



Pengantar: Pentingnya Sistem Pertanian Berkelanjutan

*Sistem Pertanian Berkelanjutan
bahan kuliah ke 1*



SISTEM PERTANIAN BERKELANJUTAN (FPU612401)

Semester Ganjil 2024/2025 PS IKL

2 sks (2-0)

Kuliah – Sabtu 08.00 - 09.40??

UTS – Sept 2025

UAS – Jadwal UAS Desember 2025

- 1. Siti Hudaidah (dosen PIK) – Penanggung Jawab**
- 2. Supriatin (dosen TNH)**
- 3. Agustiansyah (dosen AGR)**
- 4. Indra Gumay Yudha (dosen PIK)**
- 5. Muhammad Irfan Affandi & Ani Suryani (dosen AGB)**



Tujuan Perkuliahan

Mahasiswa dapat:

- (1) memahami dampak penerapan pertanian konvensional (tidak berkelanjutan),**
- (2) mengerti prinsip dan konsep Pertanian Berkelanjutan di berbagai ekosistem tropika,**
- (3) memahami pengelolaan pertanian berkelanjutan dan mampu menerapkannya di masyarakat, serta**
- (4) mampu menganalisis sosial ekonomi pertanian berkelanjutan.**



TUJUAN PEMBANGUNAN BERKELANJUTAN

1 MENGHAPUS
KEMISKINAN



SPB

2 MENGAKHIRI
KELAPARAN



SPB

3 KESEHATAN
YANG BAIK DAN
KESEJAHTERAAN



SPB

4 PENDIDIKAN
BERMUTU



SPB

5 KESETARAAN
GENDER



SPB

6 AKSES AIR BERSIH
DAN SANTASI



SPB

7 ENERGI BERSIH
DAN TERJANGKAU



SPB

8 PEKERJAAN LAYAK
DAN PERTUMBUHAN
EKONOMI



SPB

9 INFRASTRUKTUR,
INDUSTRI DAN INOVASI



SPB

10 MENGURANGI
KETIMPANGAN



SPB

11 KOTA DAN KOMUNITAS
YANG BERKELANJUTAN



12 KONSUMSI DAN
PRODUKSI YANG
BERTANGGUNG JAWAB



SPB

13 PENANGANAN
PERUBAHAN
KLIM



SPB

14 MENJAGA EKOSISTEM
LAUT



SPB

15 MENJAGA EKOSISTEM
DARAT



SPB

16 PERDAMAIAN,
KEADILAN, DAN
KELEMBAGAAN YANG KUAT



17 KEMITRAAN UNTUK
MENCAPAI TUJUAN



TUJUAN GLOBAL
Untuk Pembangunan Berkelanjutan

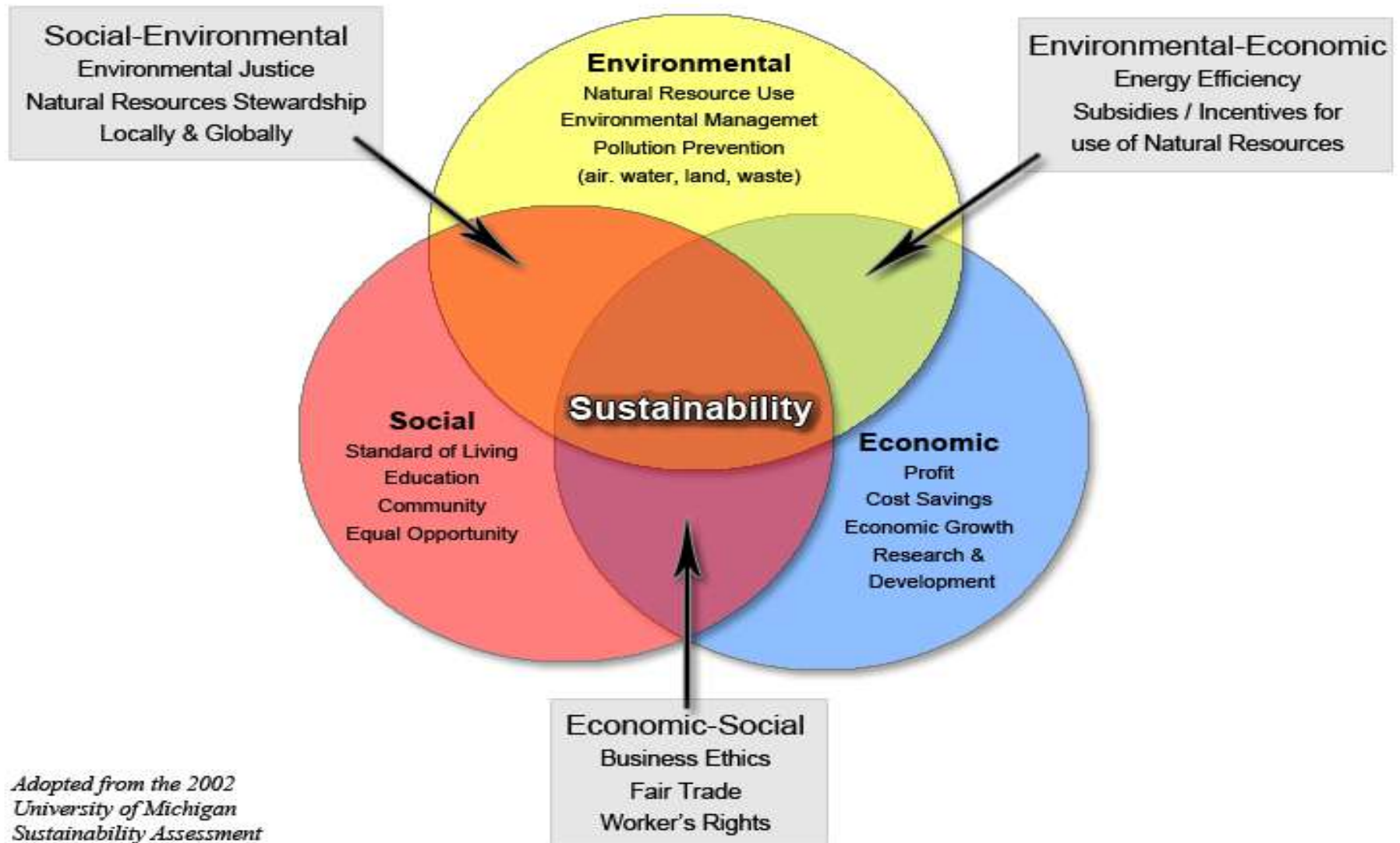
Components and Models of Sustainable Agriculture Management (SAM)

1. Introduction, Nutrient and soil management, soil and water conservation, SOM, Impacts of SAM (dosen TNH)
2. Vegetation (biodiversity, plants, crops, gen resources -- Systems) (dosen AGR)
3. Animal husbandry, fishery, marine, waste management and their uses (dosen PIK)
4. Pest management and environment aspect (dosen PTN)
5. Risk and its Management, Social aspect, social group management, and Economic aspect (dosen AGB)



1. Introduction

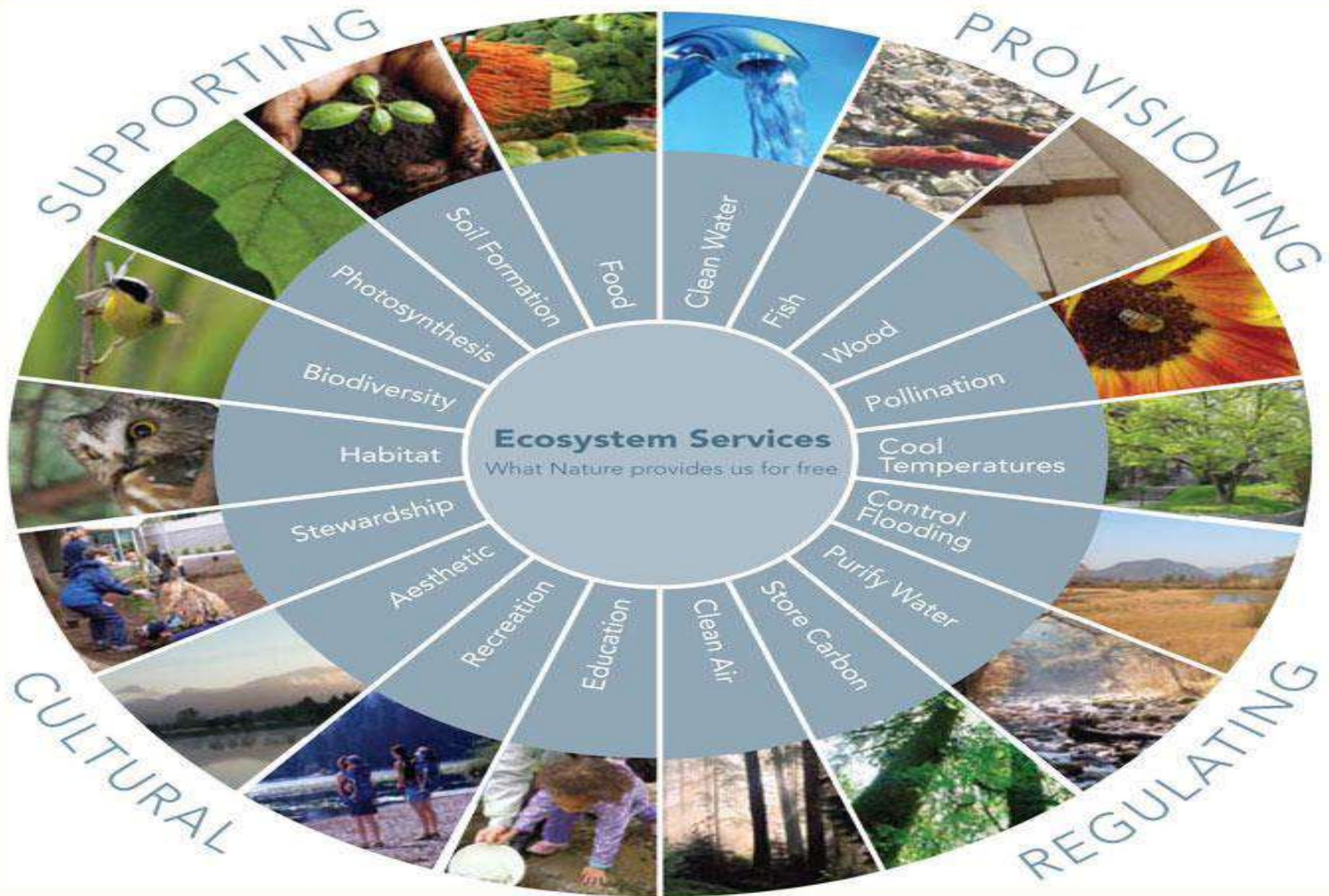
The Three Spheres of Sustainability



Primary Forest & biodiversity



Ecosystem services for human being

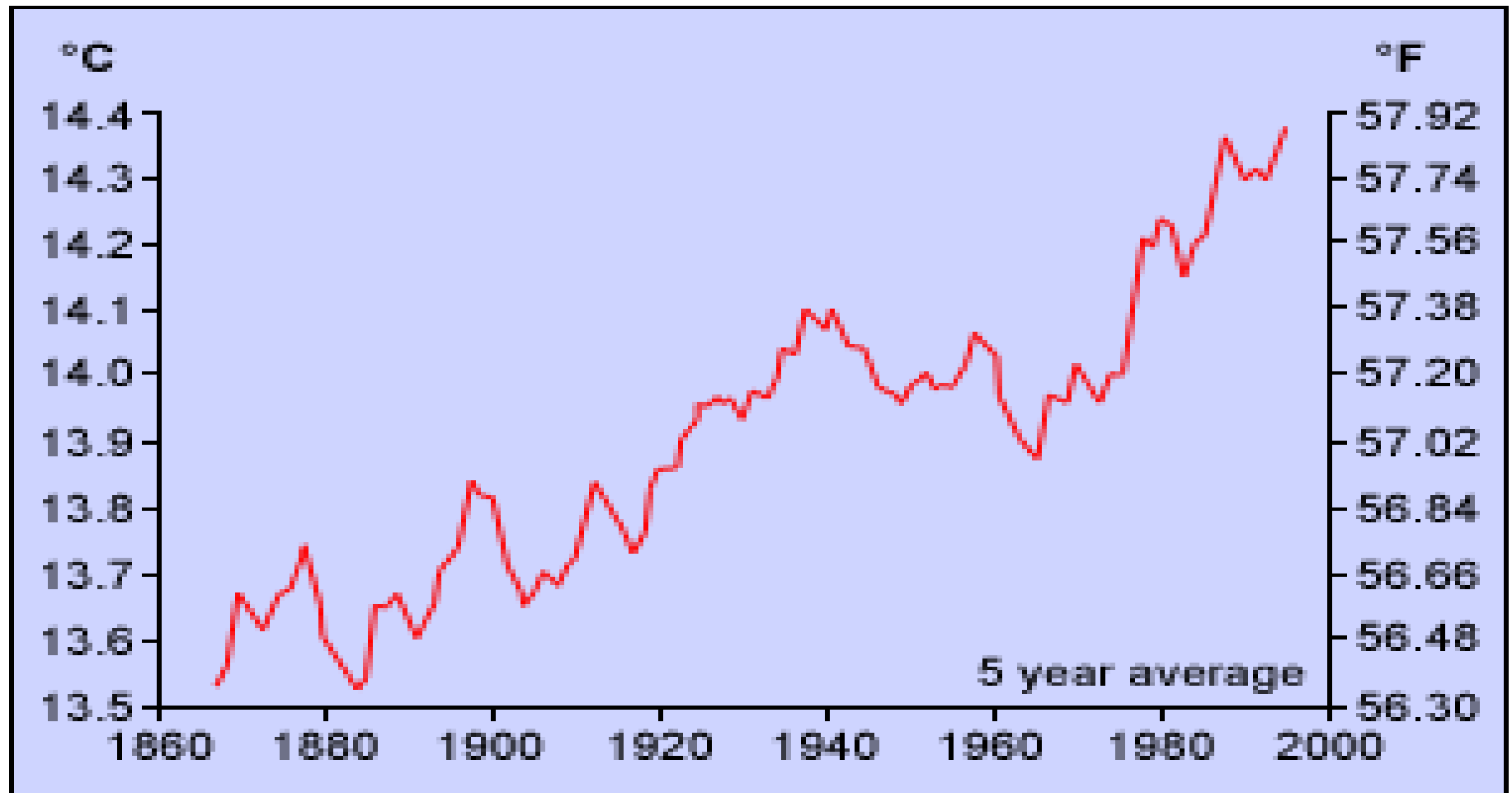


For sustainability, how do we:

- ☐ design healthy **environment**?
- ☐ secure **energy** for a growing population?
- ☐ ensure clean **water**?
- ☐ provide enough **food**?
- ☐ promote **sustainable development**?
- ☐ understand and impact **social and technological transformation**?
- ☐ mitigate and adapt to **climate change**?

Climate change, is it a problem?

Global Average Temperature

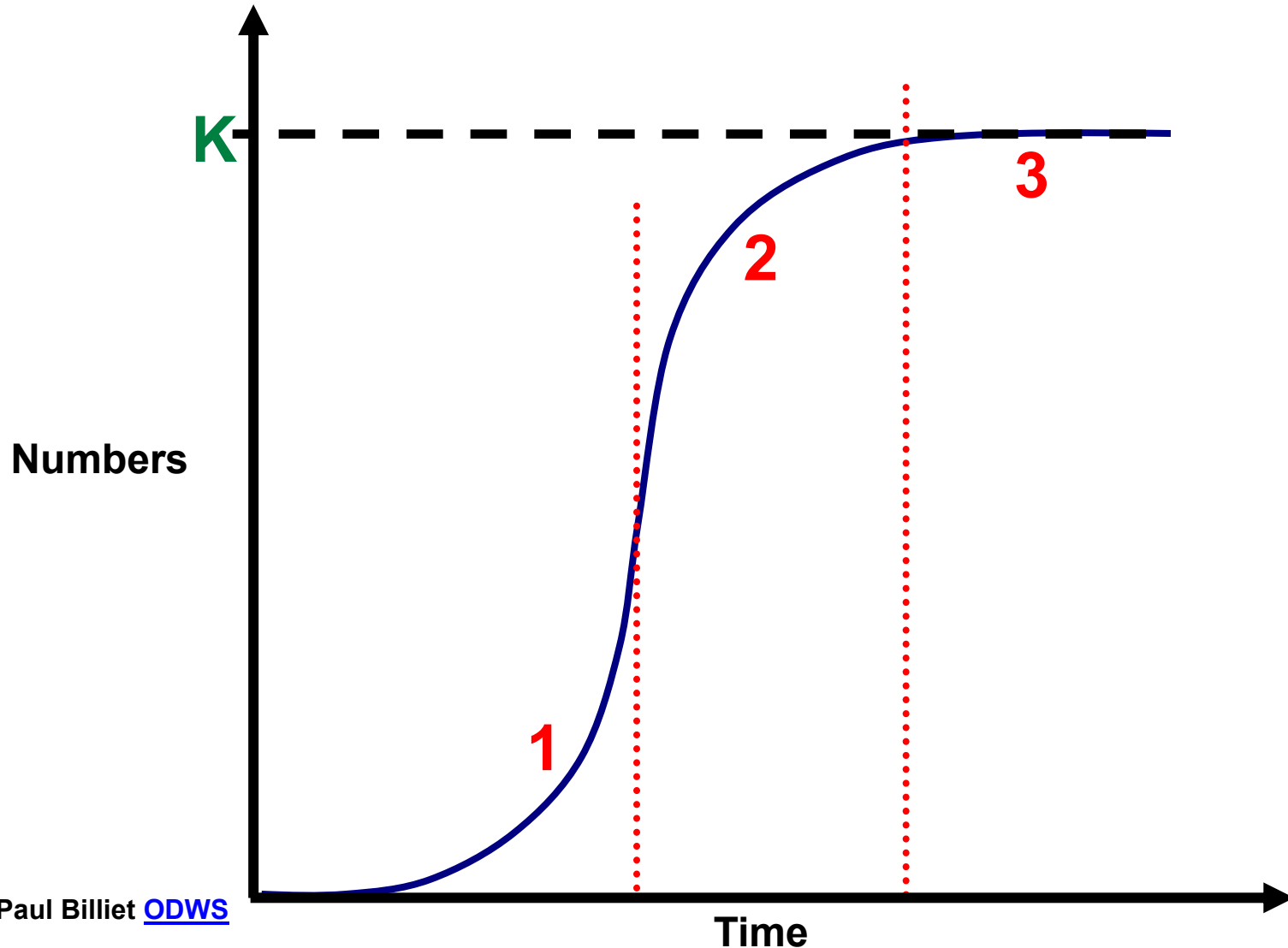


Why do we need Sustainable Agricultural System - SAS? (Problems)

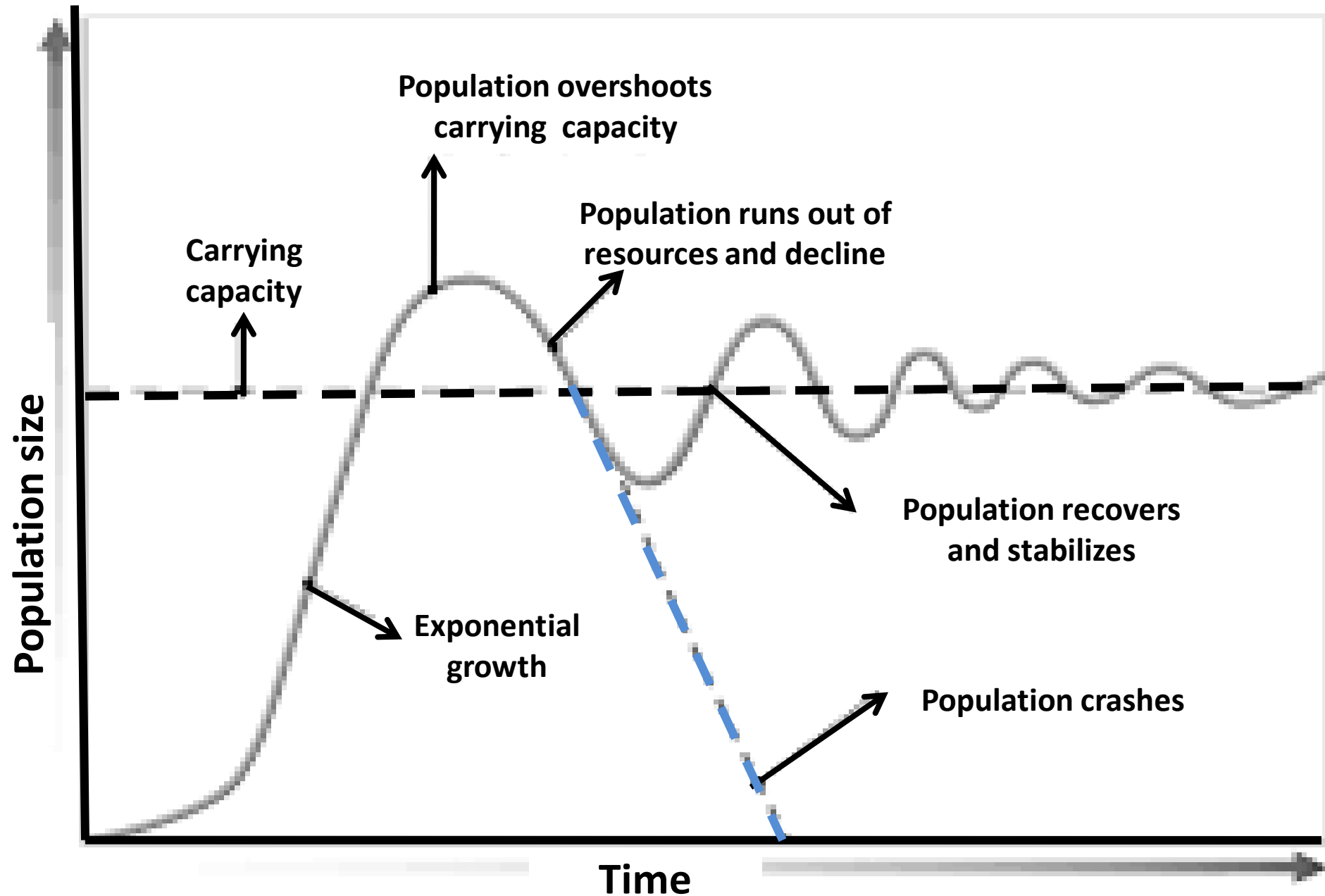
- 1. Population double every 15-30 years: need food, energy source and fiber**
- 2. 80% world population in tropical region: mostly poor**
- 3. Need agriculture, but it induces natural resources degradation**
- 4. Indonesia case: 2/3 of agricultural soil has been degraded**
- 5. Need SAS to feed the people and to sustain the natural resources**



Population growth vs Carrying capacity



How population can approach its carrying capacity?

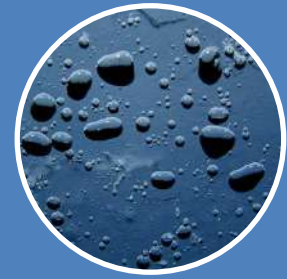




Food
security



Energy
security



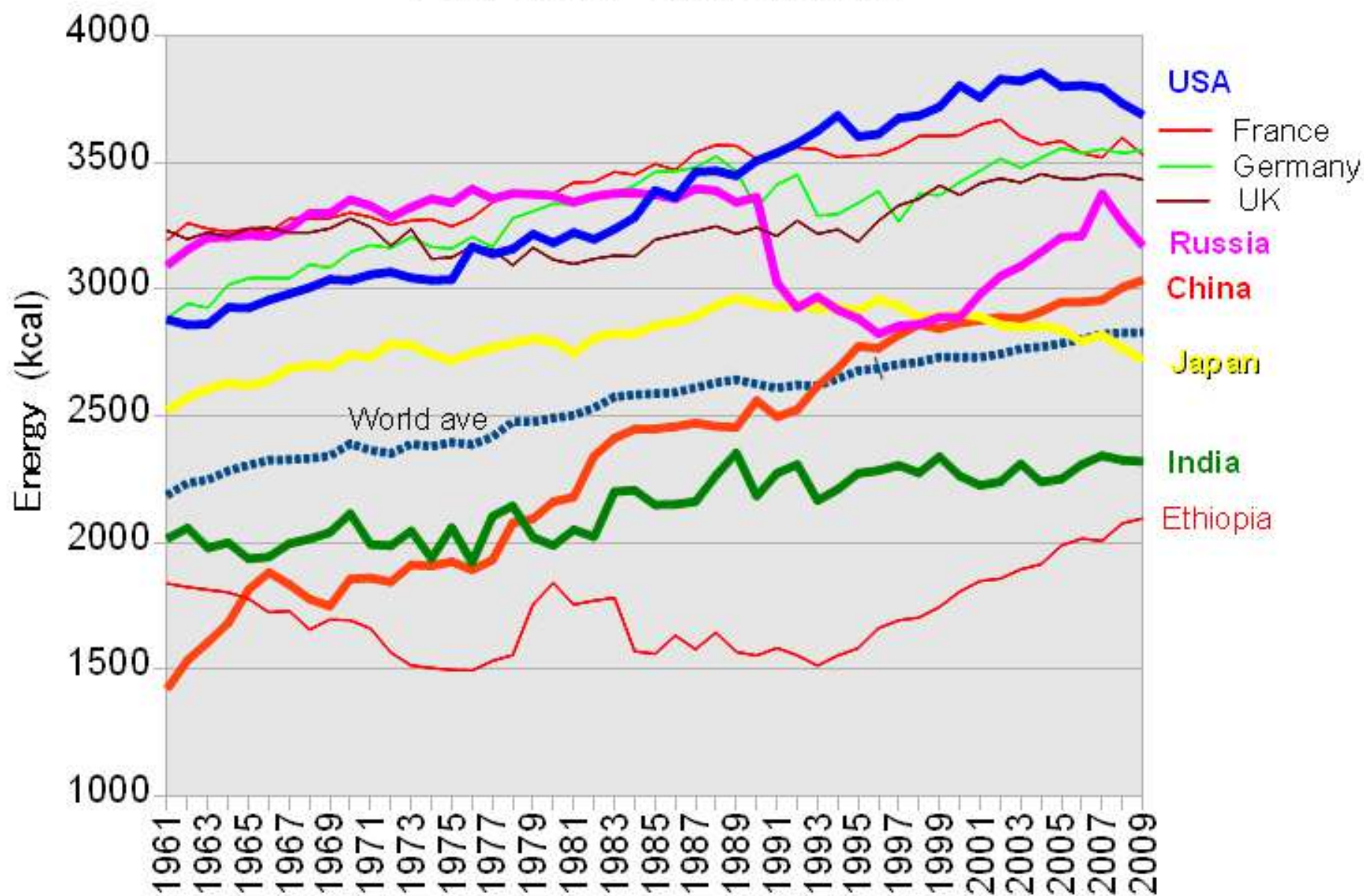
Water
security



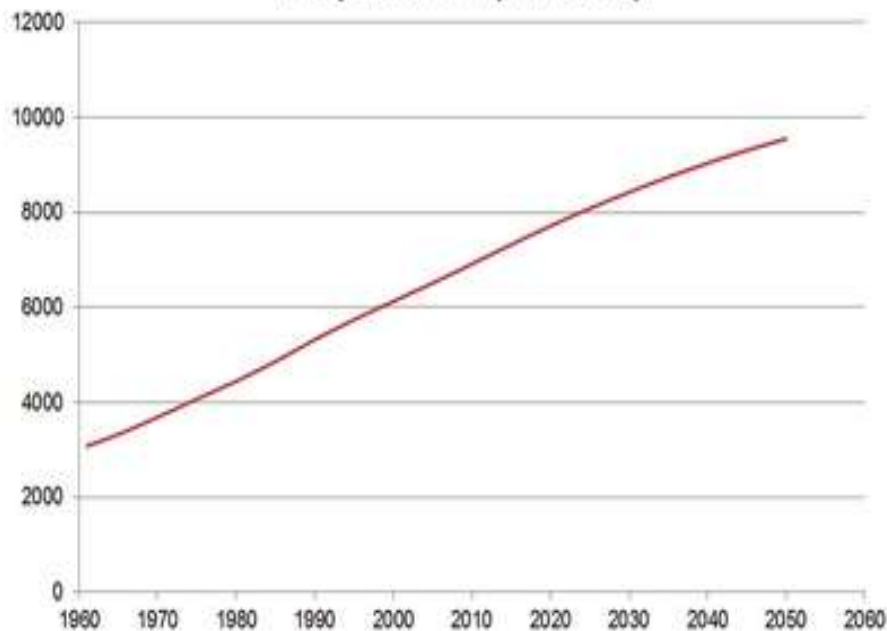
National Development (& Global) Issues

Source: Bappenas, 2008

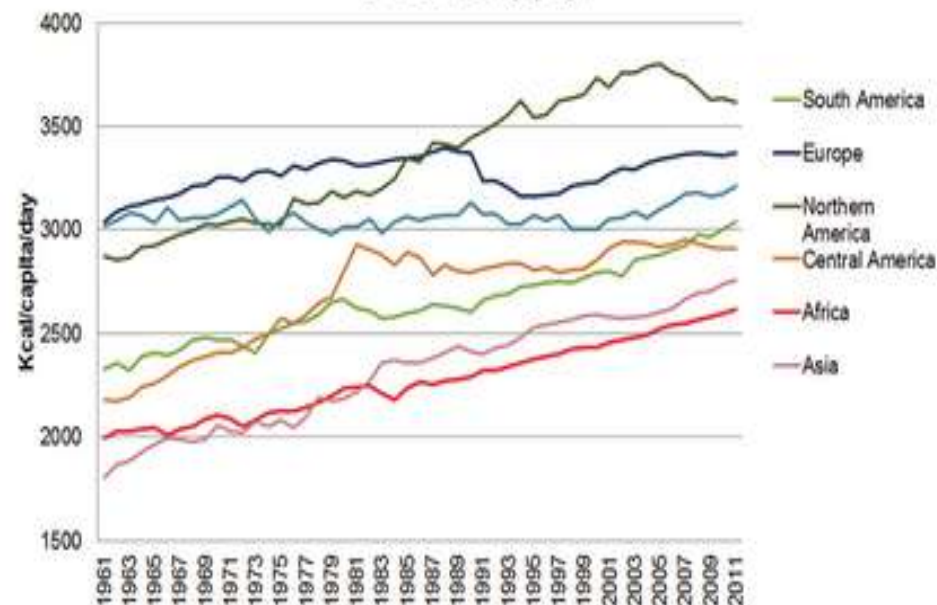
Food Supply (kcal/capita/day)



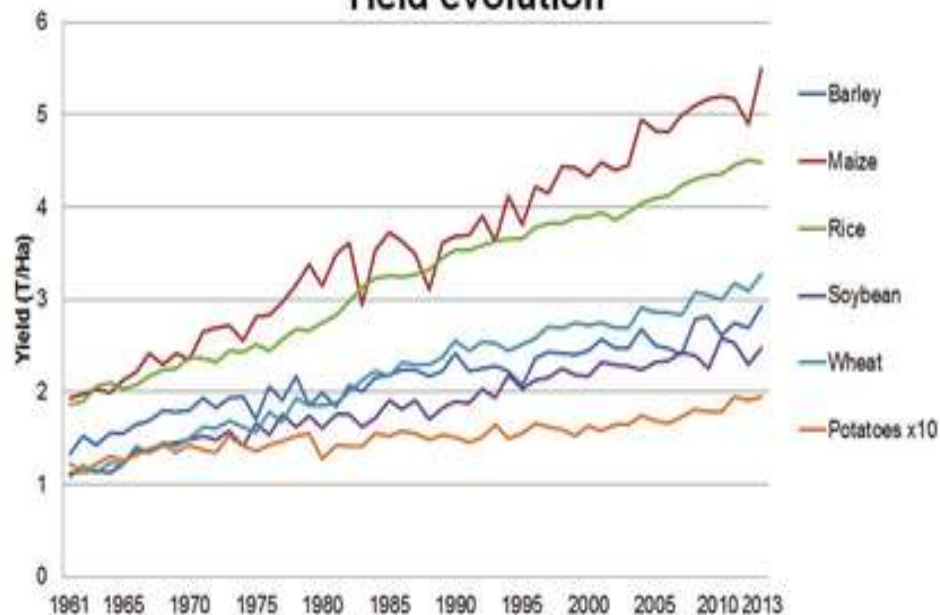
Population (milions)



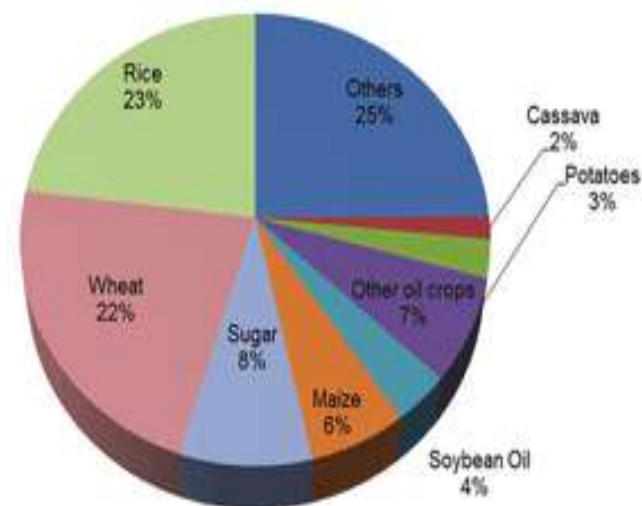
Food supply



Yield evolution



Most important crops for food energy supply





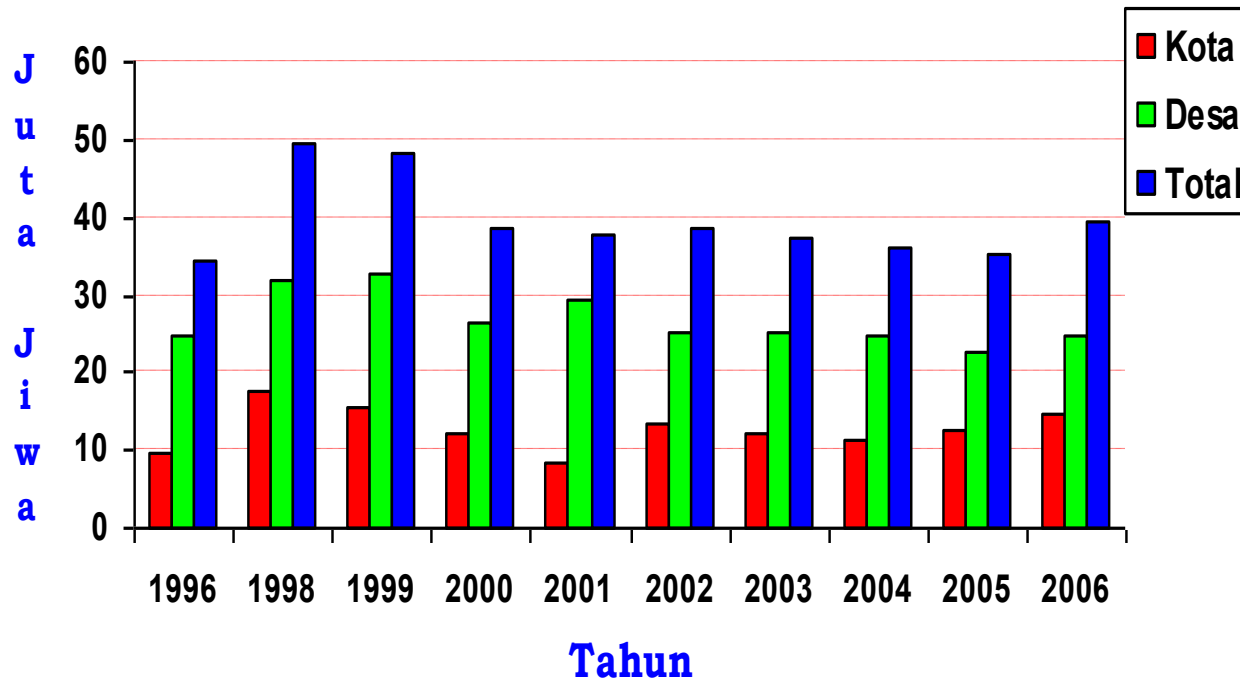
Population, National Rice and Corn Need



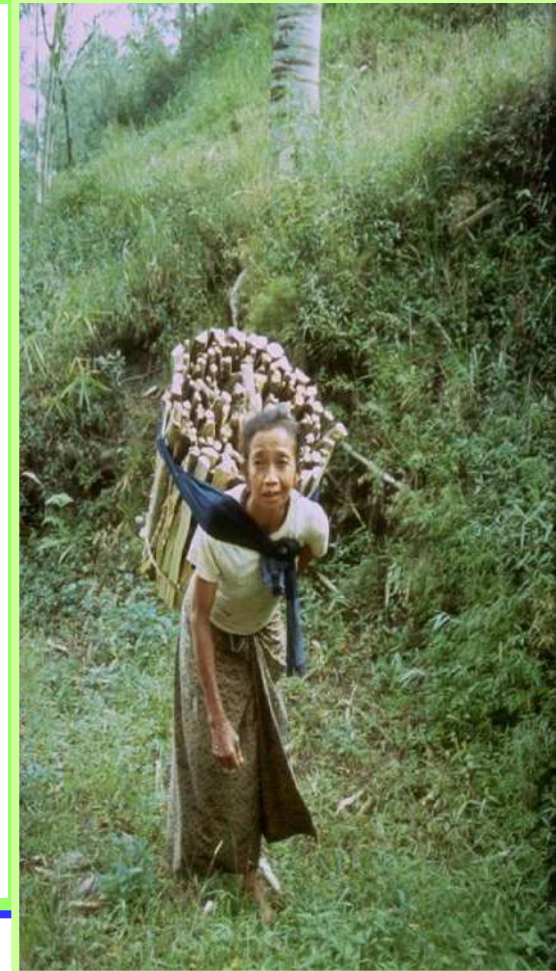
Parameter	2005	2025	Δ
Population (million)	220	296	76
Rice/corn needs per kg/capita/yr	140/38	140/38	0/0
Rice need (million ton)	30.8	41.5	10.7
Corn need (million ton)	8.4	11.3	2.9

In Indonesia more poor people live in rural area (agriculture)

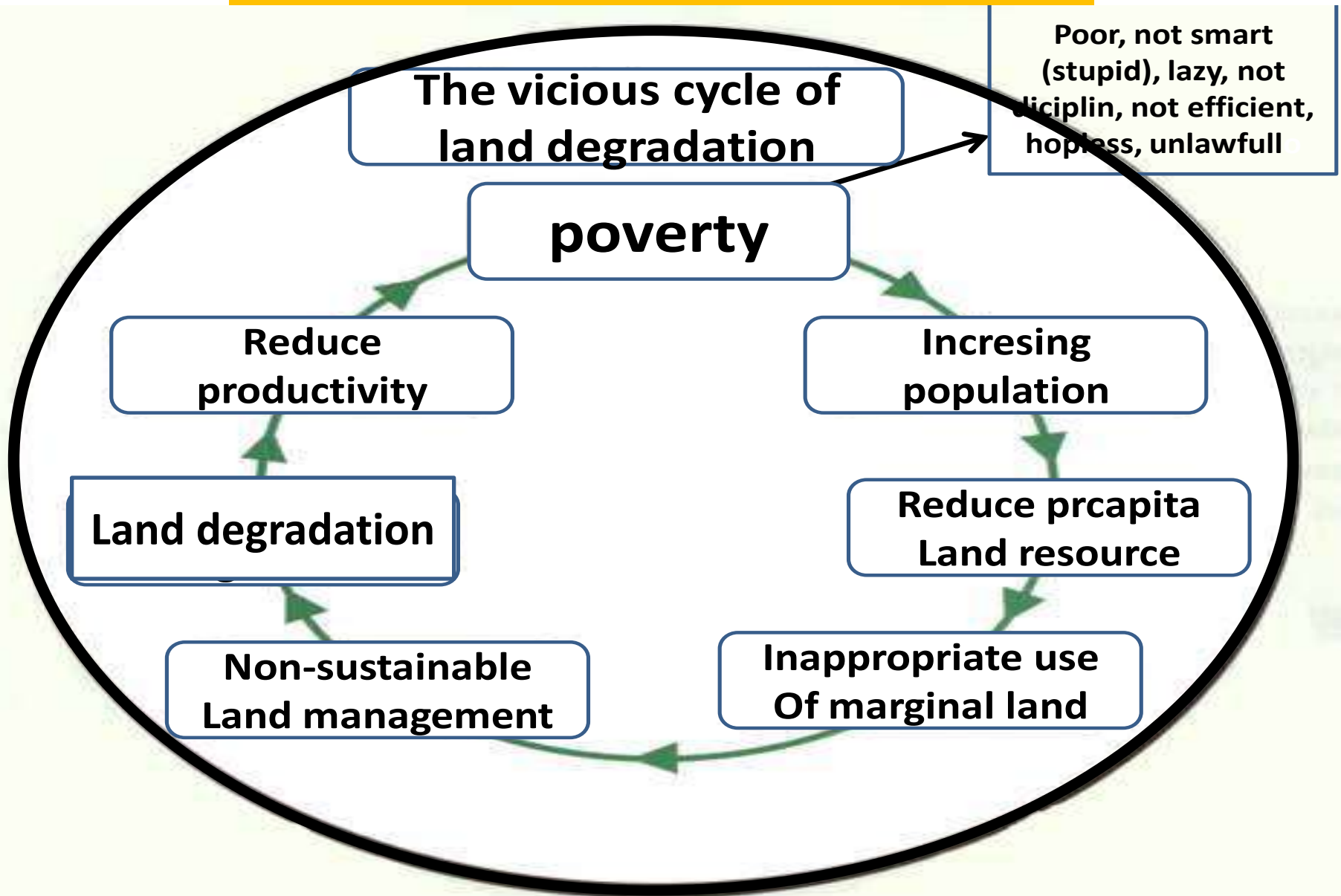
Jumlah Penduduk Miskin (Juta Jiwa)



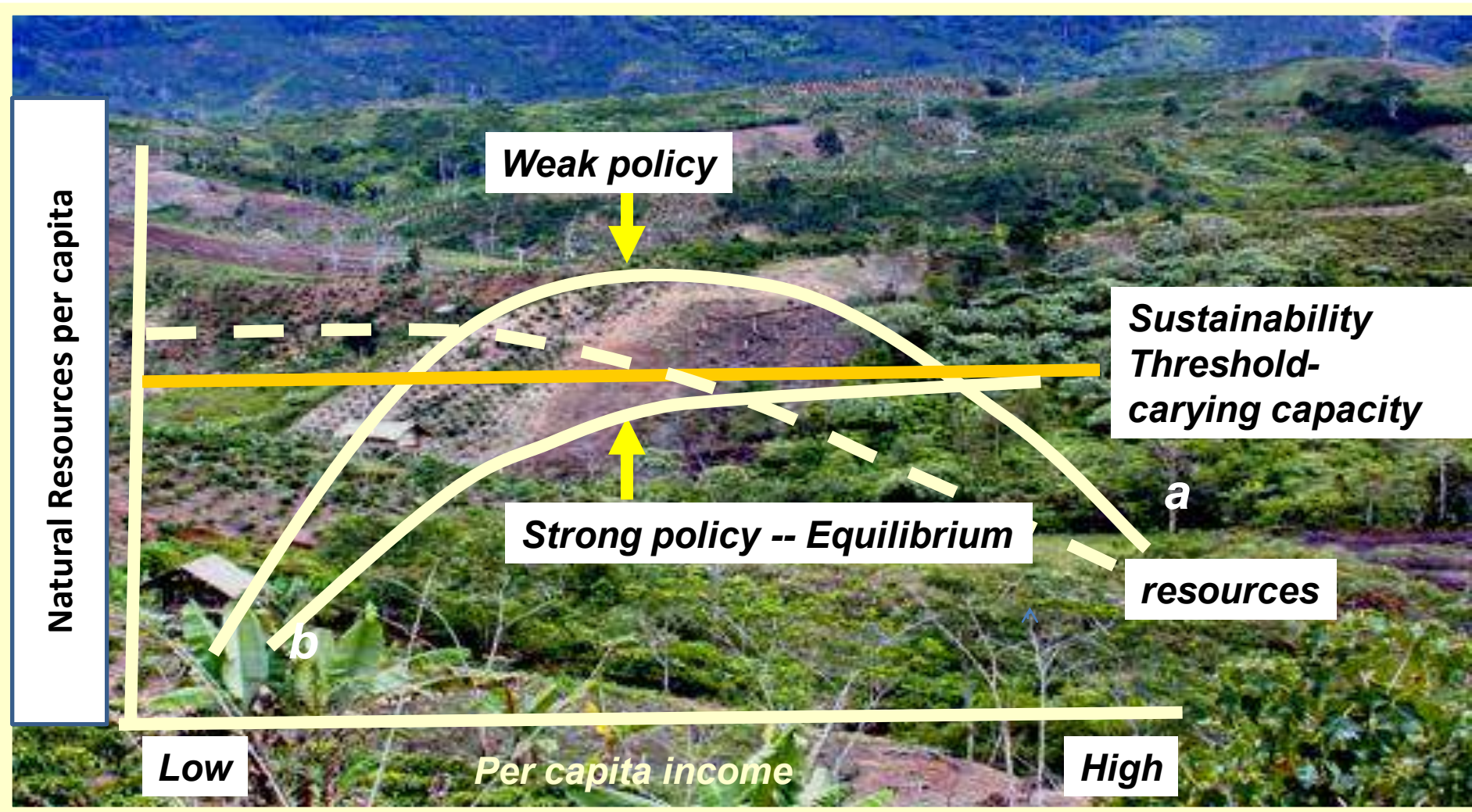
Source: Dwi Haryono, 2008



Land degradation vs poverty



Relationships between per capita income, policies, institution and environment damages (*Kuznets Curve*)



Land degradation problems in Lampung

- Degraded land in Watershed 1.536.366 ha (52%).
- Degraded mangrove land from 25.000 ha in 1970, become 30.000 ha, with rate of 7% per year.
- Abrasion occurred: in Muara Way Penet, and intrusion in Rawa Seragi.
- Rainfall change: from 2250 mm/yr in 1977 reduced to 1800 mm/yr in 2003.



Land use plan approach (solution)



Terima kasih