

Tantangan Pengembangan Statistik Statistik pembangun Knowledge

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kresnayana yahya, pengembangan statistik,
19 September 2013



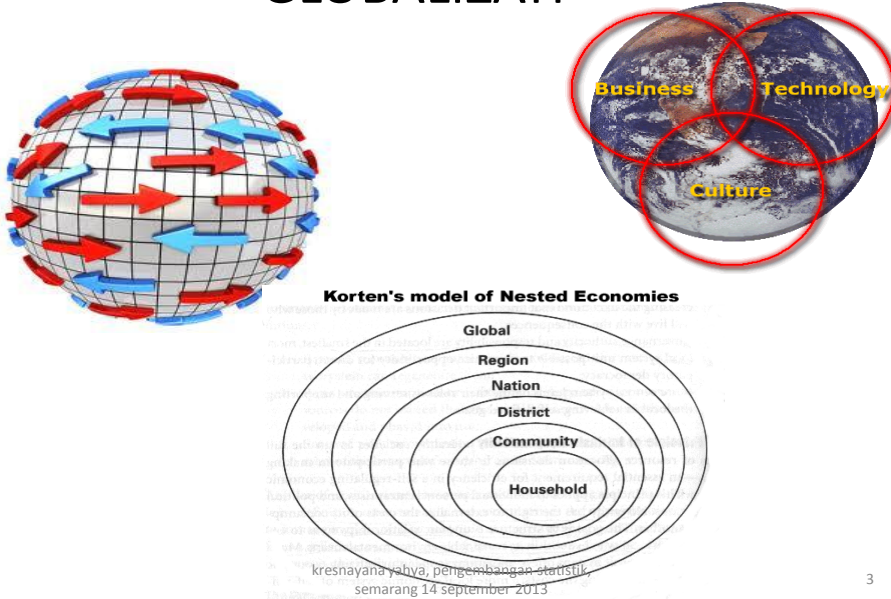
STATISTIKA PEMANDU KEHIDUPAN Kresnayana Yahya, M. Sc



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2

GLOBALIZATION



3

Perkembangan pemanfaatan Statistik

- Tidak ada bagian kehidupan yang tidak membutuhkan Informasi Statistik
- Setiap process membutuhkan data statistik secara terancang dengan kepastian tujuan dan memperhitungkan sumber variasinya
- Makin berkembangnya IT, Internet maka pelipatgandaan manfaat statistik menjadi makin luar biasa
- Kepekaan dan kemampuan berpikir statistik menjadi andalan dalam kehidupan

4

Pengembangan statistik

- Makin mengarah pada process pengukuran setiap perubahan social, ekonomi, technology
- Ketertinggalan utama karena tidak banyak kemajuan dan Inovasi dalam menemukan Indikator baru dalam memandu perubahan
- Ada Small area Statistik, ada Big Data, ada Data Mining ada Spatial Statistik; ada Black Swan yang dikembangkan dan memberi manfaat

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All encompassing relevance of e-government

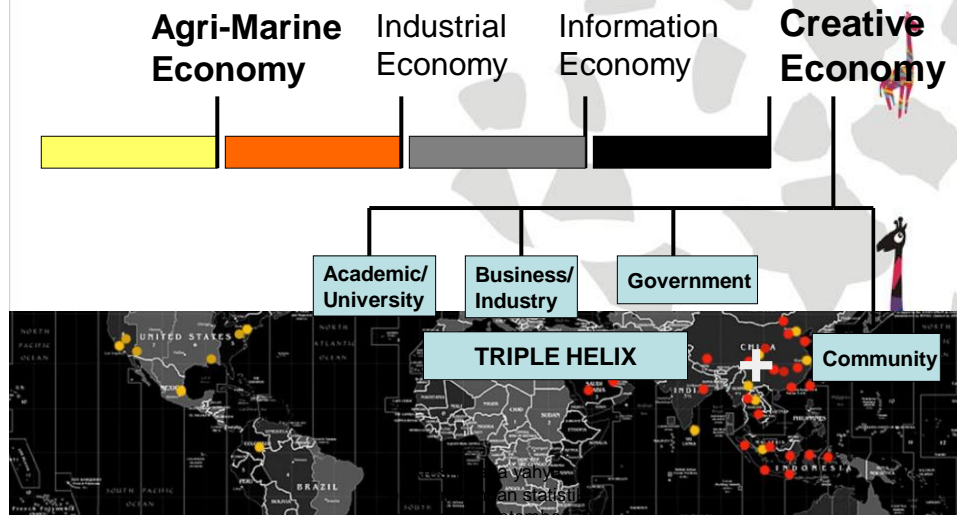
For every life situation ...

... a comprehensive range of offerings

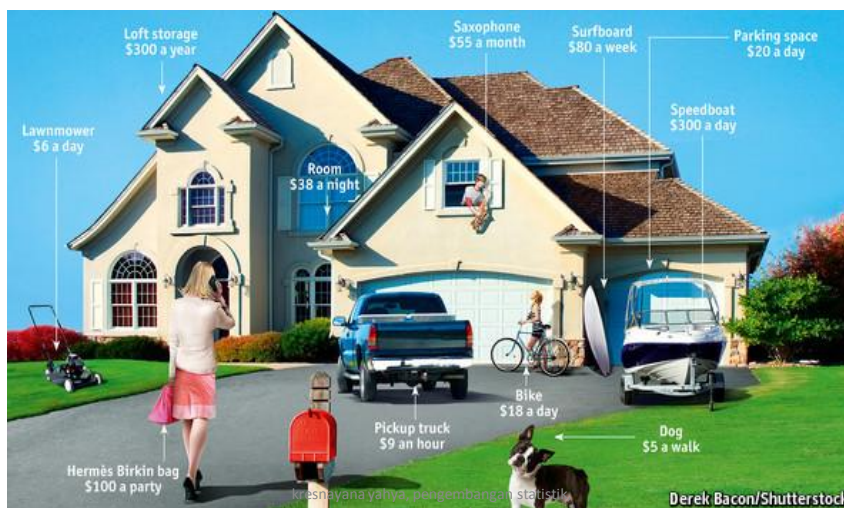
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6

From agriculture economy to the era of creative economy



The Sharing Net Economy



Statistik pemandu kehidupan

Dari masalah kependudukan ,
kesehatan , pendidikan dan seluruh
matarantainya membutuhkan makin
banyak DATA yang akan memandu
KNOWLEDGE

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9

Data, Information and Knowledge

DATA

Points of reality: observations and facts

INFORMATION

Organised data, placed in some meaningful context

KNOWLEDGE

**Information that is transformed into
capabilities for an effective action**

Why Statistic?

“We cannot, with our own eyes and ears, perceive more than a minute sample of human affairs, even in our own country – and a very random sample at that. So we rely on statistics in order to build and maintain our own model of the world. *The data that are available mould our perceptions.*”

Dudley Seers, 1983

Why Statistics?

“...as long as we are unable to put our arguments into figures, the voice of our science, although occasionally it may help to dispel gross errors, will never be heard by practical men. They are, by instinct, econometricians all of them, in their distrust of anything not amenable to exact proof.”

-J.A. Shumpeter 1933

“The common sense of econometrics.” *Econometrica* 1:5-12

Statistics is the basis for -

- Understanding the state/trends of human development
 - Developing policies and evaluating policy impacts
 - Informing public debates, raising awareness, generating political will and pressure for action
- => **The MDGs** – long term demand; international mobilization

What is Statistics?

- Statistics is a science in my opinion, and it is no more a branch of mathematics than are physics, chemistry, and economics; for if its methods fail the test of experience – not the test of logic – they are discarded.

- John Tukey, 1962

Why Statistics is Not Mathematics and Why We Should Care About Teaching Statistics

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15

Statistical Thinking vs. Mathematical Thinking

- Science entered the nineteenth century with a firm philosophical vision that has been called the clockwork universe... By the end of the nineteenth century, the errors had mounted instead of diminishing... By the end of the twentieth century, almost all of science had shifted to using statistical models... Popular culture has failed to keep up with the scientific revolution.

- David Salsburg "The Lady Tasting Tea"
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Statistical Thinking vs. Mathematical Thinking

- Statistics has its own tools and ways of thinking, and statisticians are quite insistent that those of us who teach mathematics realize that statistics is not mathematics, nor is it even a branch of mathematics. In fact, statistics is a separate discipline with its own unique ways of thinking and its own tools for approaching problems.

- J. Michael Shaughnessy, "Research on Students' Understanding of Some Big Concepts in Statistics" (2006)

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Statistical Thinking vs. Mathematical Thinking

- Mathematical thinking is deductive: the inference of particular instances by reference to a general law or principle.

"General to specific"

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Statistical Thinking vs. Mathematical Thinking

- Statistical thinking is inductive: the inference of general laws from particular instances.

“Specific to general”

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19

Expert Commentary

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“There are *lies*, *damned lies*, and *statistics*.”

~ Benjamin Disraeli

“*Statistical thinking* will one day be as necessary for efficient citizenship as the ability to read and write.”

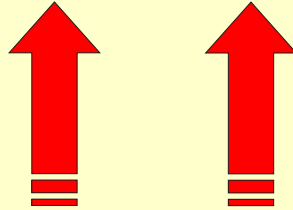
~ Herbert George Wells

1 - 20



Growing Demand for Official Statistics

Development of
official statistics



External Forces

+

Internal Forces



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21

Statistical Thinking and Our Lives

There are a lot of people in the public who are intimidated by numbers and I think a lot of them become reporters and editors." – Tom Barrett, political reporter, The Vancouver Sun

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Statistical Thinking is about ...

- The need for data
- The importance of data production
- The omnipresence of variability
- The measuring and modeling of variability
- Interpreting results in context

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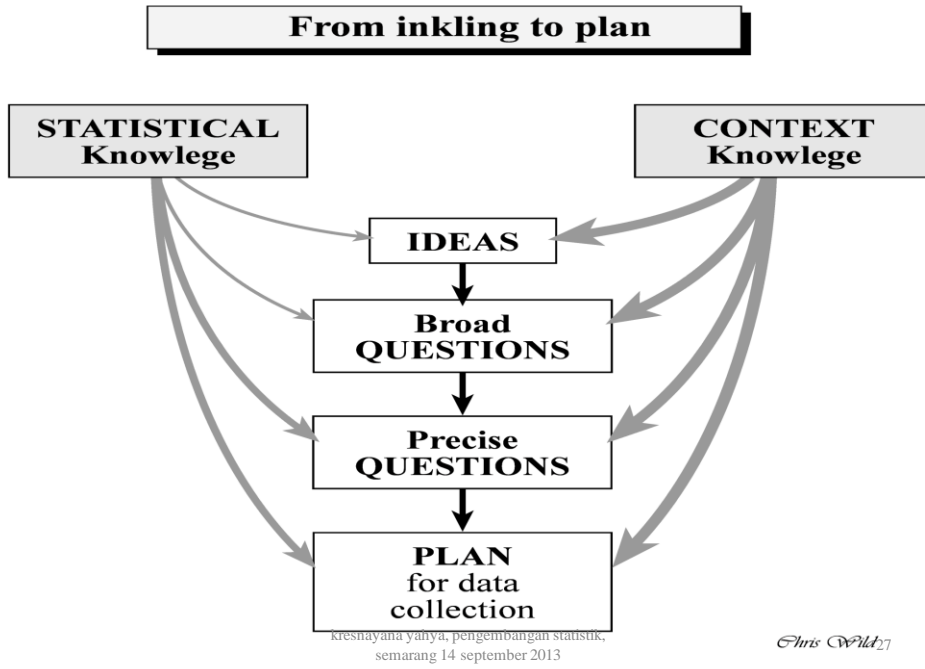
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Measurement is the Essence of Science

- “When you can, count.”
 - Francis Galton (1822-1911) First cousin to Charles Darwin.
- “When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind ...” Lord Kelvin, 1883.

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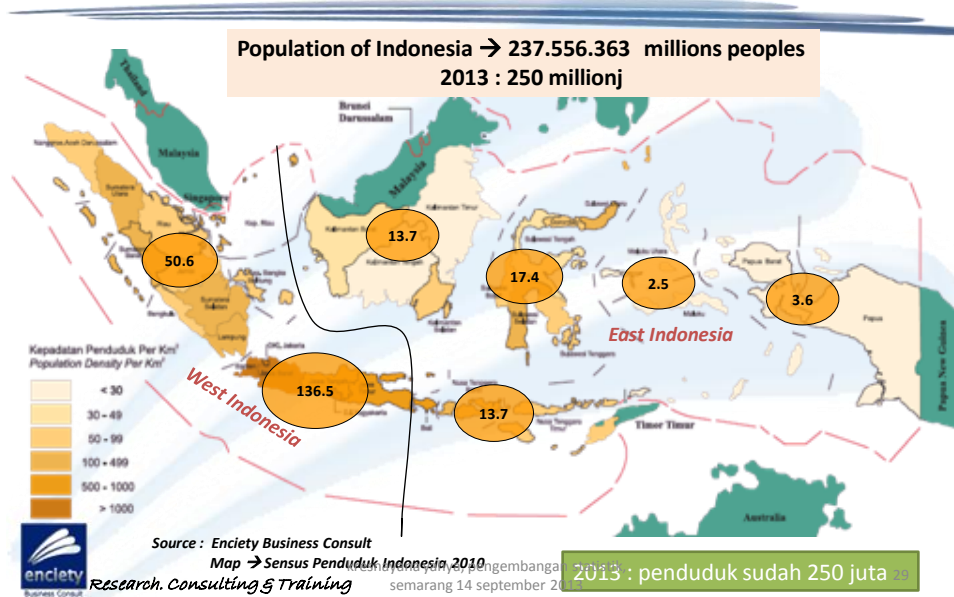
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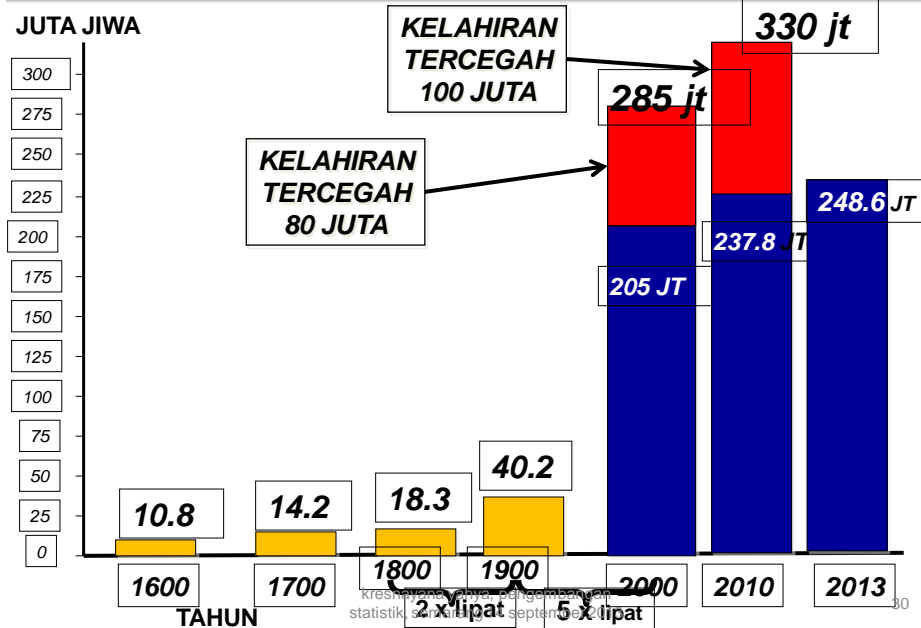
Belajar statistics



Population by Islands (millions) 2010



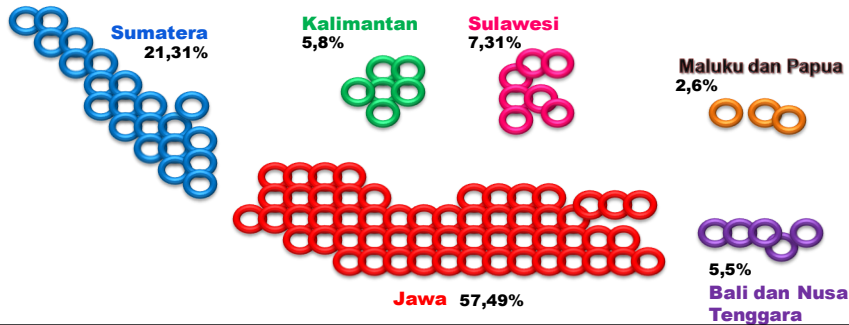
PERKEMBANGAN PENDUDUK INDONESIA (JUTA)



ISU MOBILITAS PENDUDUK

Population distribution

PERSENTASE PERSEBARAN PENDUDUK INDONESIA MENURUT PULAU, TAHUN 2010

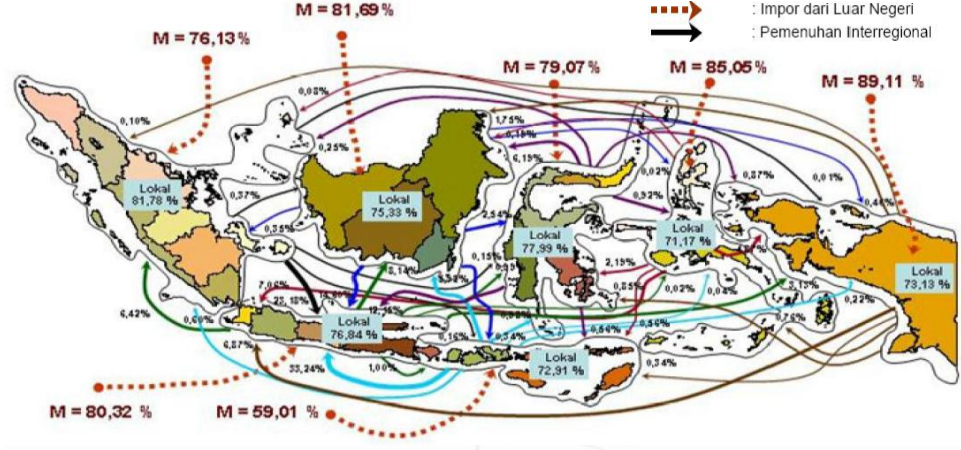


Persebaran penduduk tidak merata
Penduduk terkonsentrasi di kota-kota besar;
Perubahan pola migrasi
a. Dalam 10 tahun terakhir, terjadi pola migrasi di Indonesia (dari pulau Jawa ke luar Jawa);
b. Terjadi migrasi dari *central urban* ke *sub-urban* sehingga area perkotaan semakin melebar.

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Sumber: SP-2010

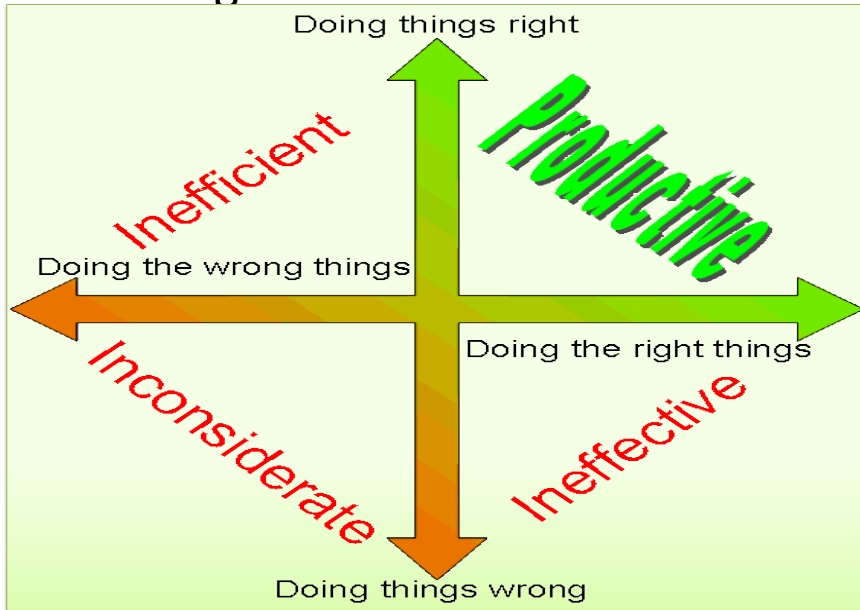
Pola Spasial Pemenuhan Permintaan Antara Lokal, Antar Propinsi dan Impor



Nilai persentase untuk impor dan antar pulau dihitung terhadap total pemenuhan dari lokal
Tingkat ketebalan garis menunjukkan persentase besaran pemenuhan input dari luar lokal

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Tantangan Produktivitas Indonesia



Logistic Cost Indonesia comparison

Negara	% Biaya Logistik terhadap PDB	% Biaya Logistik terhadap Biaya Penjualan
Amerika Serikat	9,9%	9,4%
Jepang	10,6%	5,9%
Korea Selatan	16,3%	12,5%
Indonesia	27% *)	

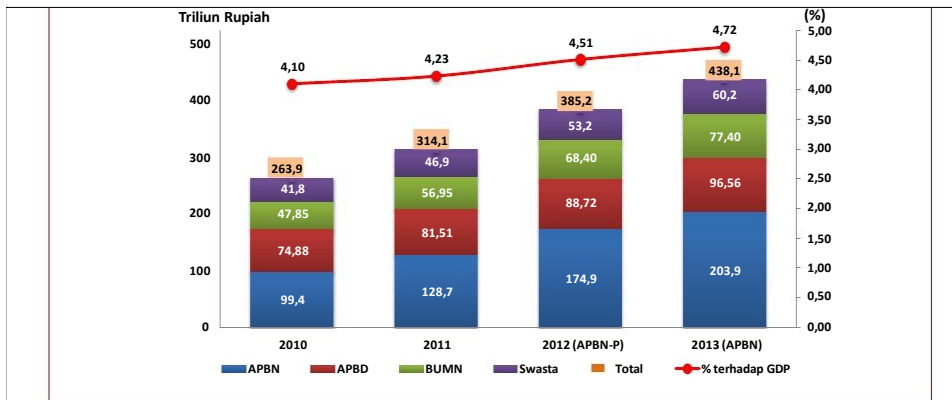
PEMBIAYAAN INFRASTRUKTUR MELALUI APBN 2005 - 2013



Prosentase APBN sektor infrastruktur terhadap GDP semakin meningkat dari tahun ke tahun dari 0,94% (2005) menjadi 2,30% (2013).

Sumber : Kementerian Keuangan

INVESTASI PEMBIAYAAN PEMBANGUNAN INFRASTRUKTUR, 2010-2013 (APBN, APBD, BUMN, dan Swasta)



Meskipun investasi infrastruktur mengalami peningkatan dari tahun ke tahun (4-5% dari GDP), namun belum mencapai tingkat investasi sebelum krisis moneter 1997 (sekitar 7% GDP). Sementara itu, Investasi infrastruktur di China dan India mencapai 8-10% dari GDP.

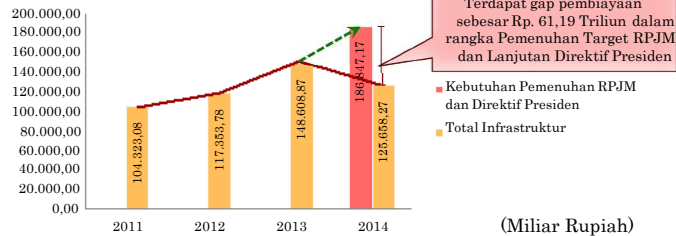
Sumber: DJA, DJPK, Kemen. Keuangan, KPS-Bappenas, BPS (diolah)

PAGU INDIKATIF TAHUN 2014 BIDANG INFRASTRUKTUR

Dalam rangka pemenuhan target RPJMN 2010-2014, dan melanjutkan pelaksanaan Kegiatan Prioritas Direktif Presiden, diperlukan kebutuhan pendanaan Infrastruktur sebesar Rp. 186,84 Triliun.

Prioritas pendanaan diarahkan pada pencapaian target:

- Penyelesaian infrastruktur yang menunjang penguatan konektivitas nasional (transportasi dan ICT).
- Pembangunan waduk, embung dan situ dalam menunjang pencapaian target Surplus Beras 10 Juta Ton.
- Pembangunan infrastruktur dasar dalam mendukung pencapaian target MDG's

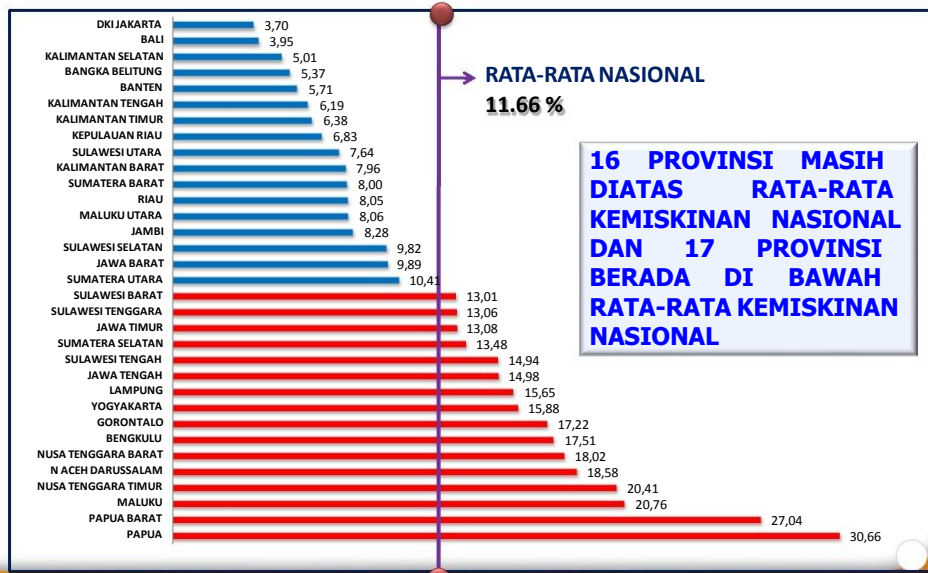


Terdapat gap pembiayaan sebesar Rp. 61,19 Triliun dalam rangka Pemenuhan Target RPJM dan Lanjutan Direktif Presiden

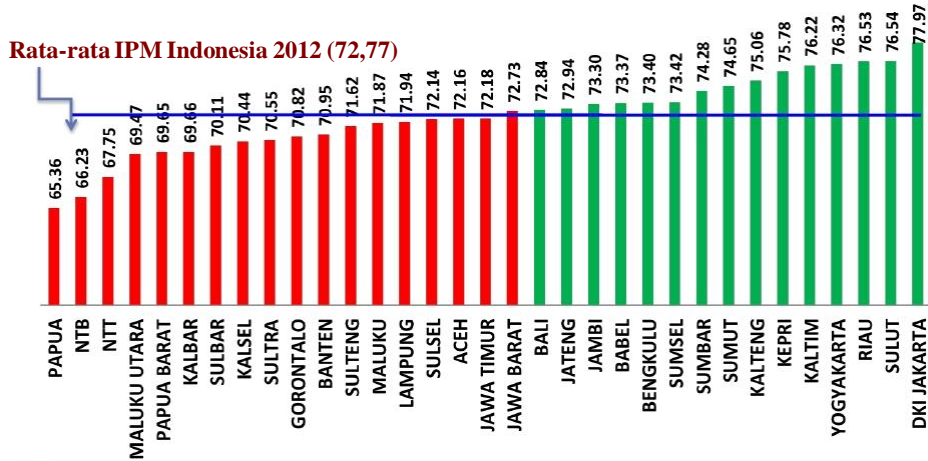
No	Kementerian/ Lembaga	2011	2012	2013	Indikatif 2014
1	Pekerjaan Umum	57.960,70	62.563,06	77.978,02	66.998,83
2	Perhubungan	22.111,72	28.117,71	36.679,25	33.558,80
3	Perumahan Rakyat	2.759,50	4.604,10	5.168,11	4.242,38
4	ESDM *	15.298,59	15.804,72	18.803,89	13.500,68
5	Kominfo	3.450,27	3.245,90	3.807,37	3.573,63
6	BPLS	1.286,00	1.606,90	2.256,87	845,13
7	Basamas	1.163,80	1.111,79	1.666,38	1.438,79
8	BPWS	292,50	299,60	399,59	381,58
9	LPP RRI	-	-	985,18	782,96
10	LPP TVRI	-	-	864,21	764,98
*) prioritas tinggi					
Total Infrastruktur		104.323,08	117.353,78	148.608,87	125.658,27

Slide - 13

DISPARITAS KEMISKINAN MASIH TINGGI - SEPTEMBER 2012

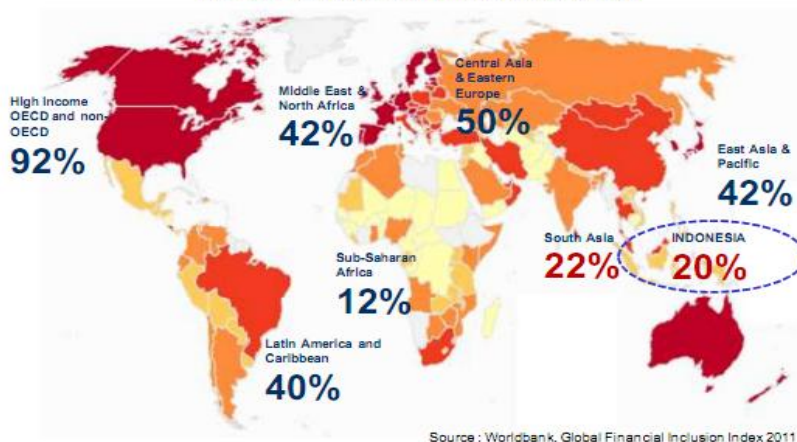


INDEKS PEMBANGUNAN MANUSIA TIAP PROVINSI TAHUN 2012



15 provinsi di atas rata-rata nasional dan 18 provinsi dibawah rata-rata nasional

Gambar 2. Financial Inclusion di Dunia

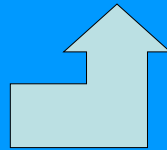


Tantangan meningkatkan akses financial masyarakat akan meningkatkan Produktivitas dan mengurangi semua penyimpangan penggunaan dana dan transaksi

The Value Equation

$$\text{Value} = \frac{\text{Quality} + \text{Timeliness} + \text{Flexibility}}{\text{price}}$$

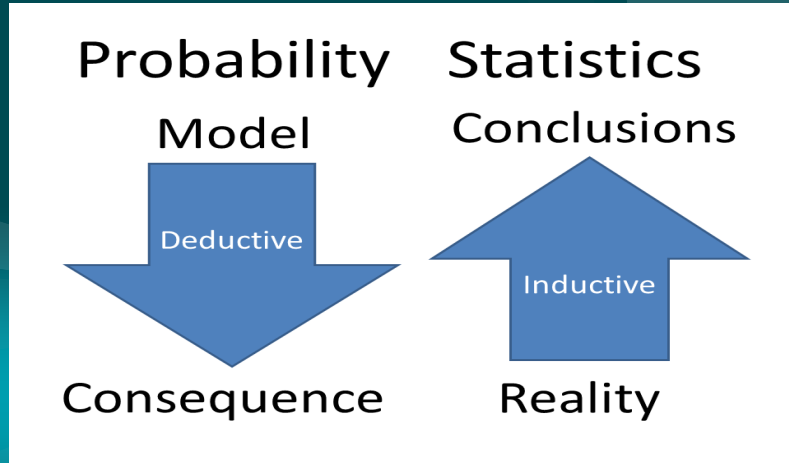
Productivity



How are
productivity
and price
related?

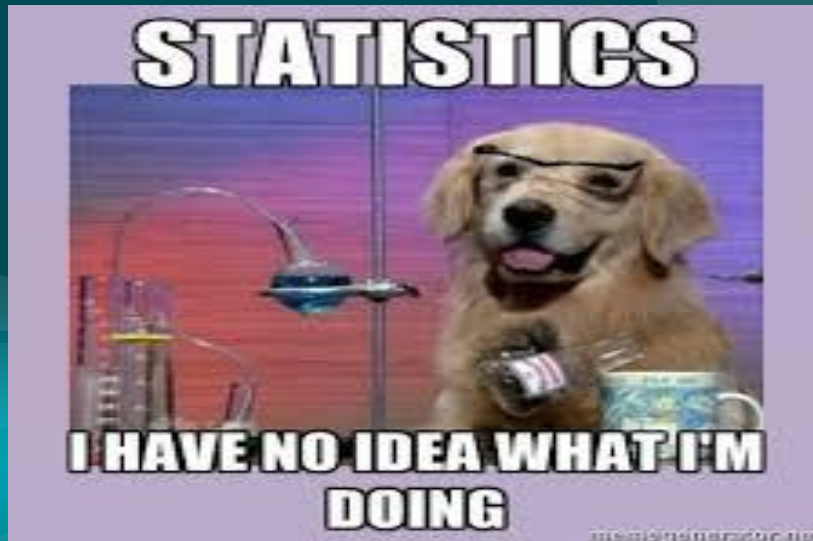
Quality Leadership





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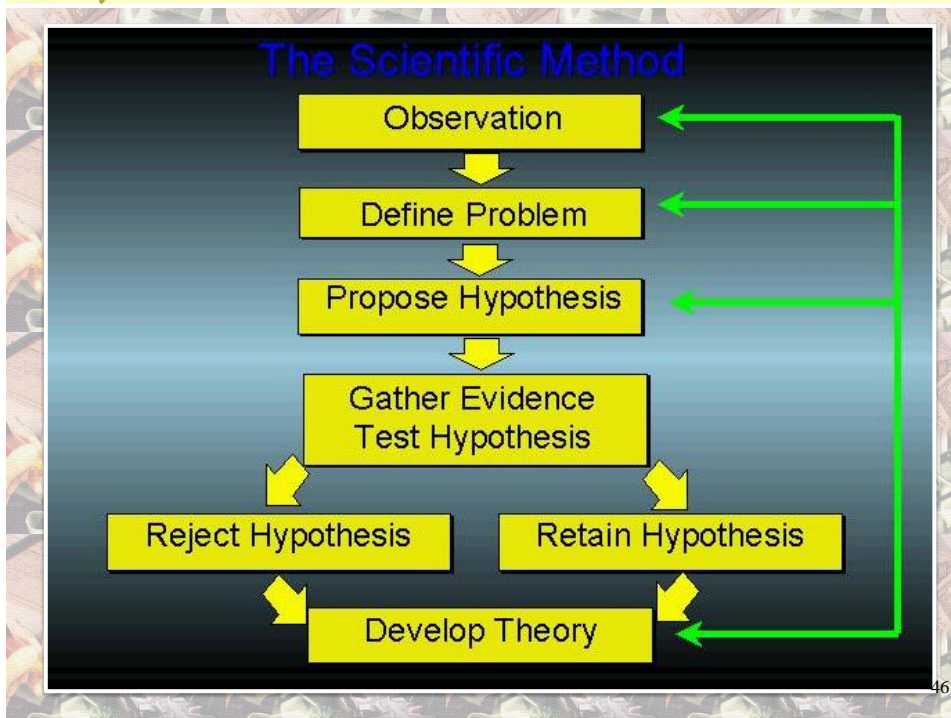
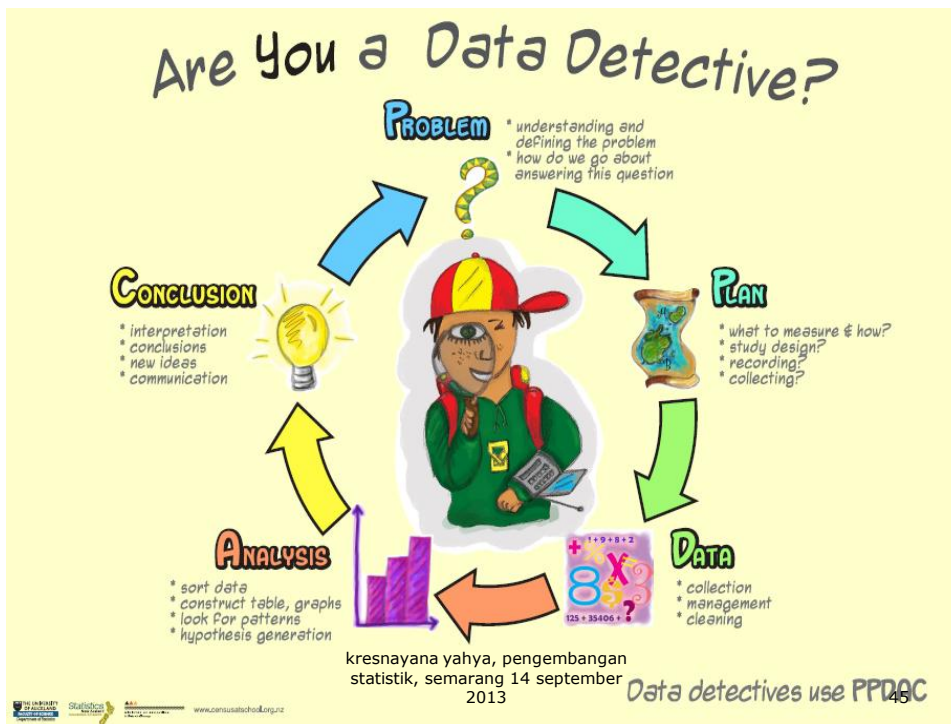
43



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44





Statistics in Industry

- Statistical thinking is a philosophy of learning and action based on the following fundamental principles:
 - All work is a system of interconnected processes.
 - Variation exists in all processes.
 - Understanding and reducing variation are keys to success.

- The American Society for Quality

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47

The Engineering Method and Statistical Thinking

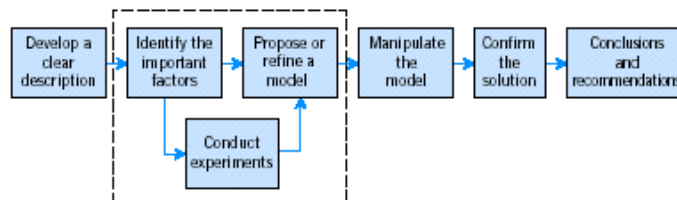
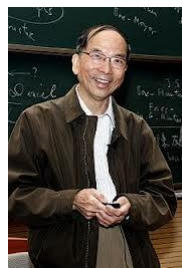
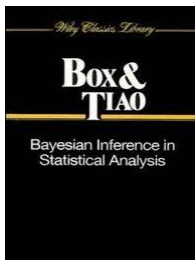
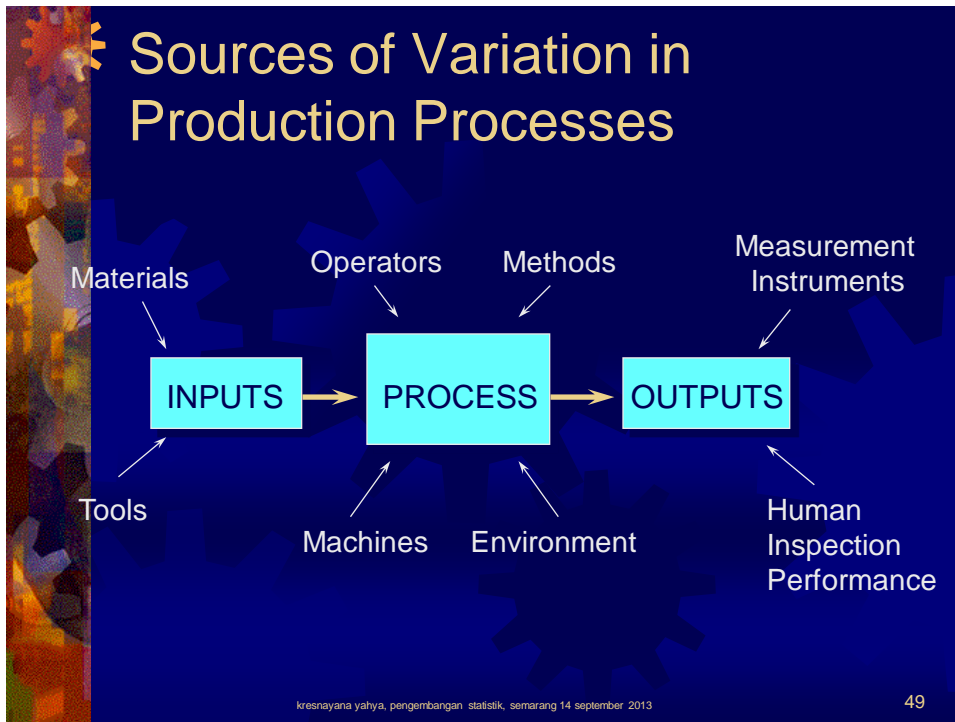


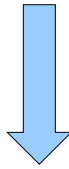
Figure 1-1 The engineering method.



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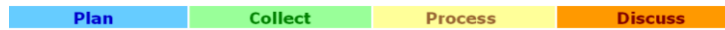
Sampel random



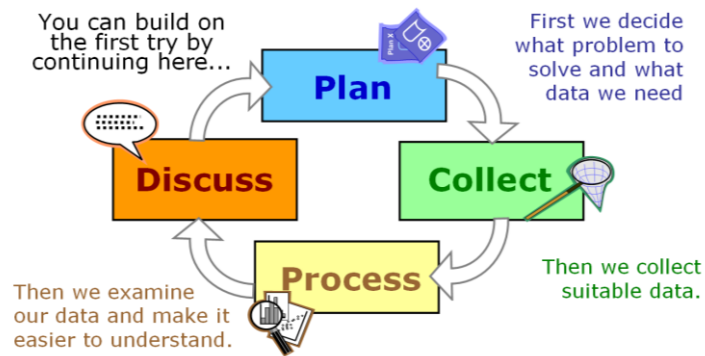
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1.52

CASE STUDIES

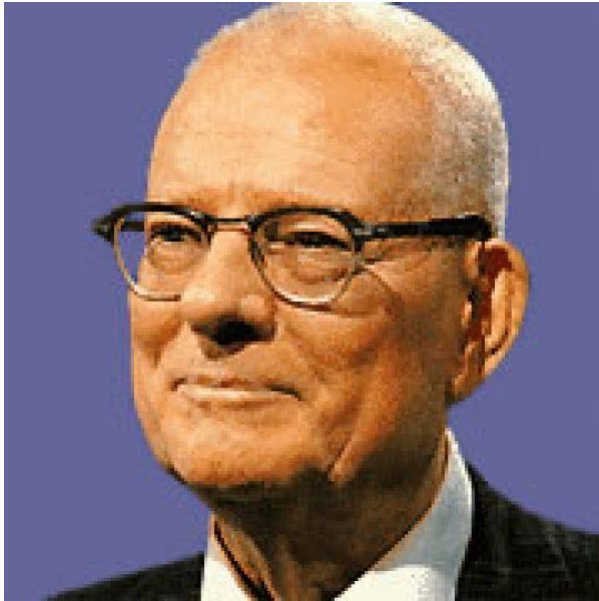


The Problem Solving Approach



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Process Mengukur

- Statistik adalah kegiatan MENGUKUR/ MEASUREMENT :
- MANAKALA ADA VARIASI DAN KETIDAK PASTIAN.
- Perkembangan, pertumbuhan, perubahan, akibat(dari suatu sebab), menemukan Gejala, mengenali Struktur – struktur hubungan

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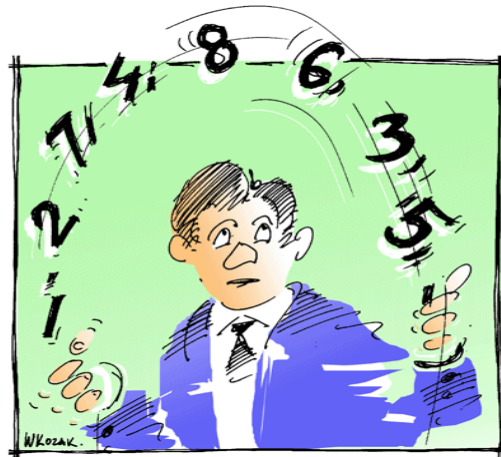
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Mengukur Process

- Design dari setiap aktivitas yang dapat diukur:
- Kualitas – Kepuasan – keberhasilan – Tingkat capaian – perkembangan – Penjualan
- Perubahan Alam : cuaca- curah hujan – kelembaban – intensitas matahari, kecepatan angin, ketersediaan air , Oksigen, pencemaran

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57

● ● ● | Mental Resources

- Technology
- Information
- Knowledge
- Creativity

“Unlike material resources, information & knowledge are not lost when you give them away.” Harlan Cleveland

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58

● ● ● | Internet as Mental Organization

- Internet multiplies human capabilities & extends social organization 1000-fold
 - Global social networking
 - Global access to information
 - Global free communication
 - Global transactions
- The potential impact on productivity of resources & quality of life is incalculable

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59

• • • | Internet as Mental Organization

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59

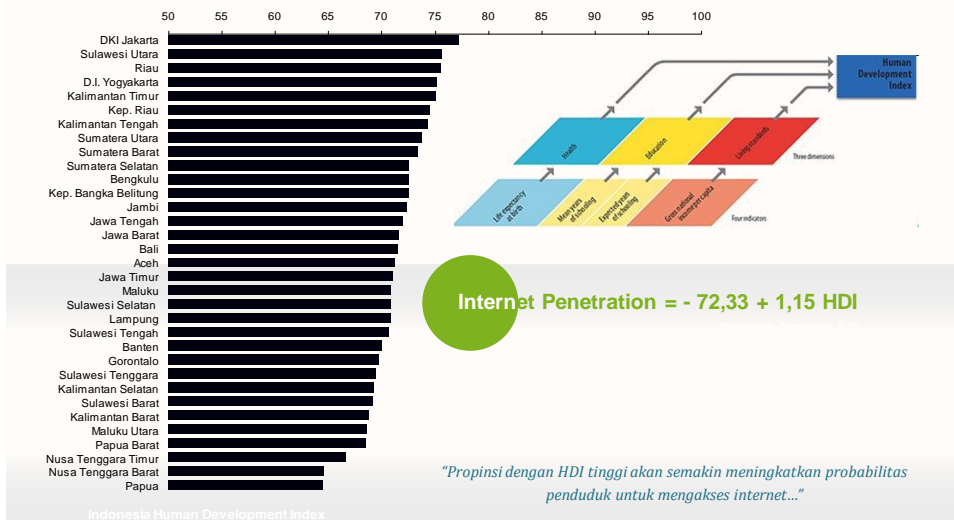
• • • | Psychological Resources

- Rising expectations
- Skills & capacities
- Culture
- Values
- Trust

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60

Indonesia Internet Penetration



New Growth Strategy 2010 – 2020



Indonesia today ...

16th-largest economy in the world

45 million members of the consuming class

53% of the population in cities producing 74% of GDP

55 million skilled workers in the Indonesian economy

\$0.5 trillion market opportunity in consumer services, agriculture and fisheries, resources, and education

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... and in 2030

7th-largest economy in the world

135 million members of the consuming class

71% of the population in cities producing 86% of GDP

113 million skilled workers needed

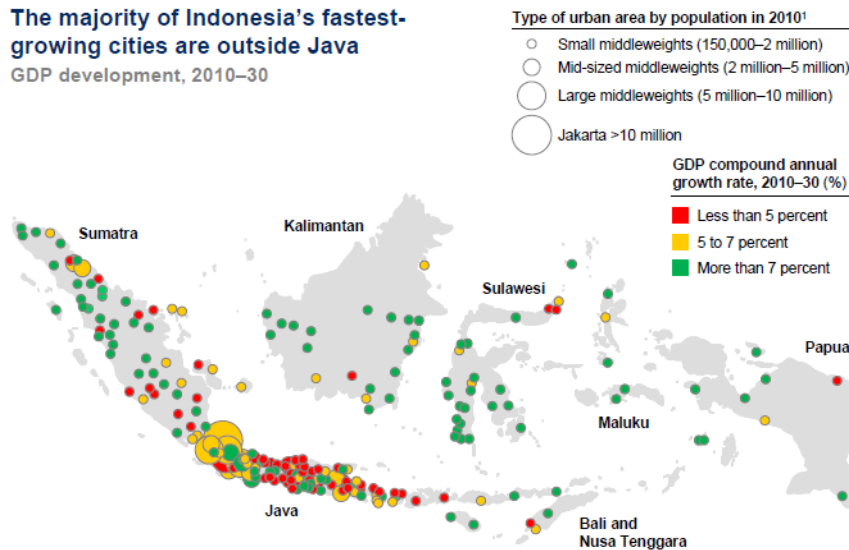
\$1.8 trillion market opportunity in consumer services, agriculture and fisheries, resources, and education

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64

Exhibit 10

The majority of Indonesia's fastest-growing cities are outside Java
GDP development, 2010–30

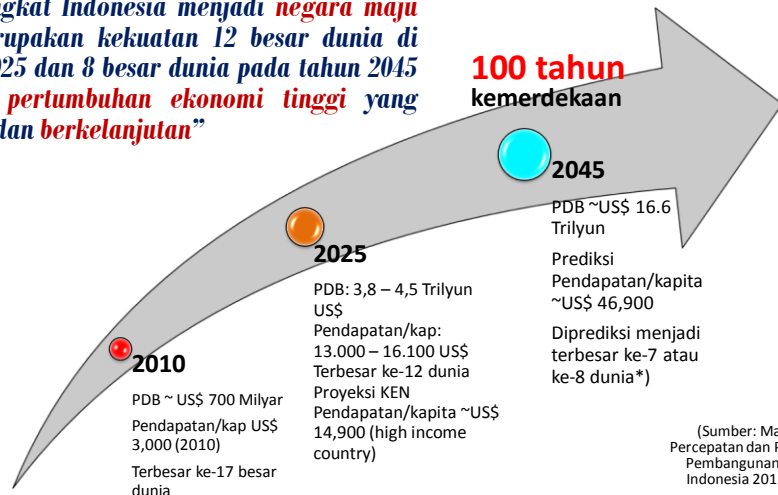


1 Urban areas are aggregated areas consisting of cities (kota) and districts (kabupaten) rather than specific city jurisdictions.
SOURCE: 2010 Population Census, Indonesia's Central Bureau of Statistics; McKinsey Global Institute analysis

VISI INDONESIA 2025

“Mengangkat Indonesia menjadi *negara maju* dan merupakan kekuatan 12 besar dunia di tahun 2025 dan 8 besar dunia pada tahun 2045 melalui *pertumbuhan ekonomi tinggi yang inklusif dan berkelanjutan*”

100 tahun
kemerdekaan



Pencapaian Visi 2025 dan 2045 memerlukan penyiapan generasi yang mampu berperan aktif dalam kegiatan pembangunan. Edukasi, *kresnawana yahya*

Chinese Proverbs

***“If you are planning for a year, plant rice.
If you are planning for a decade, plant trees.
If you are planning for a lifetime, educate
people”***

“Hunger is a great teacher”

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67

Thank You



Action

“c” change in classified

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68



END OF SLIDES
THANK YOU



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69



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70