



Asian Thematic Conference on
Managing a Statistical Organization in Times of Change
February 12-14, 2020

***Strengthening Capacity to Respond to
Statistical Challenges in the
Information Technology Age:
Asia and the Pacific's Experience***

Arturo Martinez Jr.
Statistician
Statistics and Data Innovation Unit
Economic Research and Regional Cooperation Department
Asian Development Bank





Outline of Presentation

- Global Initiatives on Promoting Data for Development
- Notable Efforts from Asia and the Pacific Region
- ADB's Contribution and Ongoing Efforts



What difference do data make?



Photo courtesy of [Time.com](https://www.time.com)



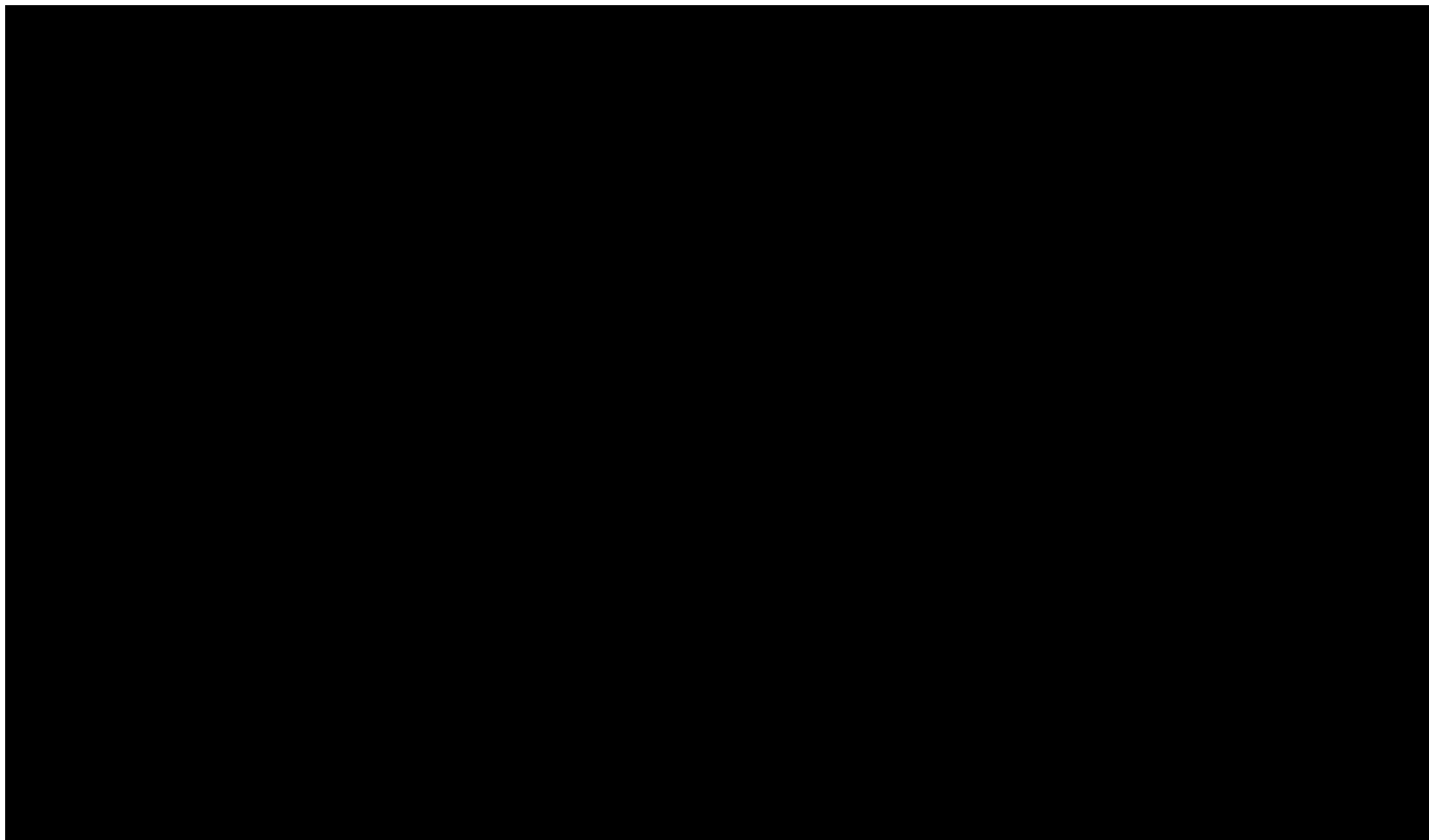
What difference do data make?



Photo courtesy of <https://www.rappler.com/move-ph/230805-daniel-cabrera-graduates-from-grade-school-cebu-may-2019>



What difference do data make?



A nighttime photograph of a city street scene. In the foreground, a multi-lane highway interchange is visible, with light trails from cars moving through it. To the right, a pedestrian walkway with a yellow railing leads up a hill. In the background, several tall skyscrapers are illuminated, their windows glowing with light. The sky is dark, and the overall atmosphere is that of a bustling urban environment at night.

High-quality,
timely, reliable **DATA** are
the
foundation of effective policymaking.





Development statisticians are working together to respond at this critical juncture of data revolution.

Examples of Global Collaborations where Asia and the Pacific is Contributing



Big Data for Official Statistics

11101001100
001100DATA
REVOLUTION
0GROUP11001
011000100011
11101110000

DATA REVOLUTION GROUP





Innovative and big data sources are increasingly being tapped to complement conventional sources of development data.



Big data have wide array of applications in the context of the SDGs.



How data science and analytics can contribute to sustainable development

1 NO POVERTY
Spending patterns on mobile phone services can provide proxy indicators of income levels

2 ZERO HUNGER
Crowdsourcing or tracking of food prices listed online can help monitor food security in near real-time

3 GOOD HEALTH AND WELL-BEING
Mapping the movement of mobile phone users can help predict the spread of infectious diseases

4 QUALITY EDUCATION
Citizen reporting can reveal reasons for student drop-out rates

5 GENDER EQUALITY
Analysis of financial transactions can reveal the spending patterns and different impacts of economic shocks on men and women

6 CLEAN WATER AND SANITATION
Sensors connected to water pumps can track access to clean water

7 AFFORDABLE AND CLEAN ENERGY
Smart metering allows utility companies to increase or restrict the flow of electricity, gas or water to reduce waste and ensure adequate supply at peak periods

8 DECENT WORK AND ECONOMIC GROWTH
Patterns in global postal traffic can provide indicators such as economic growth, remittances, trade and GDP

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Data from GPS devices can be used for traffic control and to improve public transport

10 REDUCED INEQUALITY
Speech-to-text analytics on local radio content can reveal discrimination concerns and support policy response

11 SUSTAINABLE CITIES AND COMMUNITIES
Satellite remote sensing can track encroachment on public land or spaces such as parks and forests

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Online search patterns or e-commerce transactions can reveal the pace of transition to energy efficient products

13 CLIMATE ACTION
Combining satellite imagery, crowd-sourced witness accounts and open data can help track deforestation

14 LIFE BELOW WATER
Maritime vessel tracking data can reveal illegal, unregulated and unreported fishing activities

15 LIFE ON LAND
Social media monitoring can support disaster management with real-time information on victim location, effects and strength of forest fires or haze

16 PEACE, JUSTICE AND STRONG INSTITUTIONS
Sentiment analysis of social media can reveal public opinion on effective governance, public service delivery or human rights

17 PARTNERSHIPS FOR THE GOALS
Partnerships to enable the combining of statistics, mobile and internet data can provide a better and real-time understanding of today's hyper-connected world





Asia and the Pacific has a number of initiatives examining how we can capitalize on innovative, big data sources to enhance compilation of official statistics.

Web scraping-related initiatives for price statistics in Asia and the Pacific

Institution	Project
National Bureau of Statistics (PRC)	Using web scraping price data for the price index of e-commerce
National Statistical Office of Georgia	Web scraping and administrative data for residential property prices and for international comparison prices
Ministry of Internal Affairs and Communications (Japan)	Web scraping and scanner data for price statistics
Statistics Korea of the Republic of Korea	Web scraping data – to compile price index using the price data through the website.
Malaysia Department of Statistics	The modernization of data collection mainly consist of the adoption of web scraping techniques to scrape price data from related website for CPI compilation.





... and facilitate evidence-based policymaking.

Big data-related initiatives for statistics on agriculture in Asia and the Pacific



INSTITUTION

PROJECT

National Bureau of Statistics (PRC)

Crop survey by farmland: using satellite and aerial remote sensing to help estimate agricultural statistics

National Statistics Office of Mongolia

Use of satellite imagery in the conduct of the NSO Mongolia's by-Census of Agriculture to aid in the identification of crop types and estimation of production

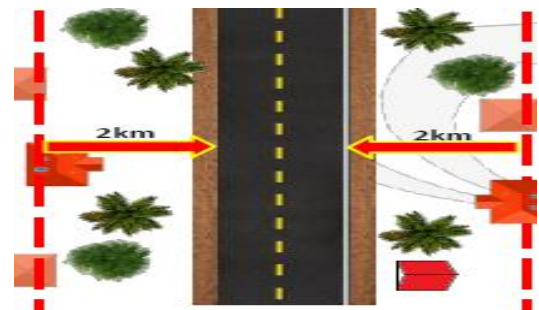
Ministry of Agriculture and Farmers Welfare (India)

Forecasting agricultural outputs using space, agro-meteorology and land-based information





Big data-related initiatives for social statistics in Asia and the Pacific



INSTITUTION	PROJECT
Thailand National Statistical Office	Use of geospatial data and satellite imagery to enhance small area poverty estimates.
National Bureau of Statistics of PRC	Innovations in Methods of Population Statistics Floating population statistics
Statistics Korea of the Republic of Korea	Daily migration of population: using mobile call detail record data for daily migration.
Philippine Statistics Authority	Use of geospatial data to measure rural Access Index or the proportion of rural population who live within 2 km of an all-season road. Use of geospatial data and satellite imagery to enhance small area population estimates.



Other big data-related initiatives for statistics in Asia and the Pacific



INSTITUTION

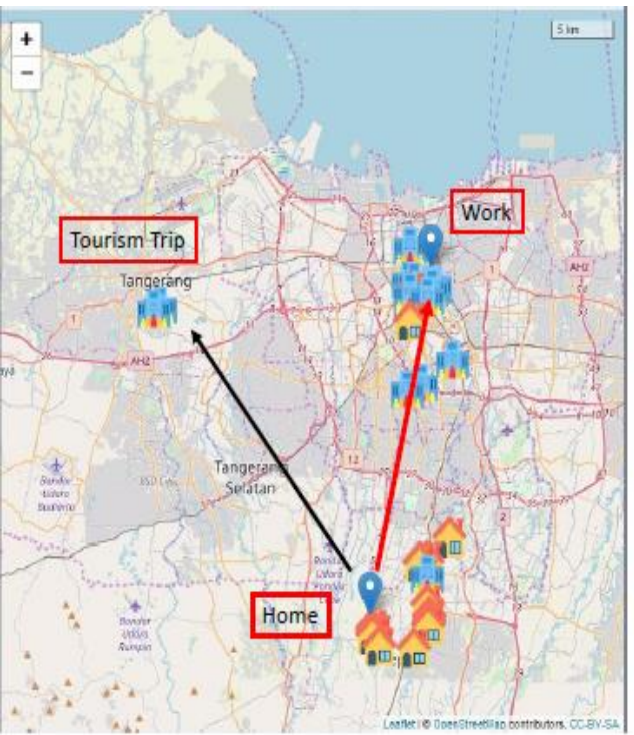
PROJECT

National Bureau of Statistics (PRC)

Application of big data for highway and waterway transport statistics

National Bureau of Statistics (PRC)

Big data enterprise statistical indicator



Singapore Department of Statistics

Integrated environment system: using environmental sensing systems and data analytics for real-time environmental information

National Statistics Office of Georgia

Use of Mobile Phone Data in validating tourism survey results

Statistics Indonesia

Human Mobility/Domestic Tourism with Mobile Phone Data



Scaling up big data-related initiatives requires strengthened capacity to address various issues.



Privacy



Capacity



Access and Sharing



Analysis



Technological Requirements



Mobile information technology tools are also changing data collection landscape.





Many national statistical systems in Asia are transitioning from traditional paper-based to CAPI-based data collection.

Asian Countries Using CAPI

- Bhutan – Labor Force Survey, Economic Census of Bhutan, Bhutan Living Standards Survey
- India - Periodic Labour Force Survey
- Philippines – Labor Force Survey, National Demographic and Health Survey, National Migration Survey
- Sri Lanka - Agricultural Household Survey
- Thailand – Agricultural Census, Household Survey on the use of ICT, Labor Force Survey
- Vietnam – Labor Force Survey

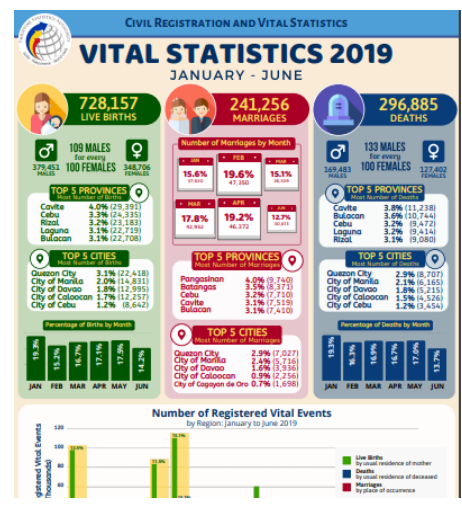
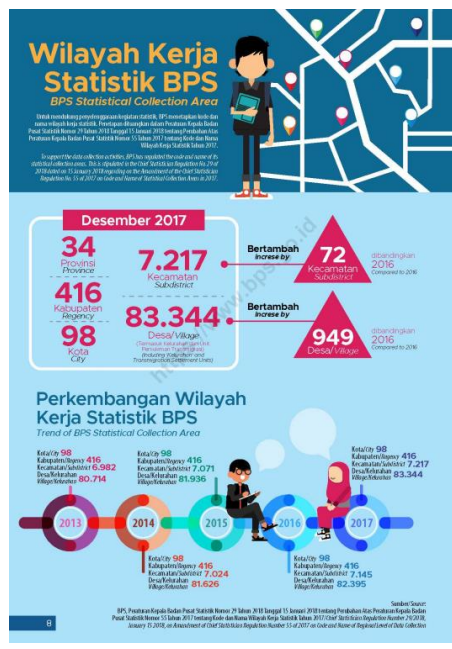
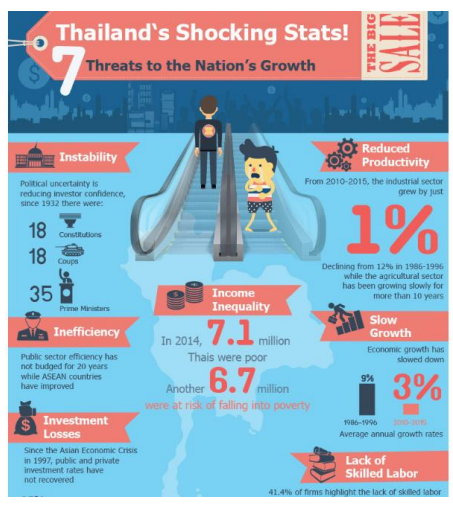
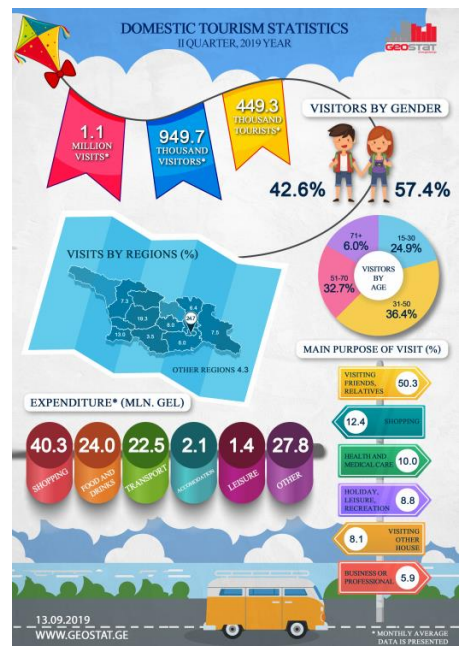
Challenges Associated with CAPI

- Need for additional training for interviewers
- Production of new devices that are compatible with the software
- Compatibility of CAPI to devices



National statistical systems are also realizing that proper communication of data is just as important as ensuring data are collected well.

Sample Infographics and Data Visualizations Disseminated by Asian NSOs





Asia and the Pacific is gradually opening up their data, developing more efficient data dissemination platforms, but needs to intensify their efforts.



<https://data.go.id/>



<https://data.gov.ph/>



<http://openstat.psa.gov.ph/>



<https://data.gov.hk/>



<http://www.data.gov.lk/>



<https://data.gov.in/>



<https://www.data.go.kr/>



<https://www.data.go.jp/?lang=english>



Asia's National Statistical Offices Performance on Open Data Initiatives

<u>Rank</u>	<u>Country</u>	<u>Score</u>	<u>Rank</u>	<u>Country</u>	<u>Score</u>
1	Singapore	86	95	Pakistan	41
11	Mongolia	77	103	Maldives	39
14	Hong Kong, China	72	104	Samoa	39
18	Korea, Rep.	70	105	Bangladesh	39
23	Australia	68	108	Vietnam	39
25	Japan	67	117	Bhutan	37
29	New Zealand	65	118	Nepal	37
39	Georgia	58	126	Thailand	36
41	Philippines	58	138	Afghanistan	32
49	Indonesia	56	140	Solomon Islands	31
53	Taiwan	55	145	Fiji	29
55	India	55	150	Timor-Leste	27
60	Kazakhstan	53	151	Vanuatu	27
61	Armenia	53	154	Cambodia	26
64	Azerbaijan	51	159	Micronesia, Federated States of	25
69	Malaysia	50	162	Lao PDR	23
70	Kyrgyz Republic	50	164	Marshall Islands	21
77	Sri Lanka	48	170	Uzbekistan	19
78	Myanmar	47	172	Papua New Guinea	16
85	China	44	178	Turkmenistan	2
89	Tajikistan	42			



Asia and the Pacific should address several technical and administrative challenges if they were to accelerate their Open Data Initiatives.



Privacy and Confidentiality



Legal, licensing and policy questions

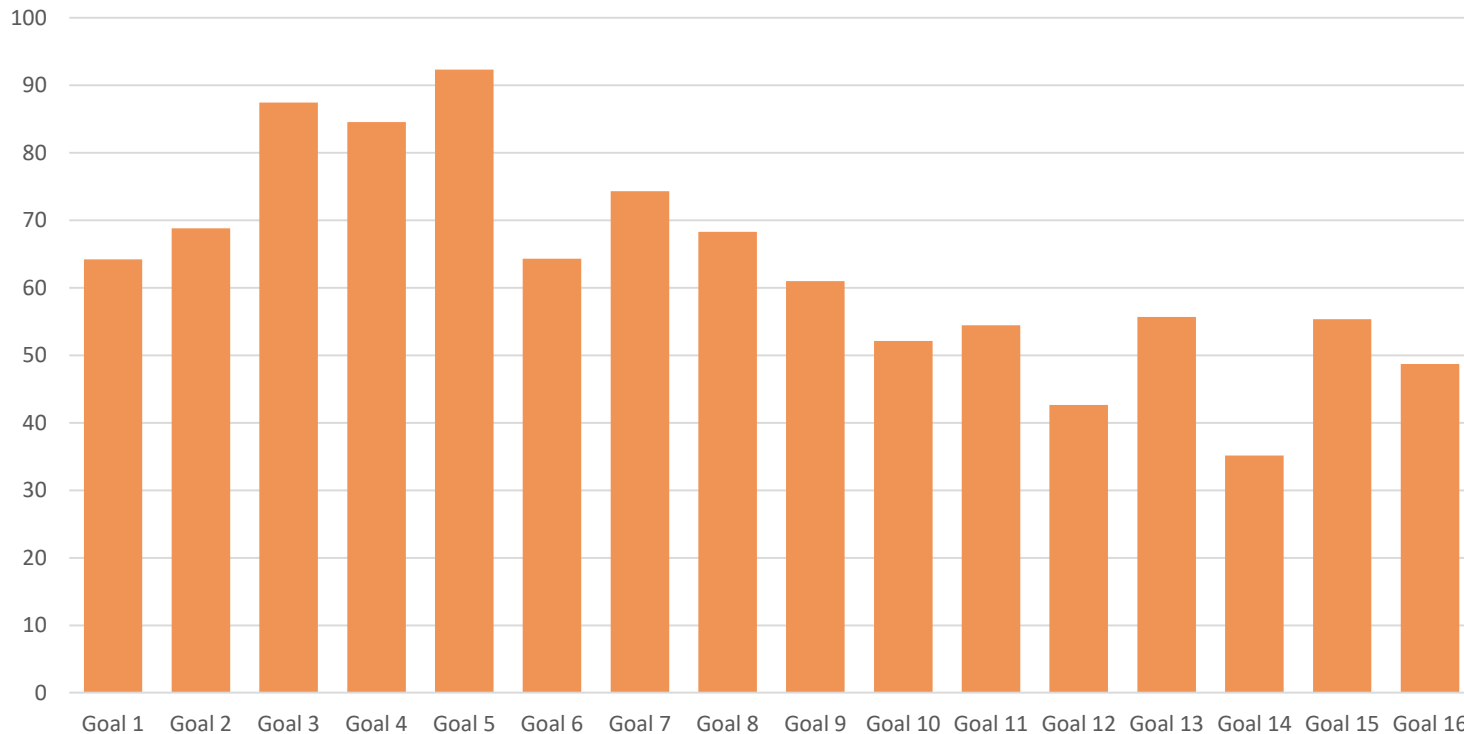


Implementation and resources



Amidst strides taken by national statistical systems, much needs to be done. International development organizations play an important role in this regard.

Asia Pacific data reporting capacity for the sustainable development goals, % of countries

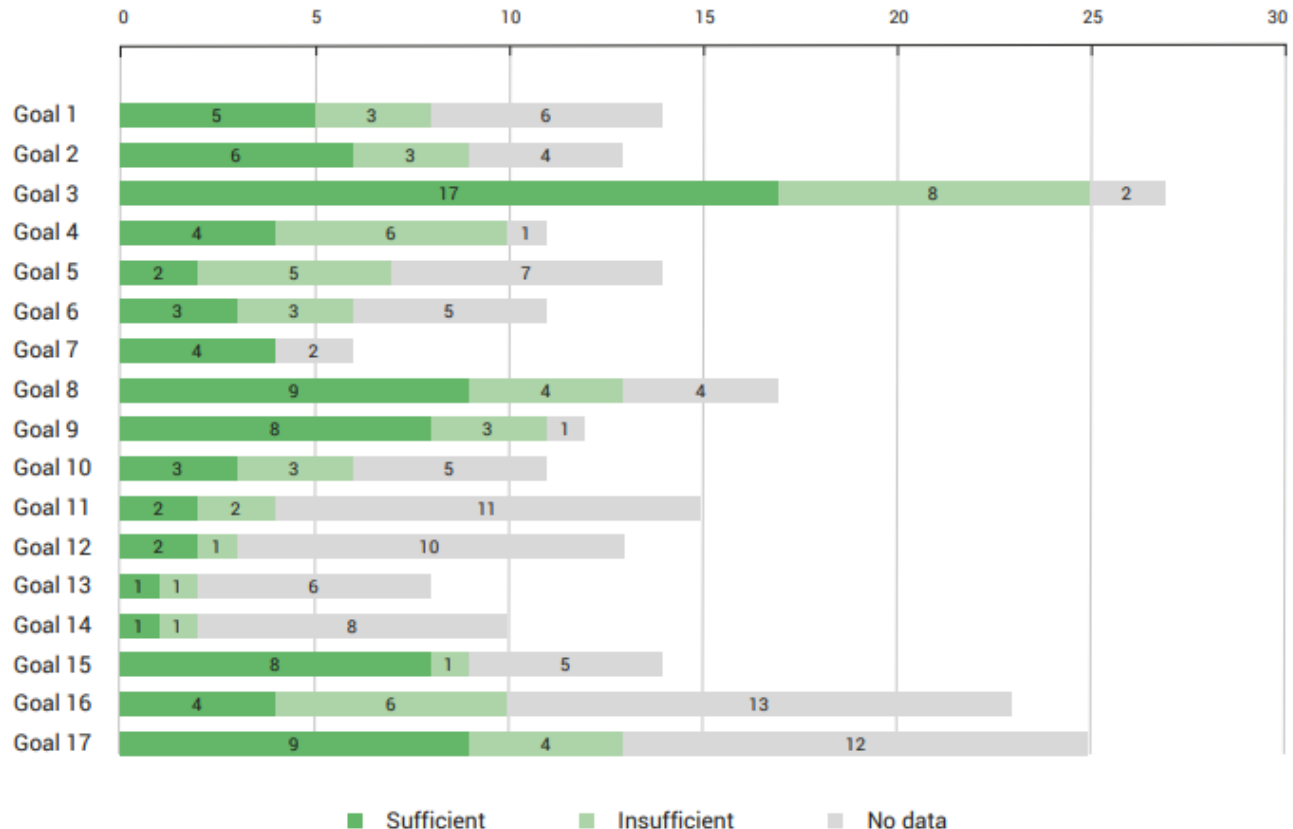


Source: <https://www.adb.org/sites/default/files/publication/159951/asia-pacific-regional-mdg-report-2014-15.pdf>



Amidst strides taken by national statistical systems, much needs to be done. International development organizations play an important role in this regard.

SDG data availability by Goal for Asia-Pacific, 2018

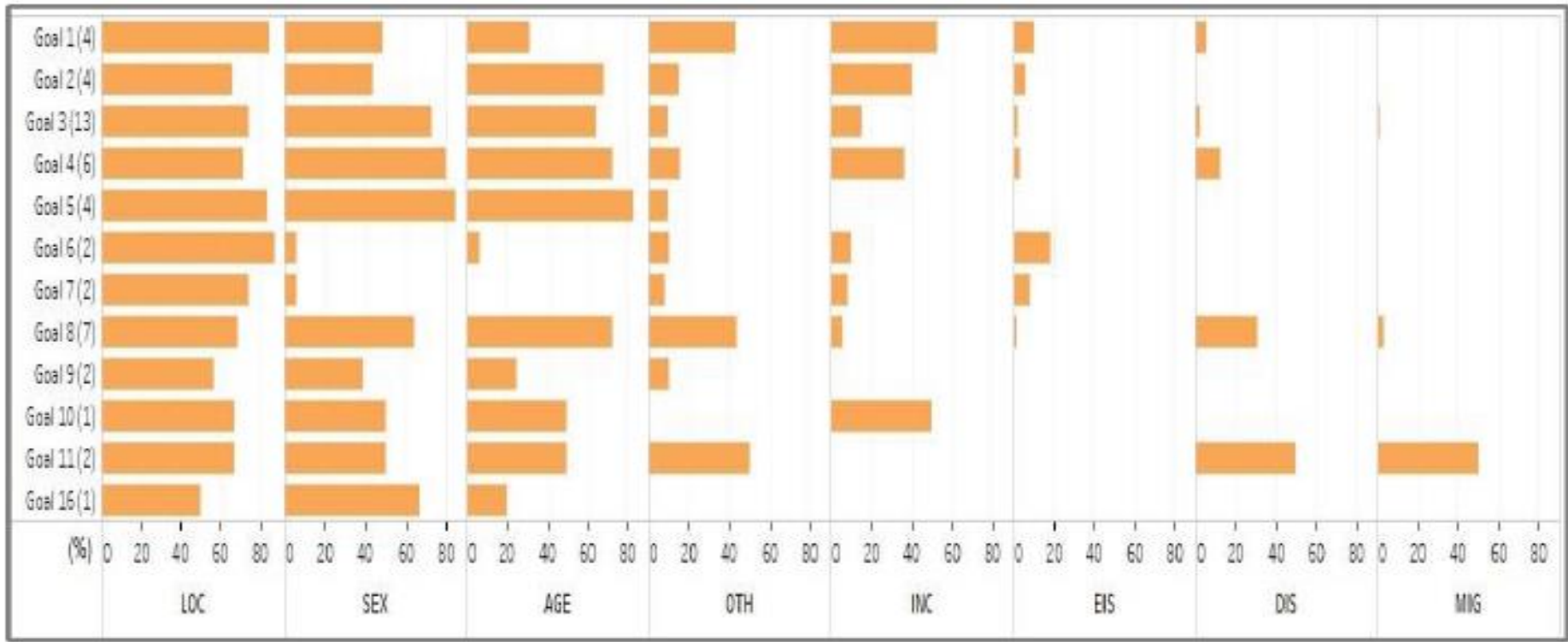


Source: UNESCAP. Asia and the Pacific SDG Progress Report 2019.



Amidst strides taken by national statistical systems, much needs to be done. International development organizations play an important role in this regard.

Limited availability of disaggregated data

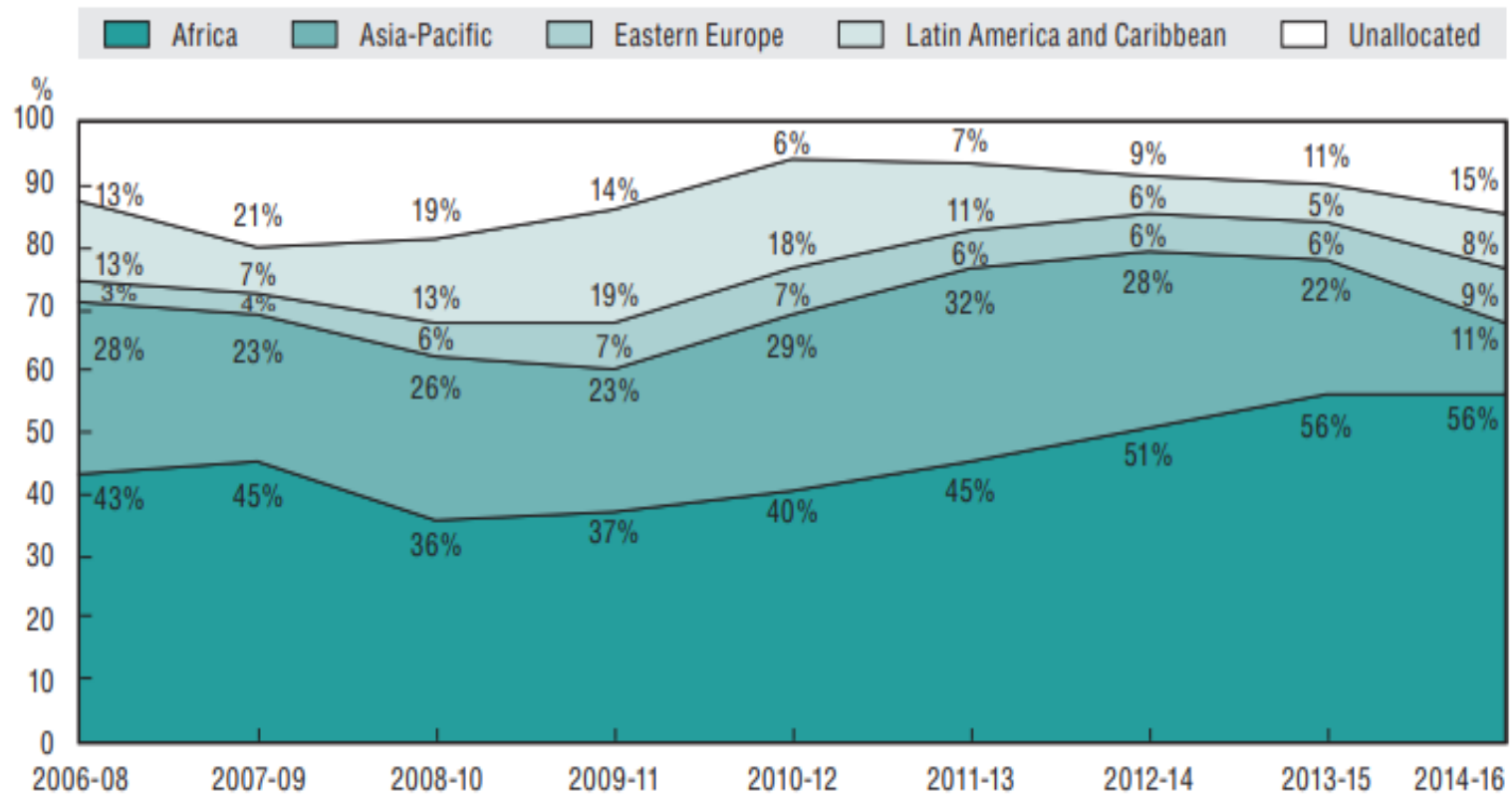


- **LOC:** Location/ spatial disaggregation
- **SEX:** Sex/gender
- **AGE:** Age
- **INC:** Income Quintiles/ deciles
- **DIS:** Disability
- **EIS:** Ethnicity/indigenous status
- **MIG:** Migratory status
- **OTH:** e.g. education, occupation, religion etc.

Source: Serrao (2017) – Presentation on SDG Data Compilation



Global commitments for statistical development by geographical region

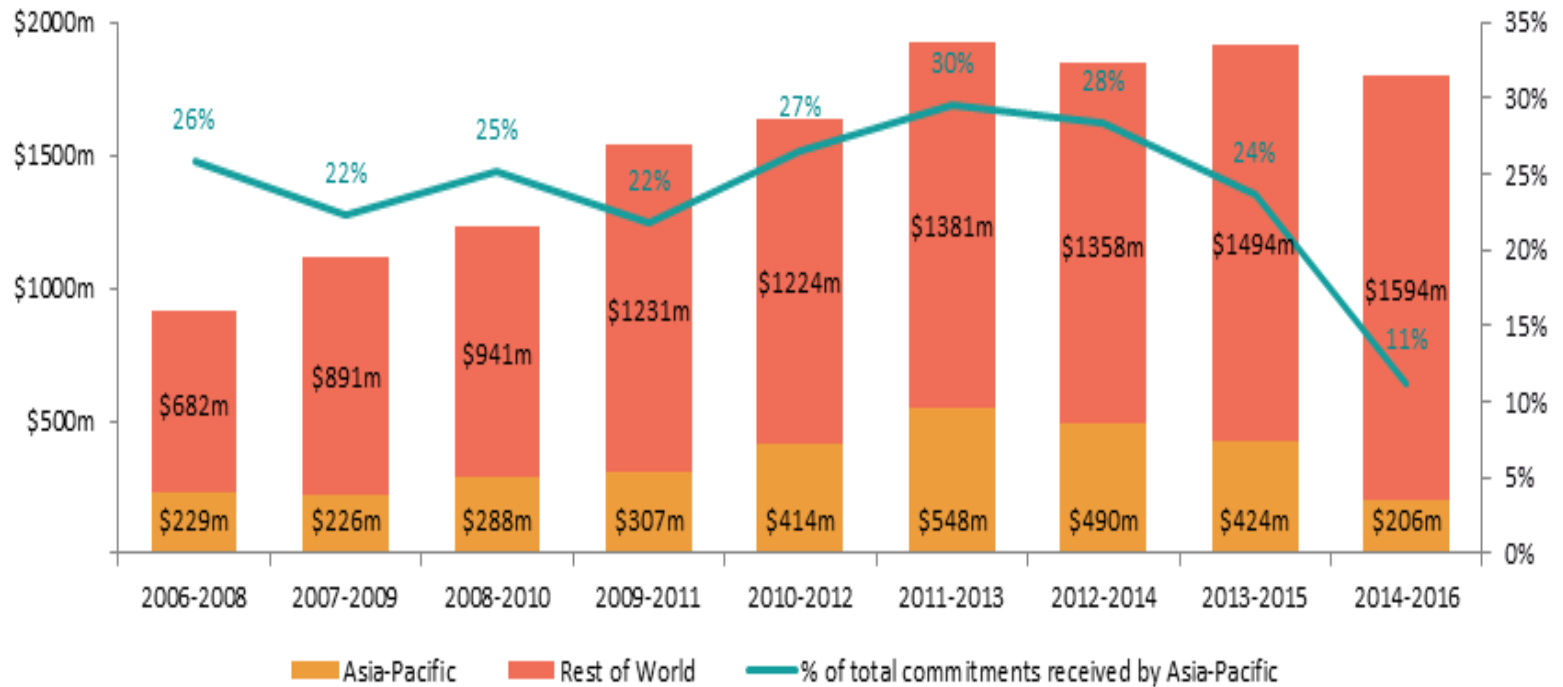


Source: https://paris21.org/sites/default/files/inline-files/PRESS2018_BAT_web_v2.pdf



Funding for statistical development

Commitments to statistics received by Asia-Pacific





ADB's Statistics and Data Innovation Unit is working closely with national statistical systems.

ADB's Statistics and Data Innovation Unit



Statisticians at ADB's Statistics and Data Innovation Unit are also working closely with government statistics staff





ADB's statistical capacity building efforts focus on three key areas: economic statistics, social statistics, and technological innovation

- First statistics capacity building project in 1970s (for Singapore on national accounts)
- Approximately 100 technical assistance projects on various topics since then
 - Statistics management and strengthening of national statistical systems
 - Development of statistics master plan
 - Strengthening of selected areas in statistics (national accounts, financial statistics, social statistics, etc.)
 - Improving data collection strategies (household surveys, administrative reporting system, dissemination practices)
- Established partnerships with other development agencies in the region.



Use of Remote Sensing to Estimate Paddy Area and Production



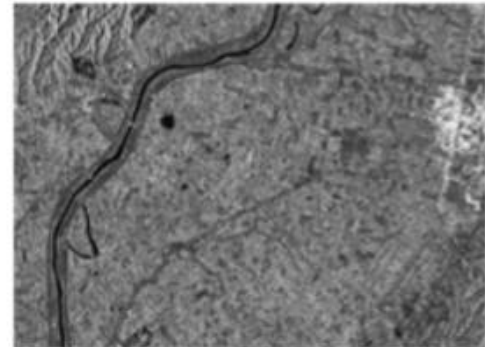
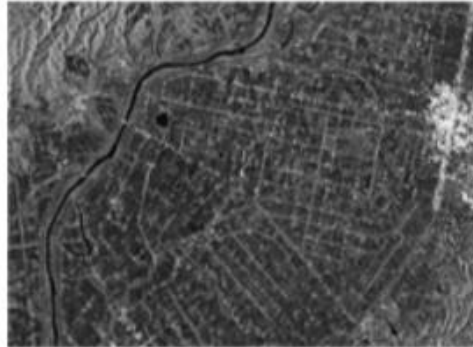
Before Planting
(inundation)



Planting



Vegetative



Low  High
Backscattering Coef.

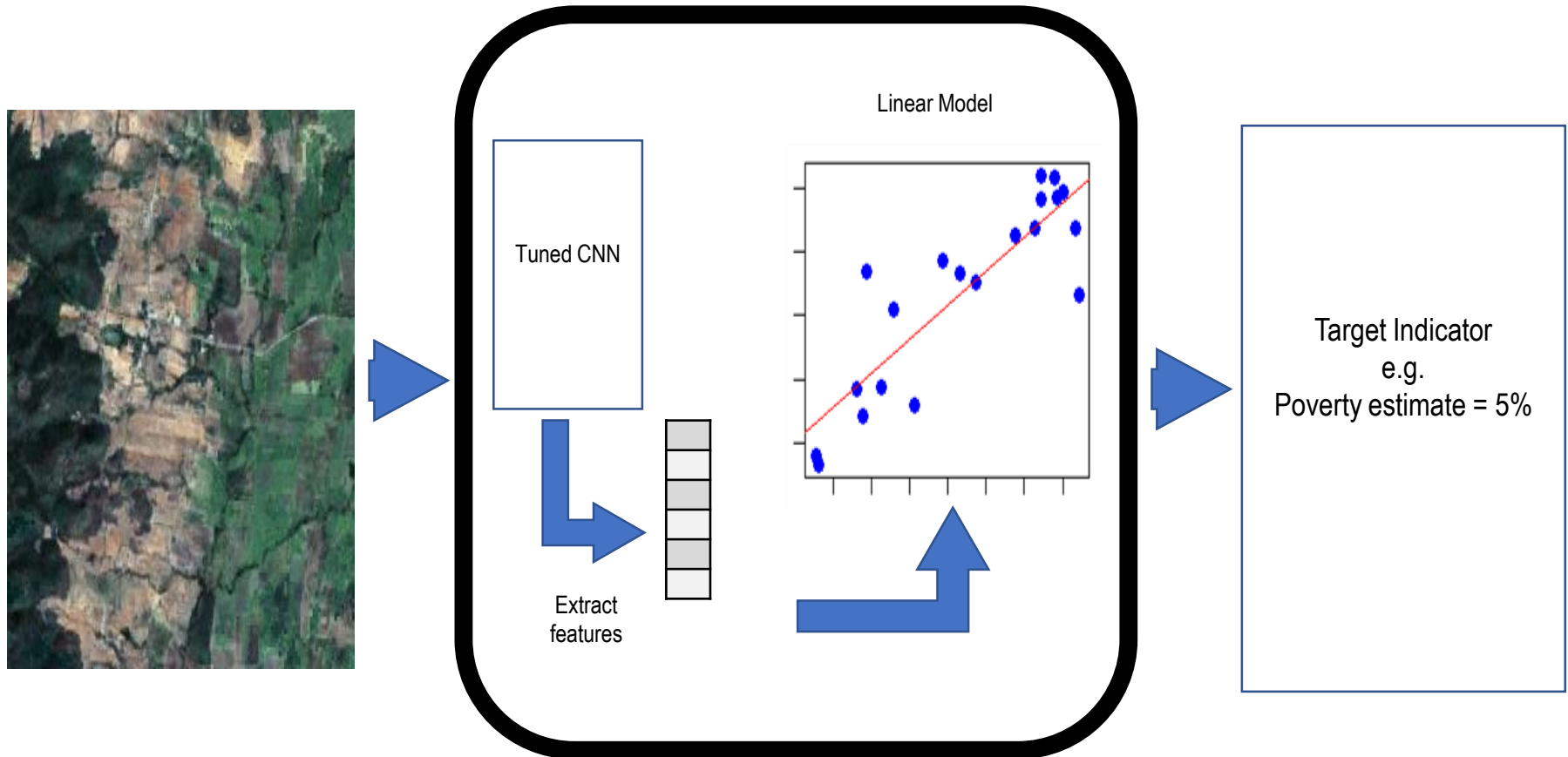


Implementing Information and Communication Technology Tools to Improve Data Collection and Management of National Surveys in Support of the SDGs





Data for Development: Use of Geospatial Data and Satellite Imagery for Granular Estimation of Population and Poverty





Data for Development Phase 2

- This TA directly supports the SDGs through technological innovation and capacity building across five domains:
 - (i) development of a customizable software to digitize sampling frames for administrative and survey data,
 - (ii) enhanced compilation of national accounts and improved statistical infrastructure,
 - (iii) quality labor statistics using modern standards and methods,
 - (iv) data dissemination, and
 - (v) knowledge sharing on technological innovations in statistics.



As international development organizations extend technical assistance to national statistical assistance, countries must also invest on strengthening their capacity.

- Major surveys in some countries conducted only if donor funds are available in many countries
 - donor dependence 70-80% budget in some countries
- Poor coverage and quality of administrative reporting systems
 - both economic and social increasing the dependence on surveys
- For disaggregated data, surveys alone may not sufficient
 - administrative data such as from civil registration and administrative registries need strengthening for long term sustainability



As part of the international statistical community, how do we help each other in capitalizing on the advances in information technology?

Conduct feasibility and case studies

Share best practices on incorporating technological advances into national statistical systems

Explore opportunities to collaborate and pool resources



Thank you.

Email: amartinezjr@adb.org