

ANALISIS KEBERHASILAN PENGELOLAAN AGROEKOSISTEM: Sosial, Lingkungan dan Ekonomi

Tim BP

13

2010

Definisi Agroekosistem

Agroekosistem adalah ekosistem di lingkungan pengelolaan pertanian, yang terkait dengan ekosistem lainnya.

- Modern agroecosystems are *entirely dependent on human intervention*, they would not persist but for that intervention.
- It is for this reason that they are sometimes referred to *as artificial systems as opposed to natural systems* that do not require intervention to persist through space and time.

Definisi Ecosystem

noun, plural: ecosystems

- A system that includes all living organisms (biotic factors) in an area as well as its physical environment (abiotic factors) functioning together as a unit.

Supplement:

- An ecosystem is made up of **plants, animals, microorganisms, soil, rocks, minerals, water sources and the local atmosphere** interacting with one another.

Keberhasilan Pengelolaan AE

- Pengelolaan Keberhasilan Pengelolaan AE dapat diketahui melalui **Agro-Ecosystem Analysis (AEA)**
- Banyak Kegunaan, Alasan, Metode dan Ukuran Kuantitatif dan Kualitatif yang dapat digunakan untuk menganalisis/mengevaluasi keberhasilan pengelolaan AE
- Beberapa contoh sederhana akan disajikan disini melalui sudut pandang: Lingkungan, Sosial, Ekonomi

KEGUNAAN AEA

Sebagai sistem pendekatan atau evaluasi yang komprehensif (***Bio-fisik dan Sosio-ekonomi***) untuk memperoleh informasi kunci masalah (***key problem information***) dan penyelesaiannya dalam suatu Agro-ekosistem (melalui program penelitian, pengembangan, dan penyuluhan).

ALASAN DILAKSANAKANNYA AEA

- Mengetahui sistem tata guna tanah (*Land Use*) pada area AE terpilih
- Mengidentifikasi batas dan membuat peta/map agroekologi suatu area studi
- Mengetahui karakter biofisik dan sosial ekonomi di AE Area yang teridentifikasi.
- Mengidentifikasi isu masalah pertanian, kehutanan and sosial-ekonomi yang ada sehingga kebutuhan program penelitian atau penyuluhan dapat diarahkan.

Lanjutan

- Menyediakan informasi kepada pengambil keputusan di kawasan AE yang dapat dipergunakan untuk perencanaan kegiatan pengentasan kemiskinan.
- Meningkatkan ketrampilan (*skill*) perencanaan dan kemampuan (*capacity*) sumberdaya manusia (SDM) di dalam AE zone untuk *rural development*
- Menselaraskan teknologi yang direkomendasikan dalam kawasan AE.
- Dll..

LANGKAH AWAL AEA

- 1. Menentukan Kawasan AEA** dapat dilakukan pada berbagai tingkat kawasan (Kecamatan, Desa, DAS, atau berbasis komoditas) berdasarkan kebutuhan dilihat dari **sudut pandang multi disiplin**
- 2. Memperoleh data primer maupun sekunder** tentang *bio-physical* dan *socio-economic* untuk keperluan evaluasi/analisis melalui metode RRA (Rapid Rural Apraisal), PRA (Participatory Rural Apraisal), Lokakarya, wawancara

Informasi dapat diperoleh melalui Metode: Lokakarya, RRA (Rapid Rural Apraisal), PRA (Partisipatory Rural Apraisal), wawancara

- **Bio-Physical Data:** topography, climate, water resources, geology, soils, communications, infrastructure, and land use, dll.
- **Socio-Economic Data:** agriculture systems, agro-forestry systems, ethnicity, markets, poverty status, dll.

AEA Procedure

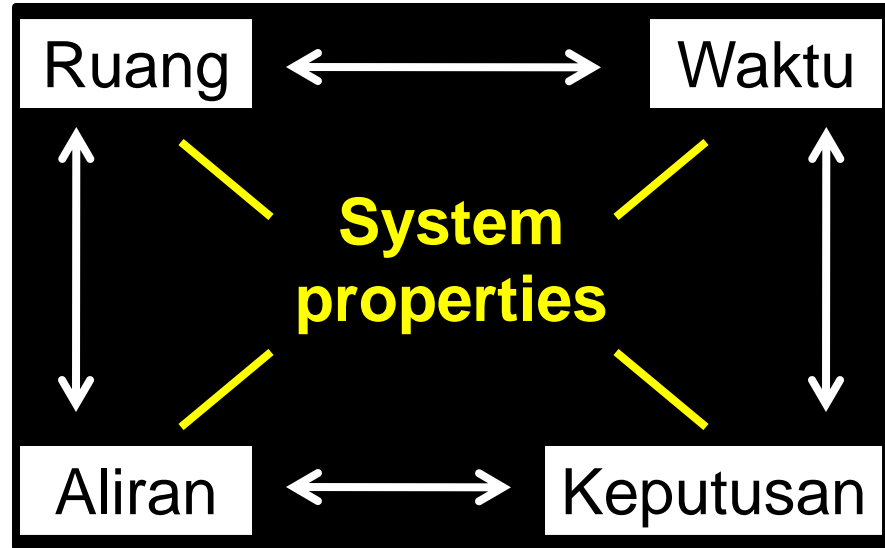
- AEA adalah berbasis pada **konsep sistem, herarki, *agro-ecosystem zones (AEZ)***, dan dengan sistem indikator ukur properties **productivity, stability, sustainability dan equitability**.
- Langkah demi langkah prosedur AEA disajikan pada DIAGRAM berikut

1. System Definition

Kegunaan & Tujuan

Batasan & Herarki

2. System Analysis



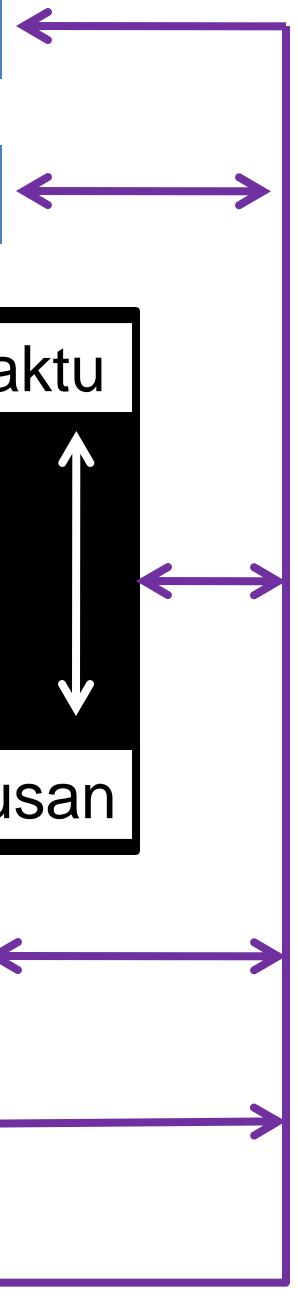
3. Identification of Development Options

Pertanyaan Kunci

Prioritise

4. Implementation

Program Design



AEA Instrument/Tools

- Transect diagrams (space analysis tool)
- Historical profiles (time analysis tool)
- Seasonalenders (time analysis tool)
- Flow diagrams (flow analysis tool)
- Venn diagrams (decision analysis tool)
- Problem-cause diagrams (decision analysis tool)
- System properties tables (system properties analysis tool)
- Pair-wise ranking (prioritisation tool)

Impact assessments:

- Innovation assessment or problem solution ranking (prioritisation tool)
- Key issues and proposed solution

Luaran Agro-Ecosystem Analisis

- Gambaran dan deskripsi *Bio-Physical* dan *Socio-Economic* Kawasan AE pengembangan AE tertentu
- Memahami kondisi *farming system* di setiap kawasan AE
- Daftar urutan prioritas peluang masalah di setiap kawasan AE
- Daftar urutan prioritas proposal kegiatan untuk penyelesaian masalah (Misalnya: Program penelitian, penyuluhan dan pengembangan)
- Penguatan jejaring kerjasama lintas disiplin (Misalnya: dalam rangka untuk meningkatkan penelitian dan penyuluhan)

DASAR-DASAR IMPLEMENTASI PRAKTIS AEA DARI SUDUT PANDANG BUDIDAYA PERTANIAN

- Indikator Utama Agro-Ecosystem
- Fungsi AE Sebagai Potensi Indikator
- Rangkuman Analisis Performen AE

Four important properties of Agroecosystem

Marten, G. G. in *Agricultural Systems* 26 (1988) 291-316

- **Productivity:**
 - Measured either as yield or income per unit of input or resource i.e. yield/ha
- **Stability:**
 - Measured as the constancy of the productivity
- **Sustainability:**
 - The ability of an agroecosystem to maintain productivity in respond to environmental disturbance
- **Equitability:**
 - Expresses how evenly the products of an agroecosystem are distributed among its human beneficiaries →
Prosperity
- **Autonomy:**
 - agroecosystem self-sufficiency

Hypothetical evolution of agroecosystem

	Productivity	Stability	Sustainability	Equitability
Low population traditional cultivation	Low	Medium	High	High
High population traditional cultivation	Very low	Very low	Low	Medium
Reforestation	Low	High	High	Low
Cash cropping	High	Low	Low	Low
Tree gardens and cash cropping	Medium	Medium	Medium	Medium
Integrated tree and home gardens	High	Medium	High	High

Agroecosystem functions with potential indicators (sub-set of functions taken from Costanza et al., 1997).

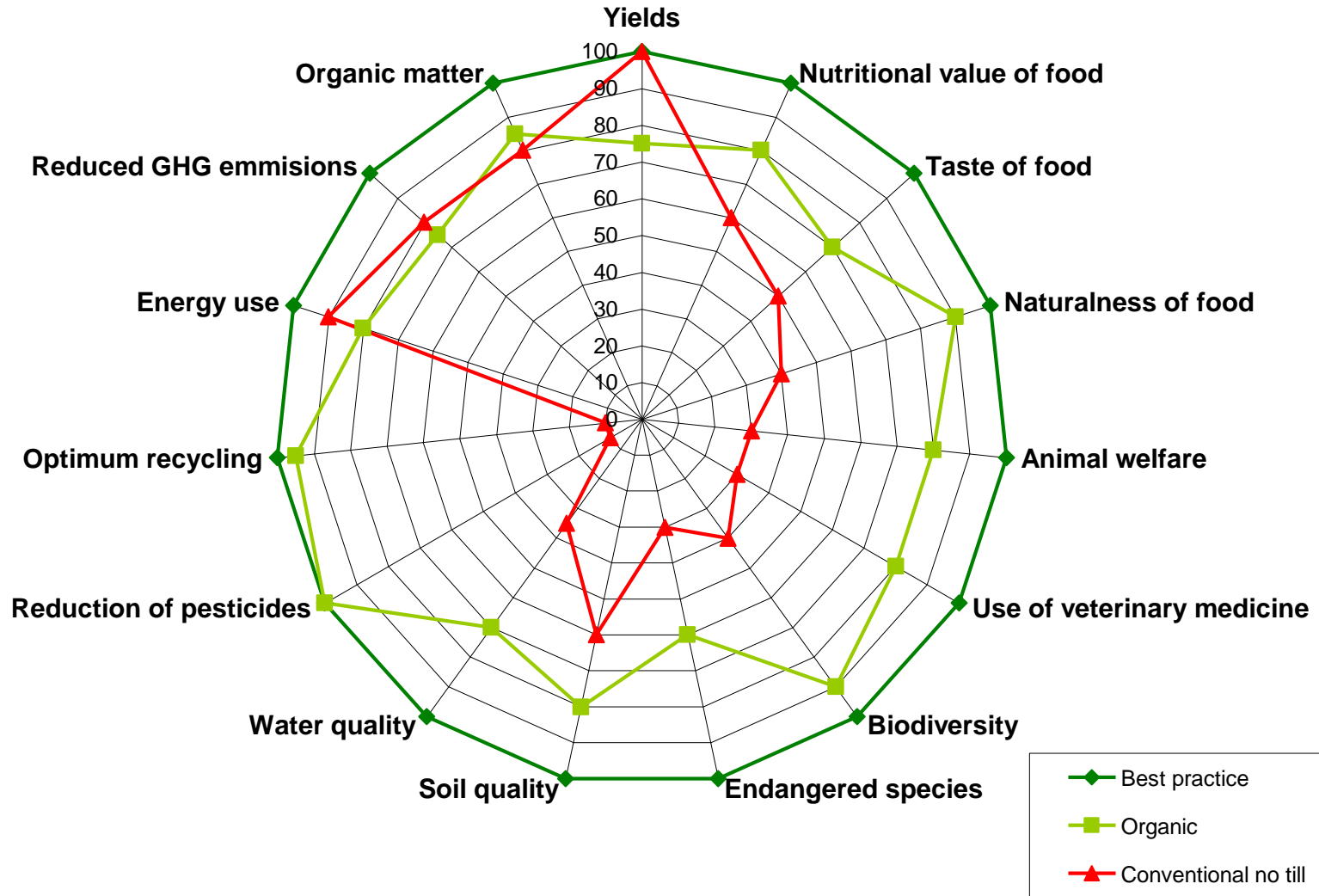
Agroecosystem Function	Potential Indicator
Food Production	Yield Quality and nutrition of food produced
Raw materials production	Yield Quality and nutrition of fiber produced
Nutrient cycling	Nutrient cycling time scale Macronutrients and micronutrients Soil organic matter Microbial biomass Soil pH Number of trophic levels
Erosion control	Erosion rate Sediment load Textural change Percent residue and live plant cover Aggregate stability Glomalin

Agroecosystem functions with potential indicators lanjutan

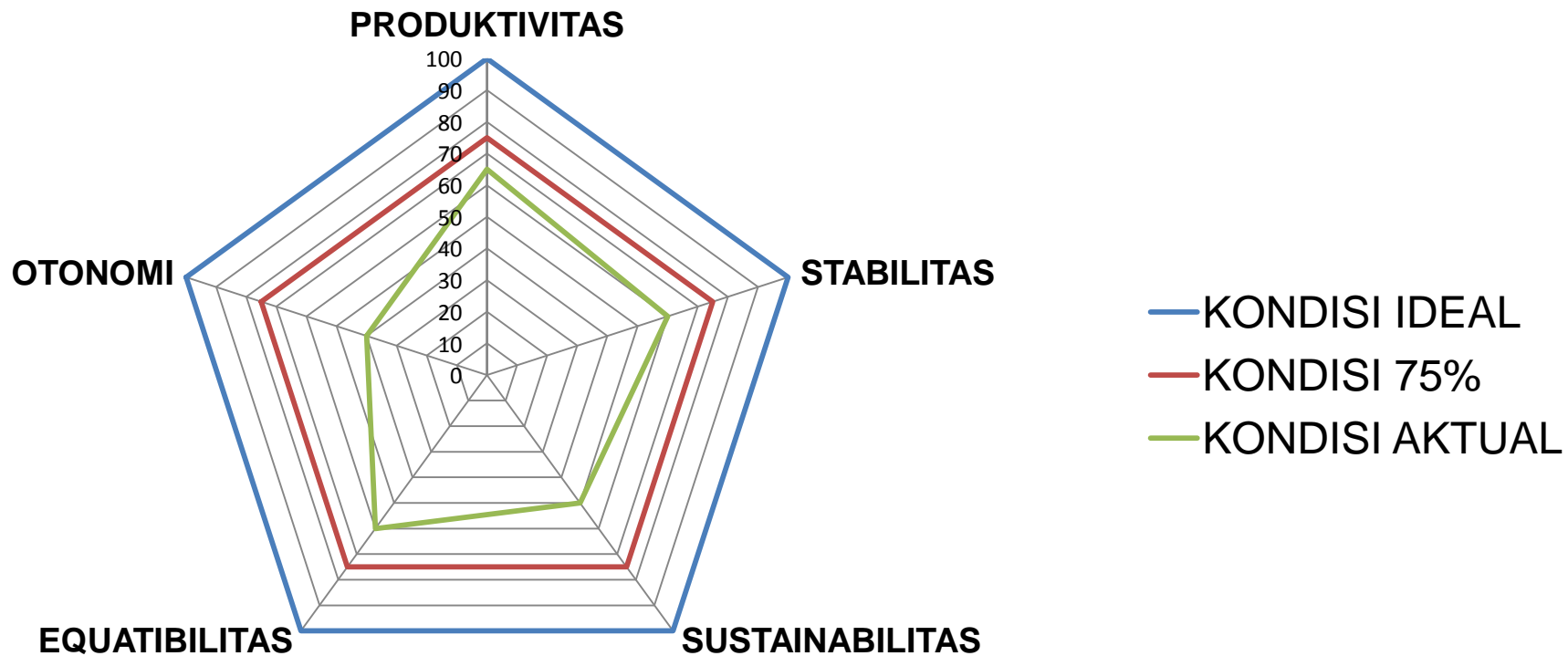
Agroecosystem Function	Potential Indicator
Greenhouse gas regulation	CO ₂ , CH ₄ , N ₂ O flux Soil C sequestration rate
Water regulation	Surface soil physical condition Soil hydraulic properties
Waste treatment	Heavy metals Levels of excess nutrients Residence times of chemicals Presence or absence of pathogenic organisms Microbial indicators of detoxification potential

CONTOH

organic systems are already at high environmental performance



AEA Sederhana Untuk Kuliah Manajemen Agro-Ekosistem 2010



SEKIAN SAMPAI
MINGGU DEPAN