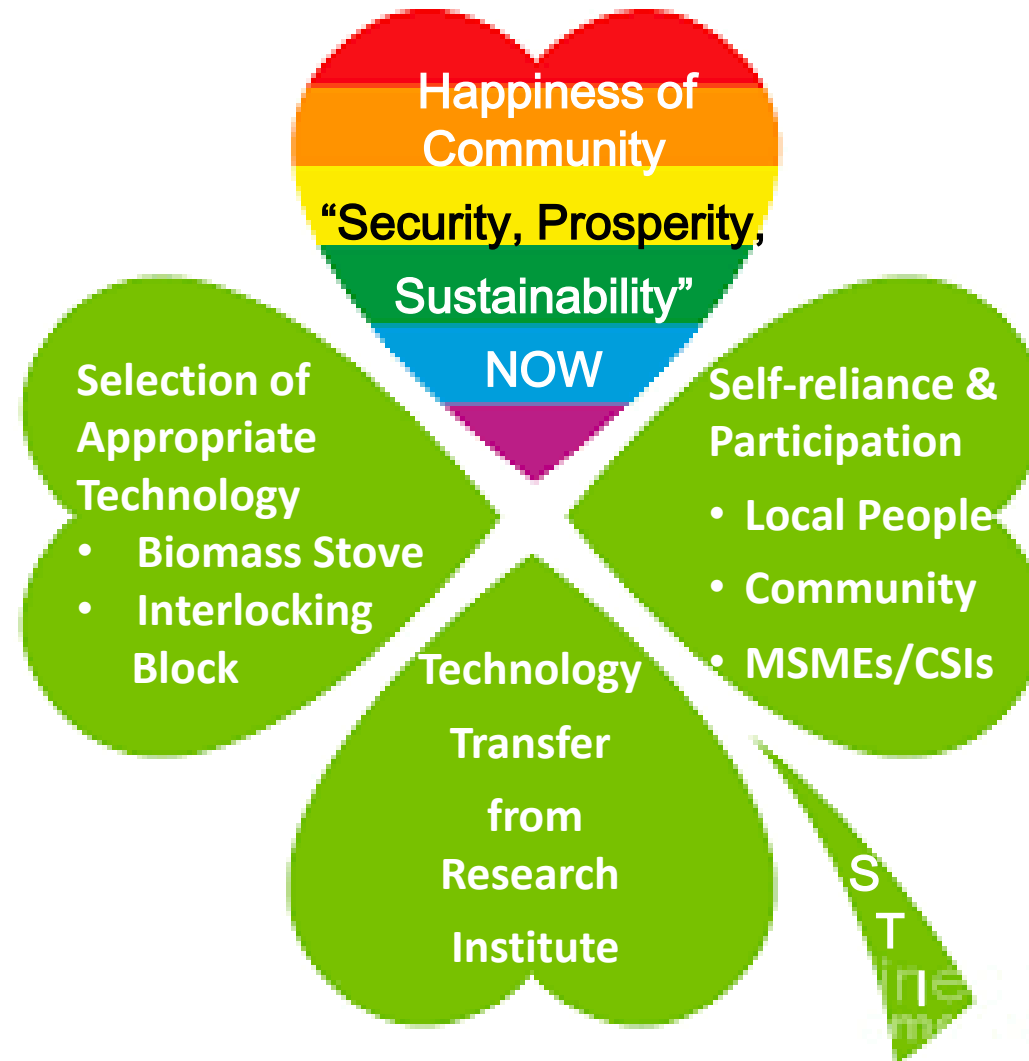


Constructed from Bottom Ash



Conclusion:

“Happiness is Now”



Thank you



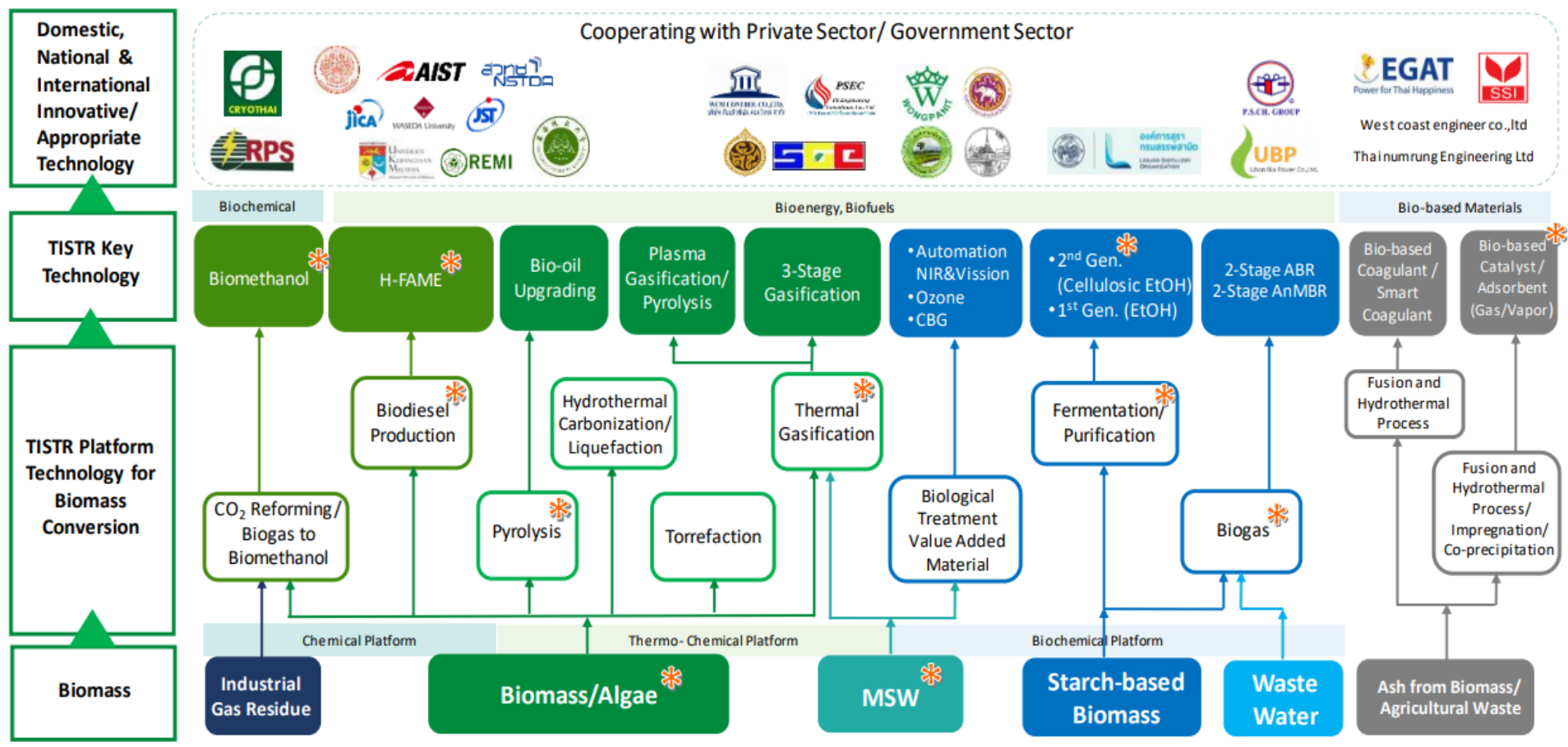
Thailand Institute of Scientific and Technological Research
(TISTR), www.tistr.or.th

ASEAN Network of Excellence Centre of Biomass Conversion Technology (ANEC)

for Biofuels, Bioenergy, Biochemicals, Bio-based

Industry

Community



* TISTR's Technology available for sharing

Platform Construction & Platform Utilization for 4GPs

Biomass Stove



Community

4 GPs

- Bio-based
- Area-based
- Total Solution
- Appropriate Technology



Biomass Stove Type 1



Biomass Stove Type 2

Interlocking Block



Interlocking Block Factories

