USAID
FROM THE AMERICAN PEOPLE

Environment, Development and Environmentally Sound Design and Management

What is “Environment”?

- **The totality of circumstances surrounding an organism or group of organisms, especially:**
  - *The complex of **physical, chemical, and biotic factors** (e.g. climate, soil, and living things) that affect and influence the growth, development, and survival of an organism or an ecological community*
  - *The complex of **social and cultural conditions** affecting the nature of an individual or community.*
  - *USAID’s environmental procedures are concerned with the “natural and physical environment,” but in practice social and cultural issues are often not separable.*

What are (some) “big-picture” environmental trends affecting human health and livelihoods in Africa?

1. Urbanization

By 2025, > 50% of:

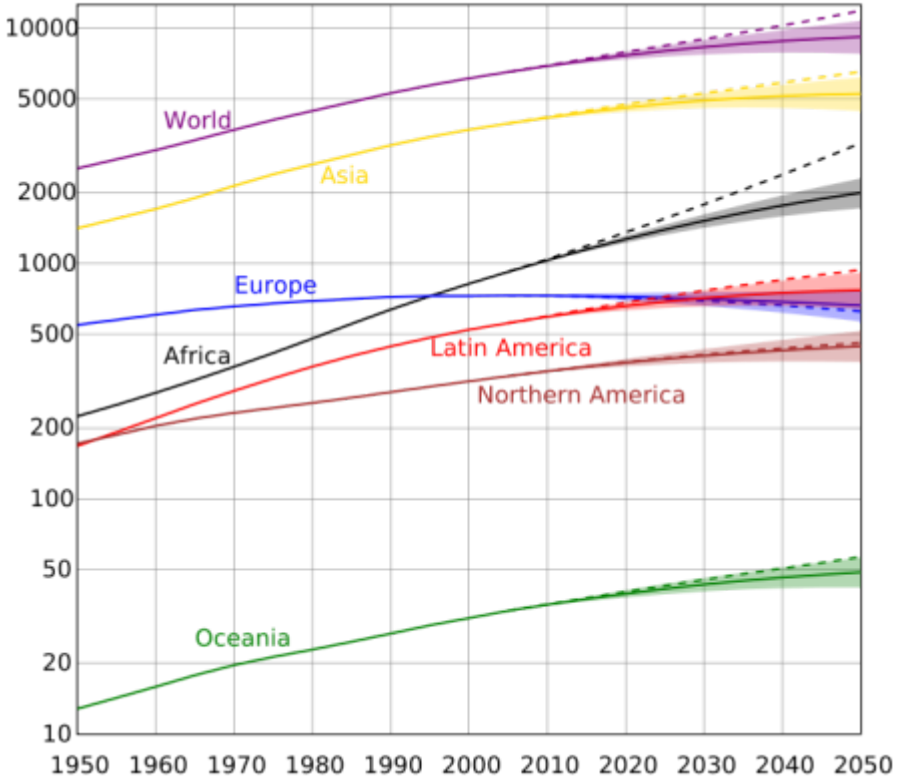
- **African population**
- **African poor**

will be in urban areas

Urban population will grow 2X as fast as rural population for the foreseeable future

2. Population growth

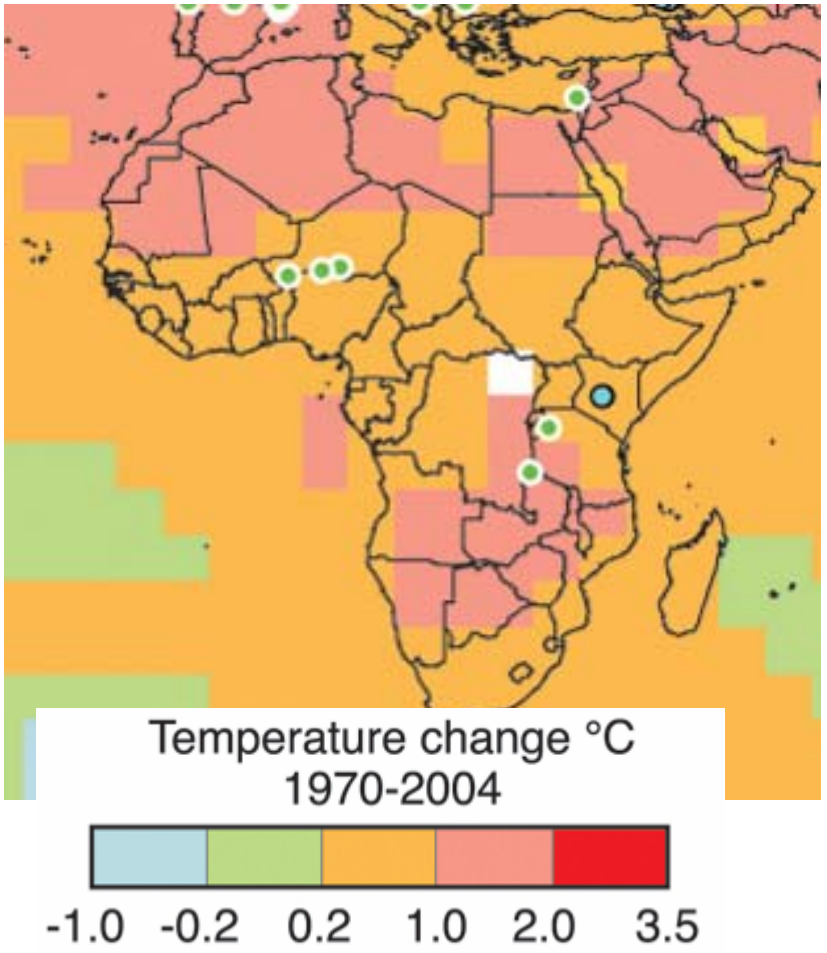
- **UN estimate: African population expected to double to 1.69 billion by 2050.**
- **Except for high-AIDS countries, 2-3% population growth is the norm**



3. Global climate change: Africa

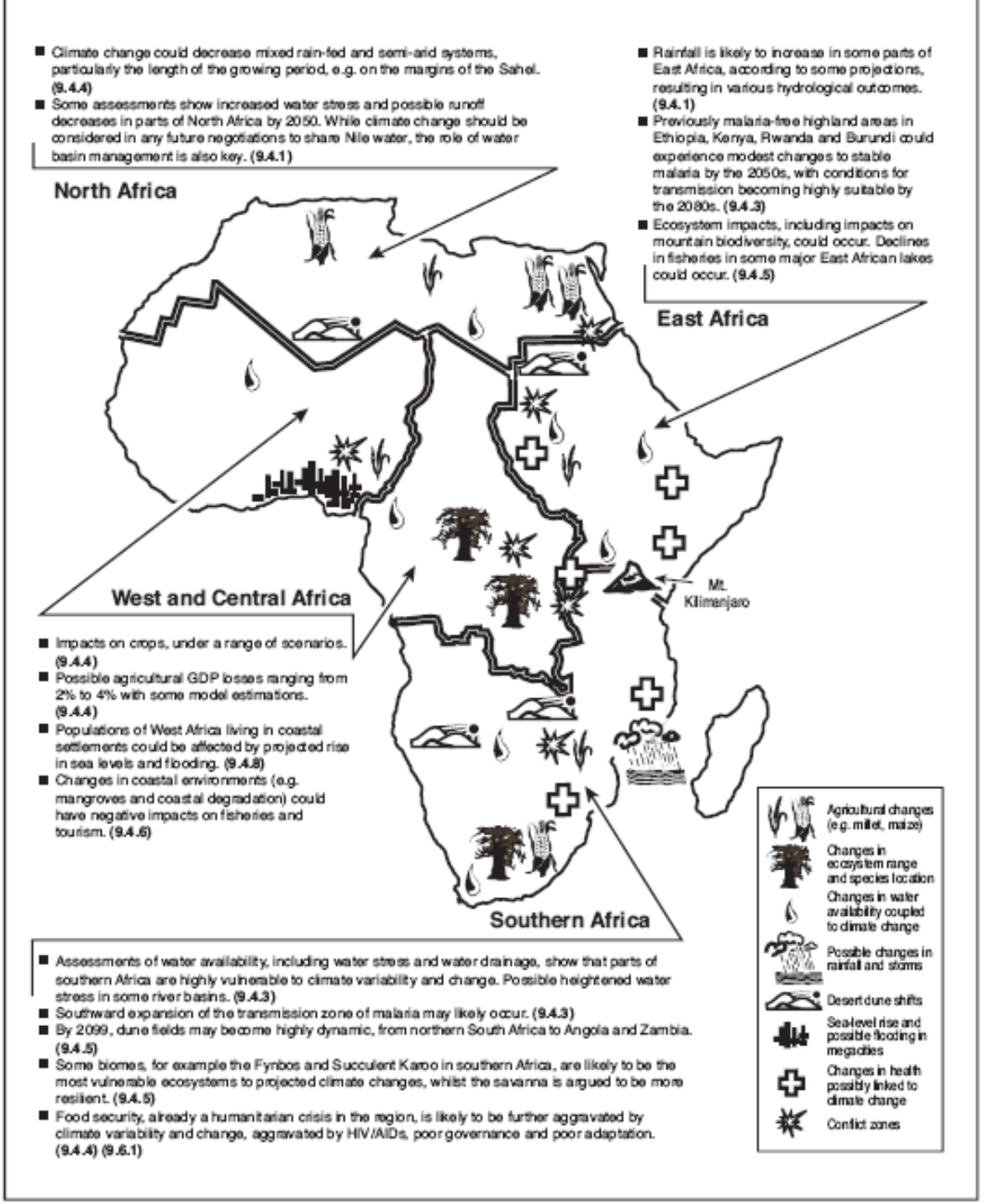
- Arid & semi-arid lands ↑ 5-8% by 2080s
- Sea-level ↑ 0.3-0.4m by 2100
- Precipitation patterns change
- More climate variability & extreme events
- Median temperature change: ↑ 3-4°C (end of century)

- 100% of observed data series in Africa for physical, biological systems consistent with global change



Global change impacts

- Crop & disease zones shift
- Rain-fed agriculture yields ↓ 50% in some countries
- Sea level rise impacts coastal cities: adaptation costs 5-10% of GDP.

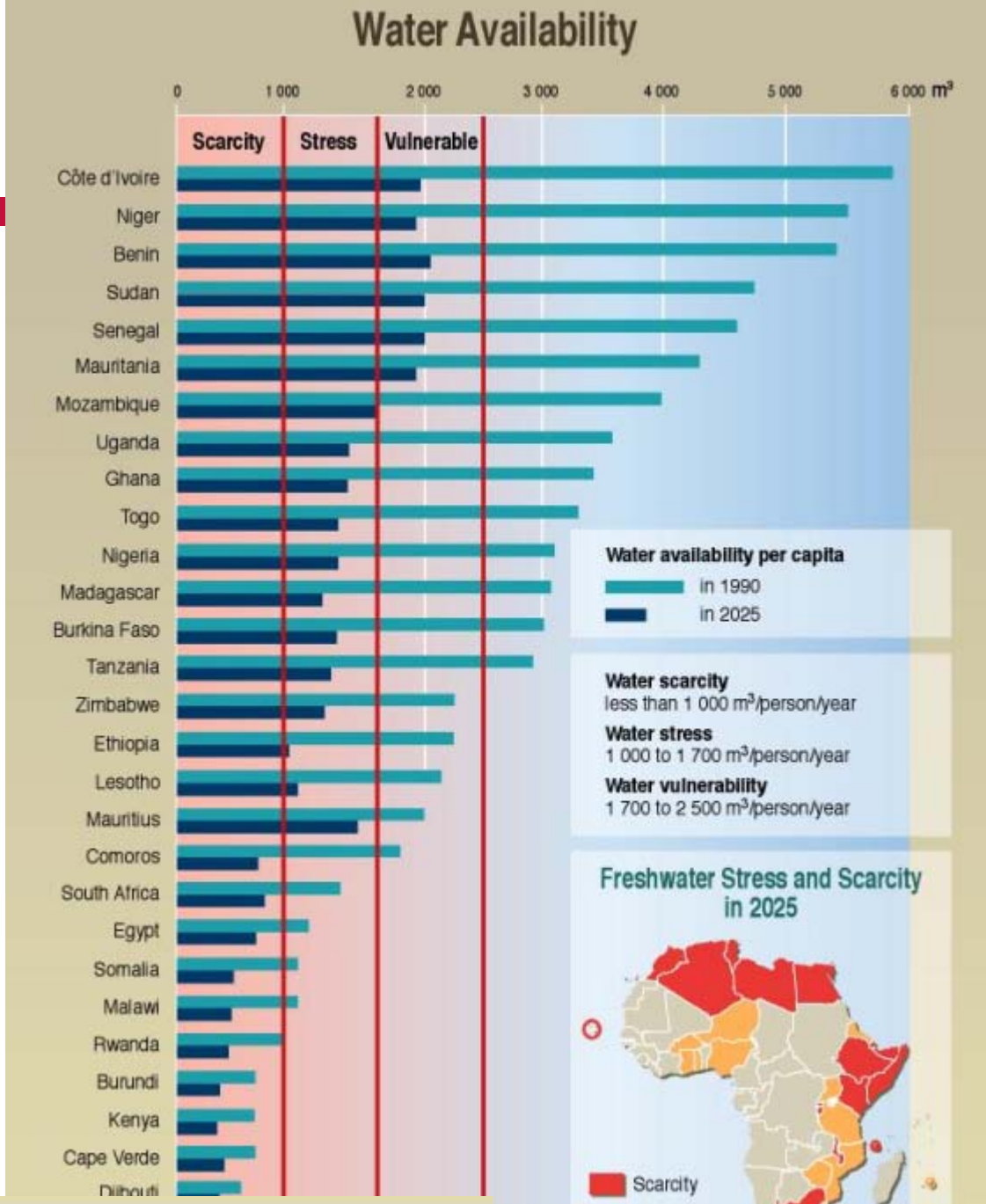


Environment, Development & ESDM. Vis

Global change + population growth =

INCREASED WATER STRESS

Greatest impacts on poor, subsistence agriculture.



Source: United Nations Economic Commission for Africa (UNECA), Addis Ababa ; Global Environment Outlook 2000 (GEO), UNEP, Earthscan, London, 1999.

Urbanization + poor municipal sanitation & waste management capacity. . .

→ **INCREASED URBAN ENVIRONMENTAL HEALTH HAZARDS**

Population growth + soil types + cultivation practices. . .

→ SOIL FERTILITY LOSS:

- *80% of SSA cropland significantly degraded*
- *2002-04:*
  85% of SSA cropland had nutrient loss > 30kg/ha/yr
  & 40% had > 60 kg/ha/yr.

Terraces in East Africa show fertility gradients—yellow at the top, green at the bottom

& UNSUSTAINABLE UPLAND AGRICULTURE

The bottom line:

“Environment” and “development” are not separable

Much of USAID’s Africa portfolio is already a direct response to—or directly affected by—these environmental trends.

! **But good development does not simply respond to external environmental challenges. . .**

- **Good development. . .**
  - *is AWARE of its **potential adverse impacts** on ecosystems, environmental resources and environmental quality and*
  - *PROACTIVELY **seeks to limit these adverse impacts**, particularly **where they affect health and livelihoods***

Why? **To avoid MISTAKES. . .**

Example: Health care facilities

- **Goal:**
  Improve public health

- **Risk:**
  Endanger the health of patients and the community with poor facilities design & improper waste management

An unused incinerator. . .

surrounded by needles & other medical waste (open access to livestock, ~15m from households)

Example: Health care facilities

? What is the problem?

Example: Water & Sanitation Activities

- **Goal:**
  Improve/preserve public health & quality of life
- **Risks:**
  Endanger public health, degrade water supply, with poor design and operation

Around the back of the latrine. . .

Seepage

Uncontrolled waste disposal

Example: Community Reforestation

An activity intended to improve the environment!

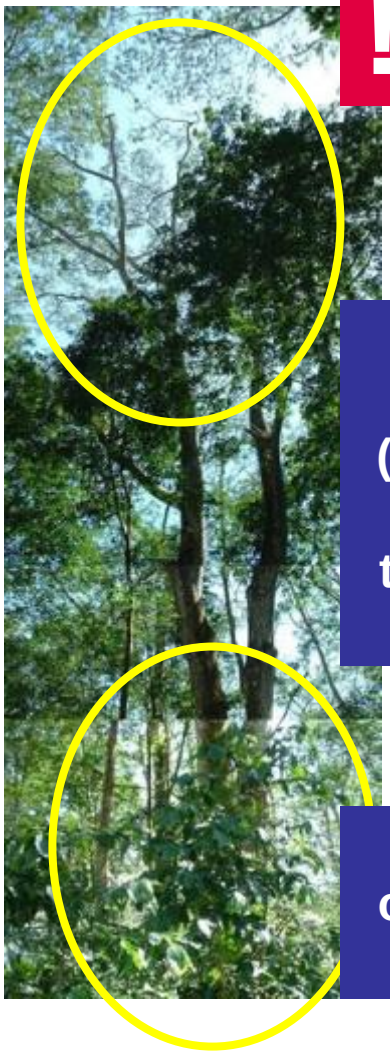
- **Goals:**
  Conserve soil & prevent erosion, provide building materials & fuel, reduce risk/impacts of flooding

- **Risks:**
  - *Deplete water table,*
  - *Displace local plants and vegetation,*
  - *Intensify use of pesticides*
  - *Increase community vulnerability*

?

Is this a nice picture?

Example: Community Reforestation



!

Unfortunately not.

Progressive blight (80% mortality) in the shade trees, an aging monoculture

High-quality organic shade-grown coffee

Unforeseen long-term vulnerabilities created by monoculture reforestation will likely affect thousands of small coffee producers.

Why are “environmental mistakes” made?

Sometimes obvious (previous examples).

But often difficult to foresee, predict

Most often rooted in a few common design problems

- **!** Failure to plan for the effects of increased scale
- **!** Designing for average conditions
- **!** Ignoring economic-environmental linkages

Common root causes #1

! **Failure to plan for the effects of increased scale**

Or, failure to plan for success!

The environmental effects of a small-scale animal husbandry project may be minor

BUT if the project is successful, and many more individuals begin to hold larger numbers of animals, serious problems may arise. . .

Health hazards from animal waste. . .

Fodder shortages (may lead to overgrazing and erosion and/or land conflicts)

Common root causes #2

Global change will affect both average conditions & expected variability

! Designing for average conditions, not expected variability

This schoolhouse is being rebuilt with plank walls and a split-bamboo roof.

Strong winds ripped the aluminum sheet roofing off the structure and toppled the landcrete walls.

In this area, one or two storms every 5 years typically have winds of this strength.

Other "average conditions" to be careful of:
Rainfall, tides, water tables. . . What else?

Common root causes #3

! **Ignoring economic-environmental linkages**

Another failure to plan for success!

Household consumption depends on income.

Success in raising income in a community may increase

- **demand for building materials (brick & timber)**
- **the number of livestock,**
- **demand for water**
- **generation of waste, including disposable packaging**

All can have significant adverse environmental impacts!

To be aware of potential adverse impacts, to proactively seek to limit them, to design robustly for expected conditions and variability is to practice. . .

Environmentally Sound Design & Management (ESDM)

Is ESDM only about limiting adverse impacts?

NO.

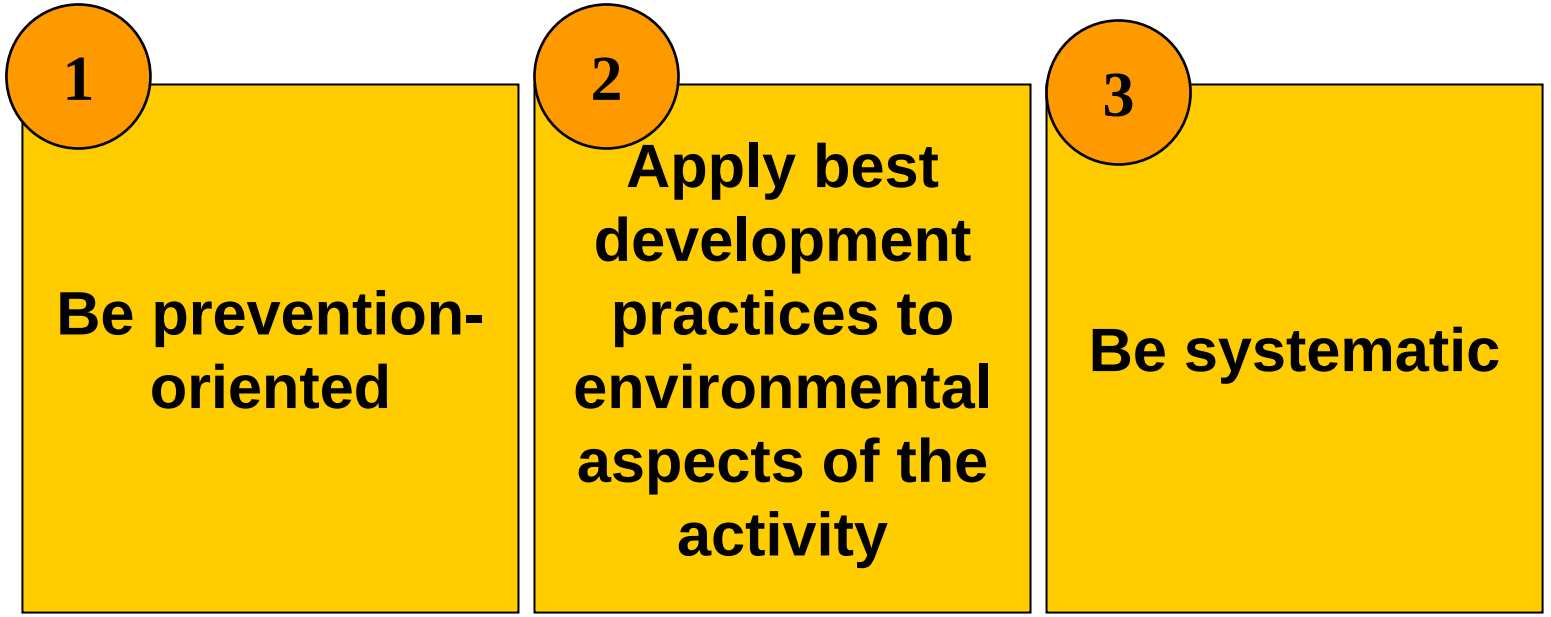
ESDM is proactive.

It seeks to preserve and improve the resource base upon which future economic activity and subsistence depends

ESDM means seeking opportunities to maximize environmental benefits

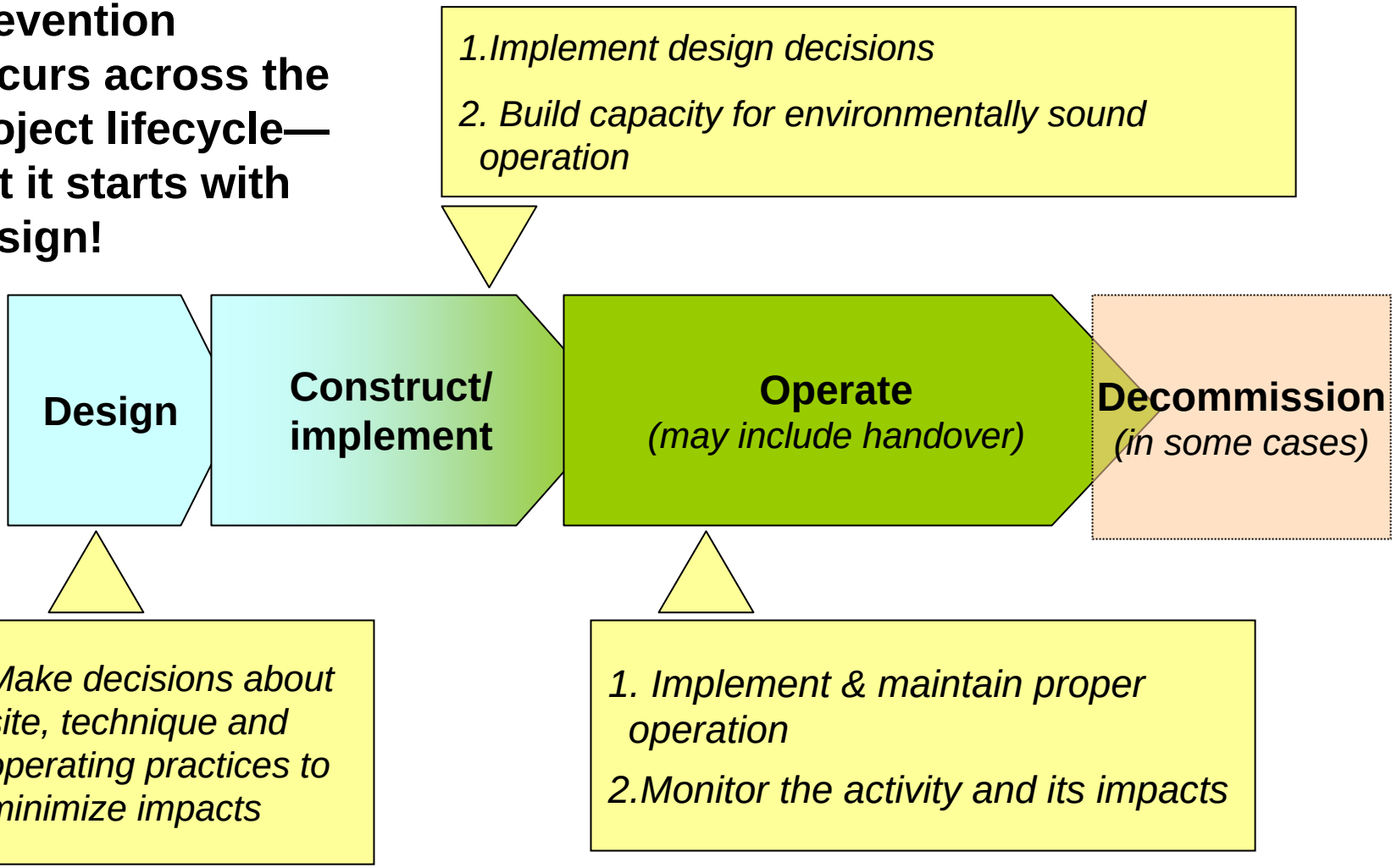
How do we achieve ESDM?

3 basic rules:



1 ESDM is prevention-oriented

Prevention occurs across the project lifecycle—but it starts with design!



ESDM is prevention-oriented

- Prevention starts early in the DESIGN phase
- DESIGN starts with the choice of **means.**

Objective

Improve agricultural productivity

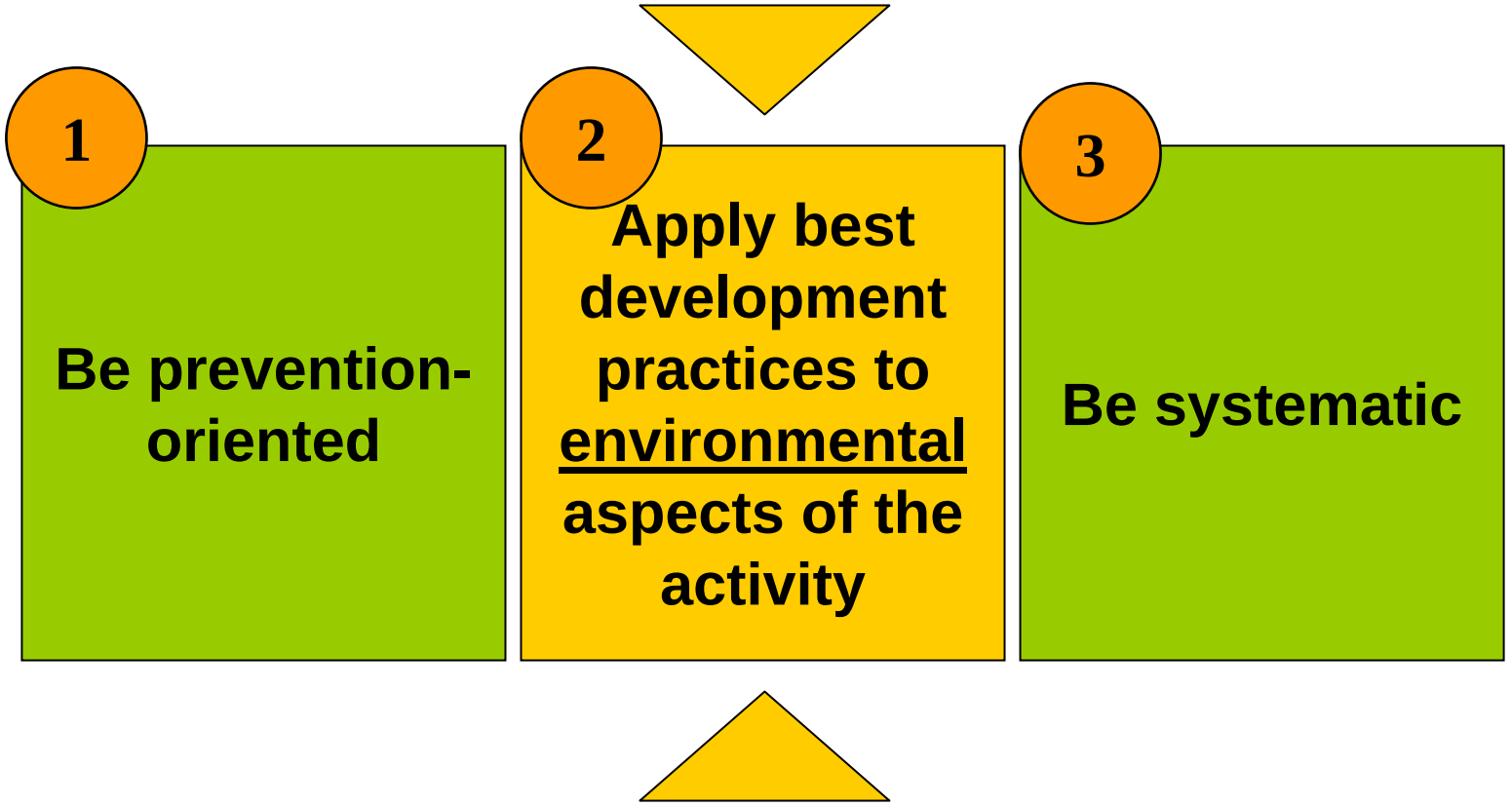
Possible *means*

How do we choose?

ESDM is prevention-oriented

! In ESDM, the choice of MEANS considers the environmental impacts of each alternative.

How do we achieve ESDM?



What are best development practices?

"For a successful project, we need. . .

A technically sound design

To build beneficiary capacity & stakeholder commitment

To design for the local social & policy context

To adjust what we do as results come in

"development professionals say. . ."

! **Each of these general best practices has particular application to ESDM.**

General BP #1:
The design is technically sound

- **Environmental application:**
  the design must be appropriate for local environmental conditions

Environmental conditions include. ..

*Rainfall, temperature, soils, flood, drought and earthquake potential. . . **What else?***

For example. . .

? **Appropriate choice of crops or trees?**

? **Appropriate choices of construction materials & methods?**

Example:
Design for local environmental conditions

Structure:
Schoolhouse

Local environment

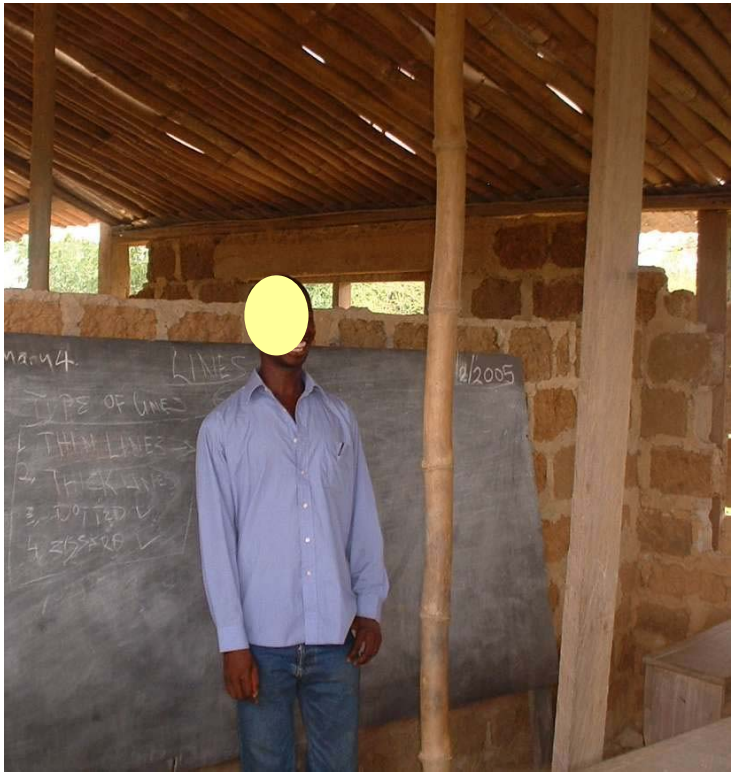
Coastal West Africa; deforested area subject to heavy winds & rains. Moist tropical climate. Building sits on slight slope.

Construction

Long-span split-bamboo roof

Unplastered “landcrete” walls

No rock or concrete foundation



? **Appropriate choices of construction materials & methods?**

General BP #2:
Design for the policy & social context

- **Environmental applications:**

1 Compliance

with national & local environmental laws and policies

2 NRM and land tenure

Activities utilizing land & other natural resources must be compatible with local NRM and land tenure.

land & resource rights are often gender-specific

3 Language, literacy

Environmental management measures must be matched to capabilities.

4 *What else?*

General BP #3:
Build stakeholder commitment & capacity

Environmental application:

Proper maintenance and operation are critical to controlling environmental impacts.

Local beneficiaries need to be trained and committed to:

- **environmentally sound operation.**
- **maintain the equipment/ structure**

Who will maintain it?
Who will operate it?

General BP #4
Practice adaptive management

✓ **Adaptive management means:**

adjusting implementation of our activity based on results from the field

- **Environmental applications:**
  - **If our activity has unintended environmental consequences, we need to DO SOMETHING ABOUT IT!**

Adaptive environmental management requires:

A project budget that funds environmental monitoring

The flexibility to adapt the project in response to unanticipated adverse impacts

General BP #4
Practice adaptive management

! **Adaptive management also means adjusting implementation of our project based on the experiences of others.**

Communicate, coordinate, share lessons on environmental impacts with colleagues!

Note:
ESDM requires community involvement

Two basic reasons for community involvement:

1. **Ethics require it.**
2. **can't apply BPs without it.**

Local residents must live with the environmental impacts of activities!

Why?

BPs require community involvement!

Technical soundness

Design for the policy & social context

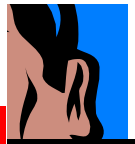
Beneficiary commitment & capacity

Adaptive management

LOCAL KNOWLEDGE is critical!

Is there a land tenure problem?

- **How often does the river flood?**
- **How often are crops rotated?**
- **What do people value and need?**



! LISTEN to the community. TALK to both men & women.

BPs require community involvement!

Technical soundness

Design for the policy & social context

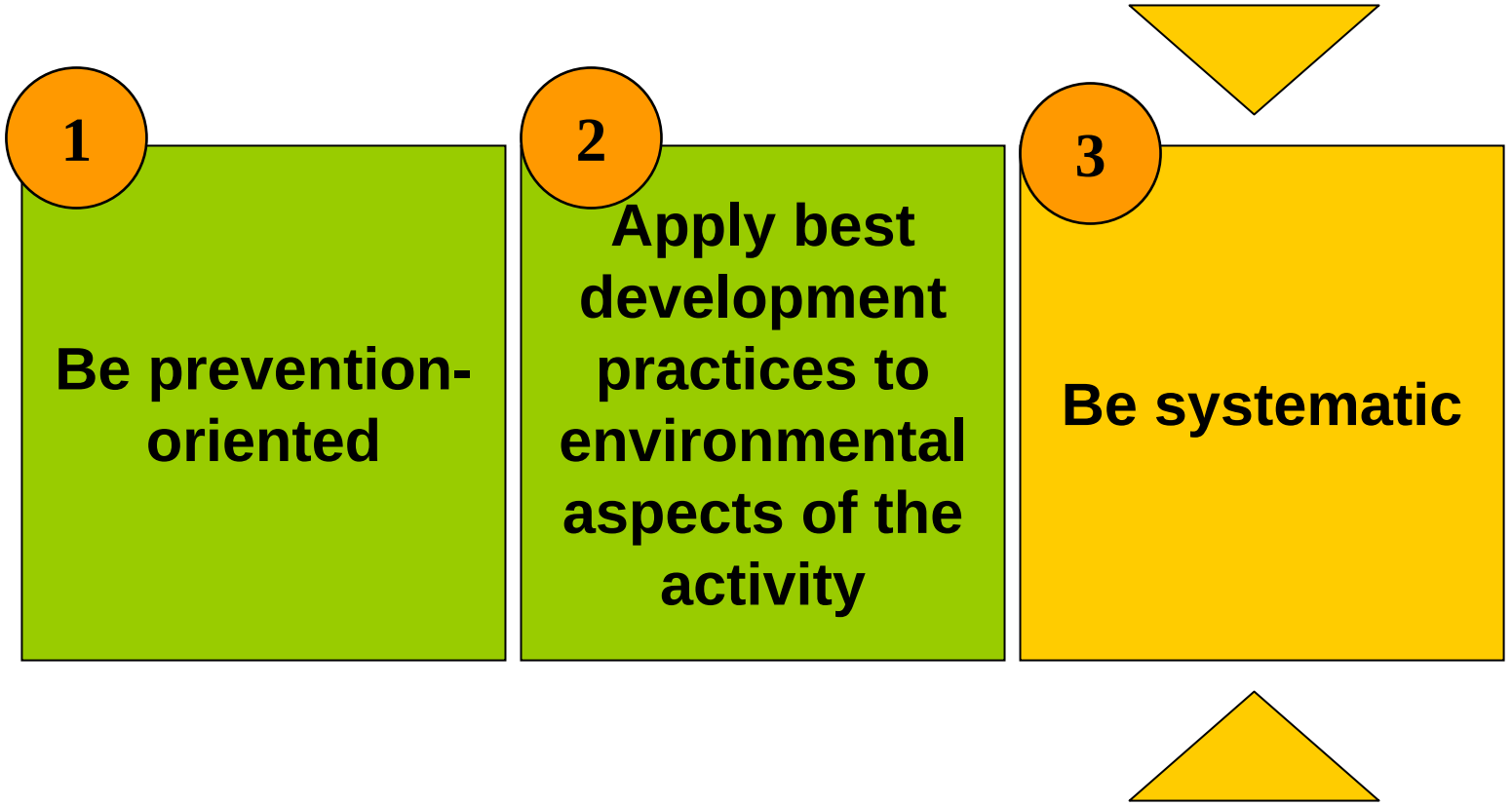
Beneficiary commitment & capacity

Building commitment & capacity is not possible without actively engaging the community.

Adaptive management

Communities are often essential to monitoring

Now, rule 3 for achieving ESDM. . .



ESDM is systematic

- **ESDM requires a systematic look at:**
  - **the possible adverse environmental impacts of an activity**
  - **ways to reduce these impacts.**
- **The best way to be systematic: Environmental Impact Assessment (EIA)!**