Small Area Estimation method and Big data for data disaggregation : Case Studies and country examples

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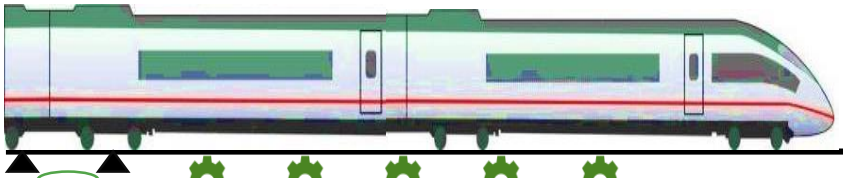
Outline of Discussion

- How is the Sustainable Development Agenda aligned with your national development priorities
- Summary of the status of availability of disaggregated SDG data in your country
- Previous and/or ongoing efforts on small area estimation
- Policy uses of small area estimates (including lessons learned)
- Limitations of small area estimates derived from conventional data sources
- Ongoing efforts or future plans to incorporate innovative data sources (e.g., big data) to address the disaggregated data requirements of SDGs

Linkages between The 12Th NESD Plan and The 20-Yr National Strategies

The 20-Year National Strategies

- Security
- Building Competitiveness
- Developing Human Potential
- Creating Equal Opportunity in Society
- Green Growth for Sustainability
- Public Sector Management



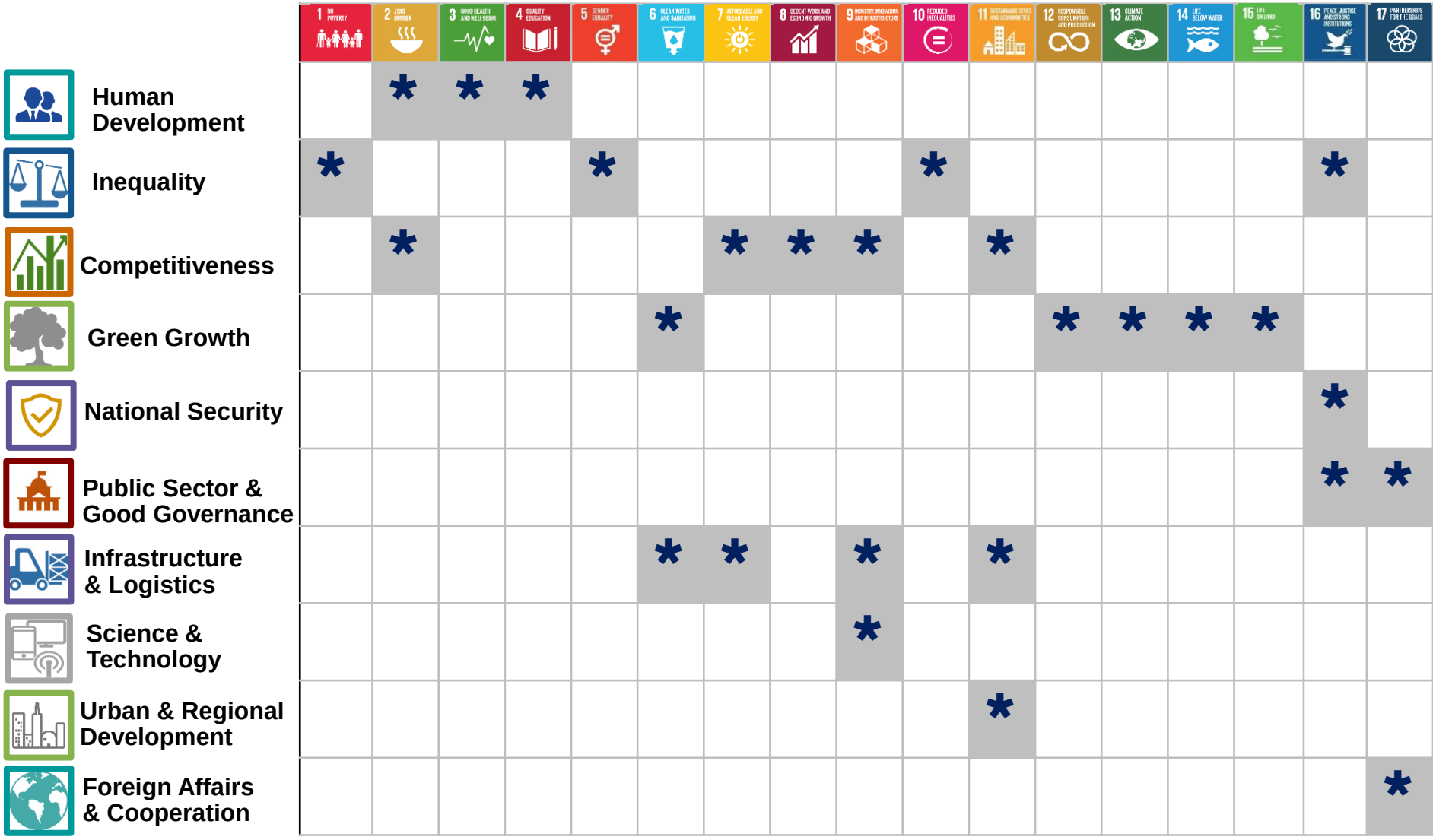
2015 2017 2018 2019 2020 2021 2030 SDGs 2036 20Yr National Strategies

The 12Th NESDP

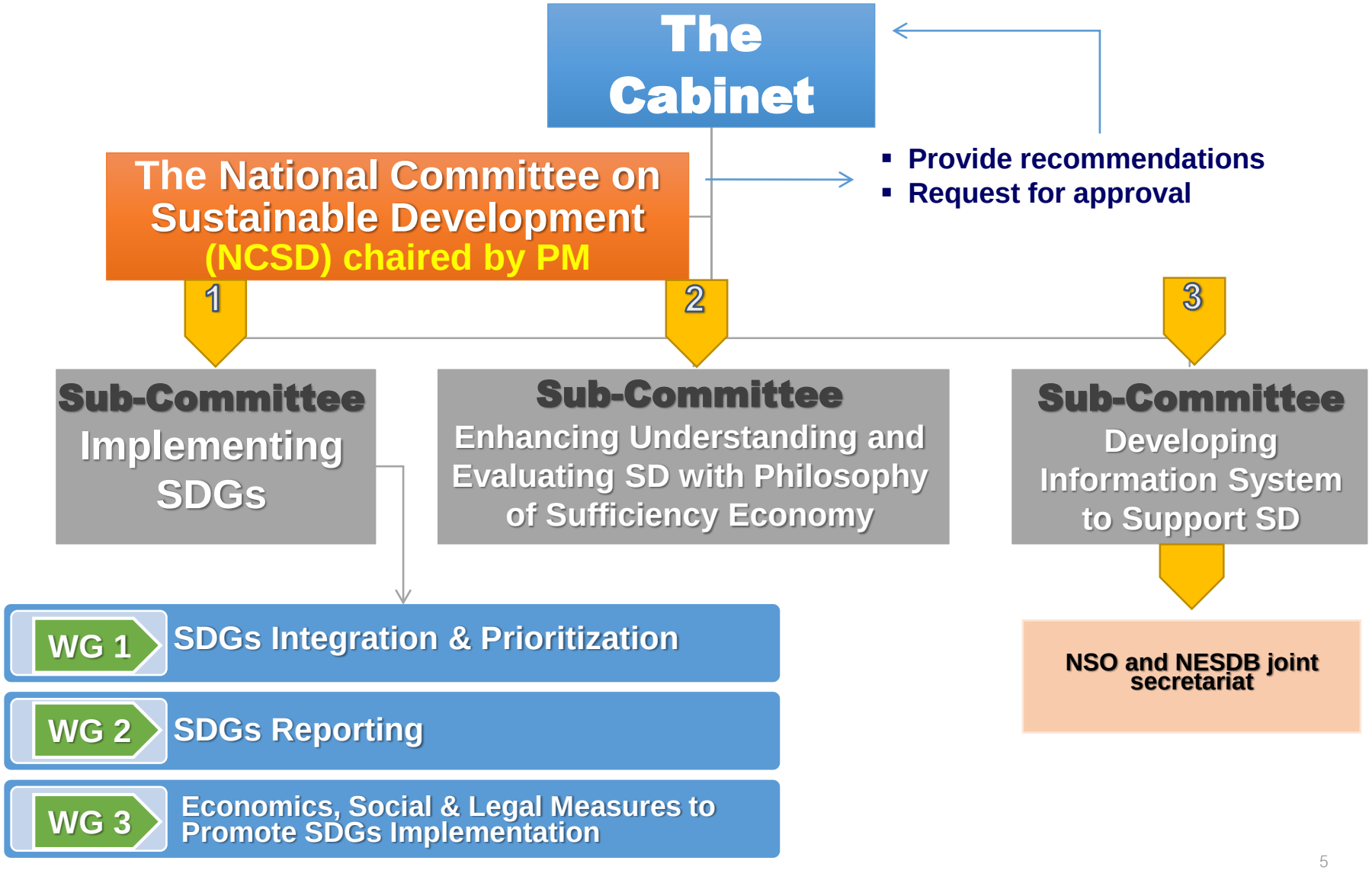
- Human Development
- Inequality
- Competitiveness
- Green Growth
- National Security
- Public Sector & Good Governance
- Infrastructure & Logistics
- Science & Technology
- Urban & Regional Development
- Foreign Affairs & Cooperation

The 12th Plan will translate the first 5-Year of the 20-Year National Strategies into action

Linkage the SDG and the NESDP



Thailand's SDG Institutional Mechanism



Thailand's Main Government Agencies : Responsible for Each SDG

1 NO POVERTY	M of Interior, M of Social Dev & Human Security
2 ZERO HUNGER	M of Agriculture
3 GOOD HEALTH AND WELL-BEING	M of Public Health
4 QUALITY EDUCATION	M of Education
5 GENDER EQUALITY	M of Social Dev & Human Security
6 CLEAN WATER AND SANITATION	M of Natural Resources & Environment, M of Agriculture, M of Interior
7 AFFORDABLE AND CLEAN ENERGY	M of Energy
8 DECENT WORK AND ECONOMIC GROWTH	NESDB, M of Finance, M of Labor
9 INNOVATION AND INFRASTRUCTURE	M of Transport M of Industry
10 REDUCED INEQUALITIES	NESDB, M of Social Dev & Human Security
11 SUSTAINABLE CITIES AND COMMUNITIES	M of Interior, M of Social Dev & Human Security
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	M of Natural Resources & Environment
13 CLIMATE ACTION	M of Natural Resources & Environment
14 LIFE BELOW WATER	M of Natural Resources & Environment
15 LIFE ON LAND	M of Natural Resources & Environment
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	M of Justice, M of Interior, M of Social Dev & Human Security
17 PARTNERSHIPS FOR THE GOALS	M of Foreign Affairs, M of Finance, M of Commerce
	Working Group

The status of availability of disaggregated SDG data

Goal	LOC (REG)	LOC (PROV)	AREA	SEX	AGE	INC	DIS	MIG	EIS	OTH
Total	20	24	13	28	22	6	3	0	0	25
SDGs 1	2	4	1	0	0	0	0	0	0	3
SDGs 2	2	2	2	2	2	2	0	0	0	2
SDGs 3	5	5	2	7	5	1	0	0	0	2
SDGs 4	0	0	1	4	5	0	0	0	0	5
SDGs 5	4	1	2	6	2	0	0	0	0	2
SDGs 6	1	1	1	0	1	0	0	0	0	1
SDGs 7	0	0	0	0	0	0	0	0	0	0
SDGs 8	0	0	0	4	4	1	2	0	0	1
SDGs 9	0	0	0	0	0	0	0	0	0	4
SDGs 10	0	0	0	1	1	2	1	0	0	0
SDGs 11	2	4	2	0	0	0	0	0	0	1
SDGs 12	0	0	0	0	0	0	0	0	0	0
SDGs 13	1	3	0	0	0	0	0	0	0	1
SDGs 14	0	0	0	0	0	0	0	0	0	0
SDGs 15	1	1	0	0	0	0	0	0	0	1
SDGs 16	0	1	0	1	0	0	0	0	0	0
SDGs 17	2	2	2	3	2	0	0	0	0	2

Country Practice on Data Disaggregation

- Considering the national Plan, Development plan, Line Ministries Plan, Provincial Plan and Global Agenda Framework.
- Establish plans and projects take into account the sub-group population ex. Gender Strategy Plan
- Specified the proper indicators to evaluate and monitor the certain project and designated to the relevant agencies.

Previous and/or ongoing efforts on small area estimation (including lessons learned)

Poverty Mapping

- Using small area estimation techniques to construct Thailand's poverty mapping since 2003(To estimate some poverty indicators at district and sub-district level)
  - The Population and Housing Census
  - The Socio-economic Survey (designed to represent at provincial level)

Joint Research Project with ADB

- To deliver case studies on a specific policy-relevant issue showcasing specific applications of SAE and innovative data analytics to disaggregate select SDG indicators.
- Data : Satellite images, Census and Survey

Poverty Map in Thailand : Why

Why do poverty mapping?

- Effective and efficiency alleviate poverty, policy makers need to know the current situation of poverty and its determinant. Who “poor” What type of assets they posses Where ”they live” So that we need disaggregated data in the local level.
- The measurement of the poverty is available at National and Regional level done by NESDB
- The limitation of data in the local level
- Data from village/community level, taking into account about data issues (still be discussing about definition, coverage etc.)
- NSO conduct both Census and Survey.

Poverty Map in Thailand : Background

- The first Poverty Mapping in 2003
- The poverty mapping following year in 2005, 2007, 2008, 2011, 2012, 2015
- The latest Poverty Mapping in 2017
- In 2003 and 2005 : The joint collaboration between NESDB NSO and TDRI drew on technical expertise from World bank to derive Thailand's first small area estimation poverty map. After that Thailand started to carry the poverty mapping (NSO)
- In 2015 : Lack of NSO staffs (resign, move, etc.) We asks World Bank to support the researcher/expertise to train the new staffs and be consulting along the constructing the new poverty mapping.

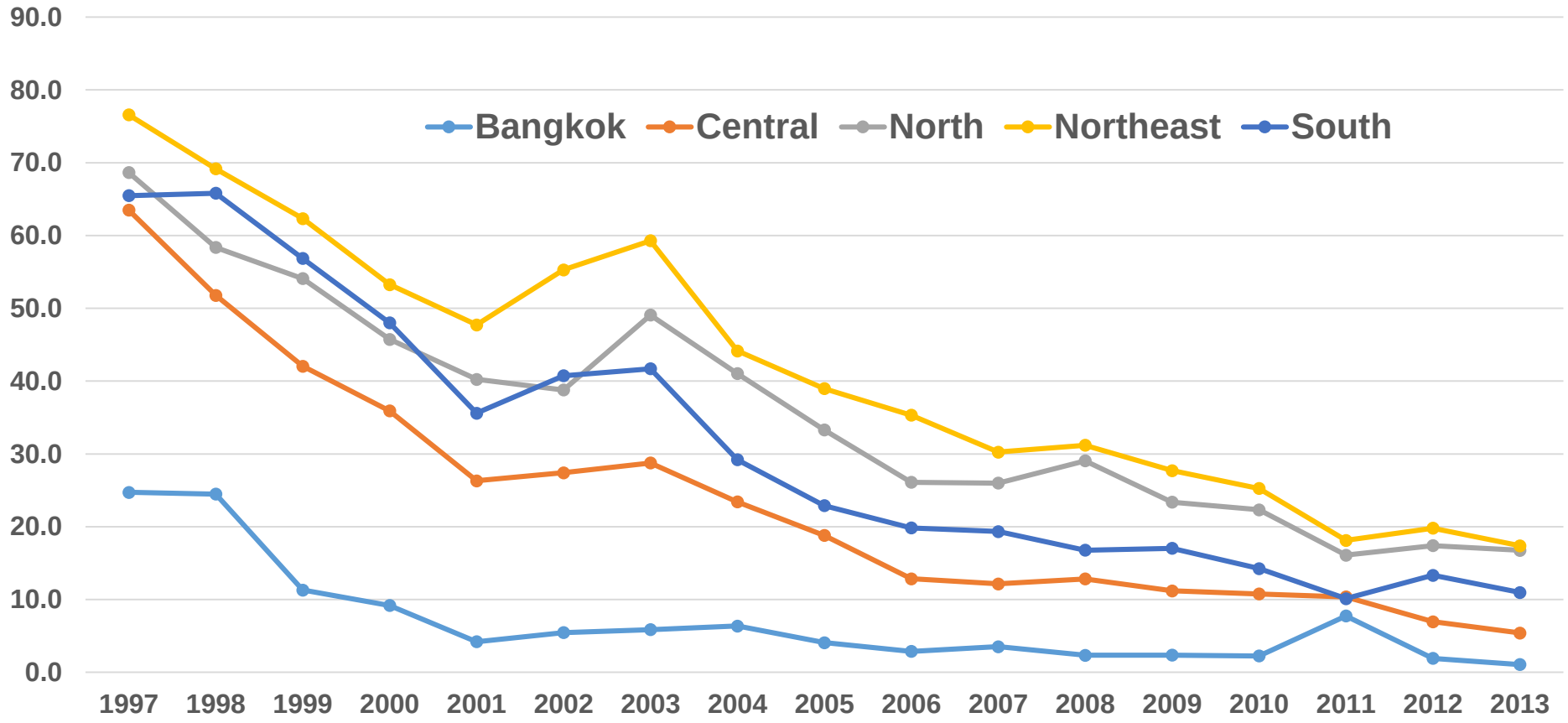
Poverty Map in Thailand :Data Sources

Poverty Maps of Thailand are derived from 2 data sources;

- The Population and Housing census : every 10 years

- The Household Socio-economic survey : every year (expenditure) every two year (Income)

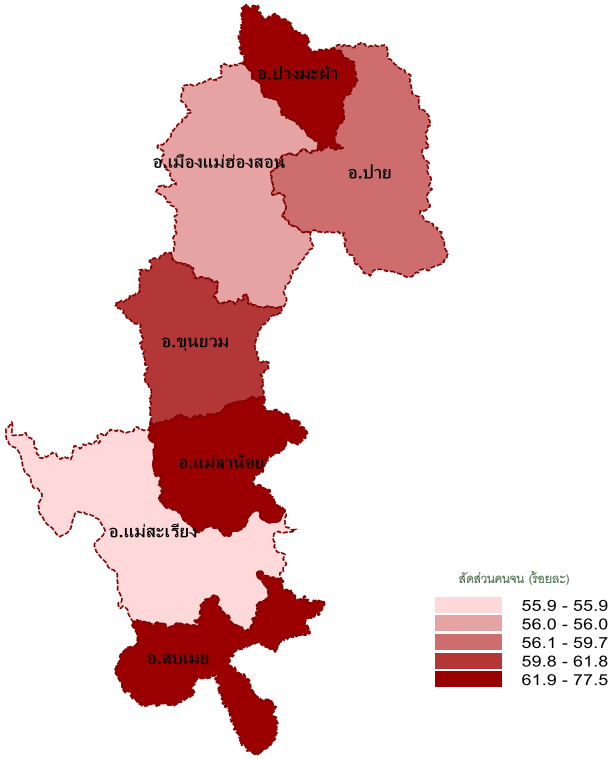
Poverty Map in Thailand : Result



Source : NESDB

Poverty Map in Thailand : Result

Result : Poverty Headcount (District Level) Meahongsorn in 2010 (Expenditure approach)

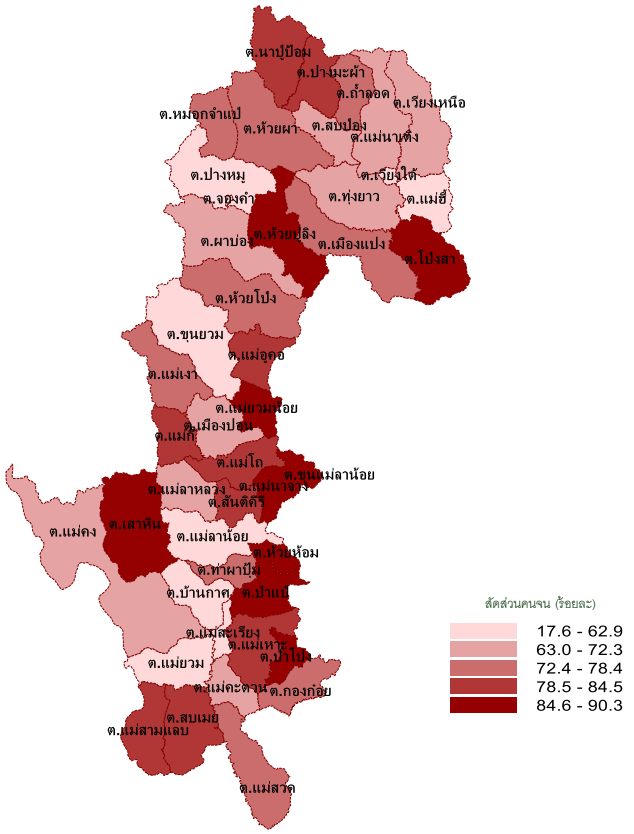


District	Headcount (%)
Sobmei	77.50
Pangmapa	74.96
Maelanoi	67.66
Khunyuam	61.77
Pai	59.69
Muang	56.04
Maesarieng	55.92

Source : NSO

Poverty Map in Thailand : Result

Result : Poverty Headcount (Sub-District Level) Meahongsorn in 2010 (Expenditure approach)



Top 5 highest headcount

Sub-district	Headcount (%)
Maenajang	90.3
Huaypuling	89.9
Papae	89.6
Maeyuamnoi	88.1
Khunmaelanoi	87.6

Top 5 lowest headcount

Sub-district	Headcount (%)
Jongkham	17.6
Viengtai	39.3
Khunyuam	42.7
Maeyuam	43.1
Maesarieng	49.3

Source : NSO

Poverty Map in Thailand : Field Verification

Poverty Map in Thailand :Dissemination

National Level	National Economic and Social Development Board
Regional Level	
Provincial Level	
District Level	National Statistical Office
Sub-district Level	

Policy uses of small area estimates

Use of the Poverty Map

- An essential tool for poverty eradication
  - The SAE estimation is an initial guide in obtaining information of proportion of households under district level:
    - As a support in allocating enumerators
    - Estimation for budgeting the equipment
  - To study relationship of Poverty/Inequality and other economic Social Phenomena
  - Supporting Monitoring and Evaluating Poverty Program (Government, Public Sector ; Child Support Grant Program, low income earner etc.)

Policy uses of small area estimates

Strengthening the Use of Poverty Map

- Increase public awareness
- Make known the availability, strengths and weakness of all the poverty maps in use
- Enhance Accuracy
- Should increase - interest and wider users Both producers and users are involved

Limitations of small area estimates

Conventional data sources

- Census data has very large size of data, which implies to:
  - Duration or time in processing
  - Hardware requirement: size of storage, speed of transfer rate
- Development of regional government leads to changes in area border,
- Different years between household level survey and community/village level data enumeration
- Different years between household level survey and census data

Ongoing efforts or future plans to incorporate innovative data sources to address the disaggregated data requirements of the SDGs

Ongoing initiatives to incorporate innovative data sources

- many experiments with big data /alternative data sources have been started, but they are not intended for the data disaggregation of SDGs:
  - In Public Sector
    - Ministry of Tourism and Sport (co-experiment with Chulalongkorn University): using the review website data to boost local tourism.
    - Meteorological Department (co-experiment with King Mongkut's University of Technology Thonburi): using sensor data for cluster analysis.
    - Department of Highways (co-experiment with EGA and NECTEC): using data from highway CCTV cameras for traffic analysis.
  - In State Enterprises
    - CAT Telecom Public Company Limited: using data from Free Wi-Fi access points to analyze tourists/users behavior.
    - TOT Public Company Limited: using social media data for customer churn analysis.

Ongoing efforts or future plans to incorporate innovative data sources to address the disaggregated data requirements of the SDGs

Future plans to incorporate innovative data sources

- Establish “Government Data Analytics Center”
- Build “Data Scientists Team”
- Co-experiment with data owners, academic institutions, private companies and international organizations

Thank you