Scenario development for the MAR Region

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Overview of presentation

- What are scenarios and how are they used?
- Development of 3 scenarios for MAR region
- Key aspects of the scenarios
- Population growth, sustainable development
- Expansion of protected areas network
- Quantification of land cover change

What are scenarios?

- "Scenarios are descriptions of journeys to possible futures. They reflect different assumptions about how current trends will unfold, how critical uncertainties will play out and what new factors will come into play." (UNEP, 2002)

- **Scenarios are not predictions of the future!**

The role of scenario studies to inform policies

- **Anticipate possible developments**
- **Analysis of impacts**

- **Research should support policy discussion**
  - Information to empower stakeholders in negotiations and decision making
  - Help stakeholders think about "desired future conditions", evaluation of problems, indicators of success/failure

- **Research should not search for '*The Solution*':**
  - Stakeholder negotiation determines 'solution'
  - Trade-offs are policy issue

Scenario development process

- Adapted from the Global Environment Outlook 4 (GEO-4) scenarios for Latin America and the Caribbean, which are being developed by UNEP

- Adaptation and quantification headed by Lera Miles, UNEP-WCMC, Cambridge, with input from partners (UNEP-GEO, MNP, U. Denver)
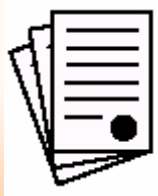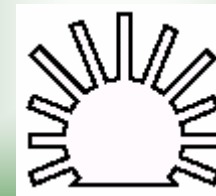
The selected GEO-4 scenarios

Markets First	*We chose* ***not*** *to use Security First*
Policy First	Sustainability First

The GEO-4 scenarios

- GEO-4 Latin America & Caribbean (LAC) narratives are developed by the GEO-4 LAC working group for release in 2007.

- Further detail and quantification added for the MAR region by UNEP-WCMC.

- We used 3 out of 4 scenarios. We chose not to use Security First (rate of land cover change was in between Markets First and Policy First)

MAR adaptation of GEO4 scenarios

	GEO4 (UNEP)	MAR (ICRAN)
Region	Latin America & Caribbean	MAR region of Belize, Guatemala, Honduras, Mexico
Timeline	2007 to 2050	2006 to 2025
Focus	Environment for development	Land use change impacts on reefs
Quantification	Core indicators for GEO by region	Land use change & impacts by country

Markets First for the MAR

- Public policy supports commercial interests and the open exchange of goods and services.

- High rates of urban development and agricultural expansion.

- Emigration increases, especially from Mexico.

- GDP per capita lower than other scenarios, except for Mexico.

- Limited social and environmental planning.

Policy First for the MAR

- National policy interventions in social and environmental issues are stronger.

- Moderate rates of urban development and agricultural expansion.

- Equity increases and emigration decreases.

- High GDP per capita, especially for Belize, Guatemala, Honduras.

# Sustainability First for the MAR

- Strong commitment to sustainable development at all levels.

- Lowest rates of urban development and agricultural expansion.

- Targeted ecosystem restoration.

- Lowest rate of population decrease.

- Medium GDP per capita; other development indicators are high.

Population Growth (%), 2005 - 2025
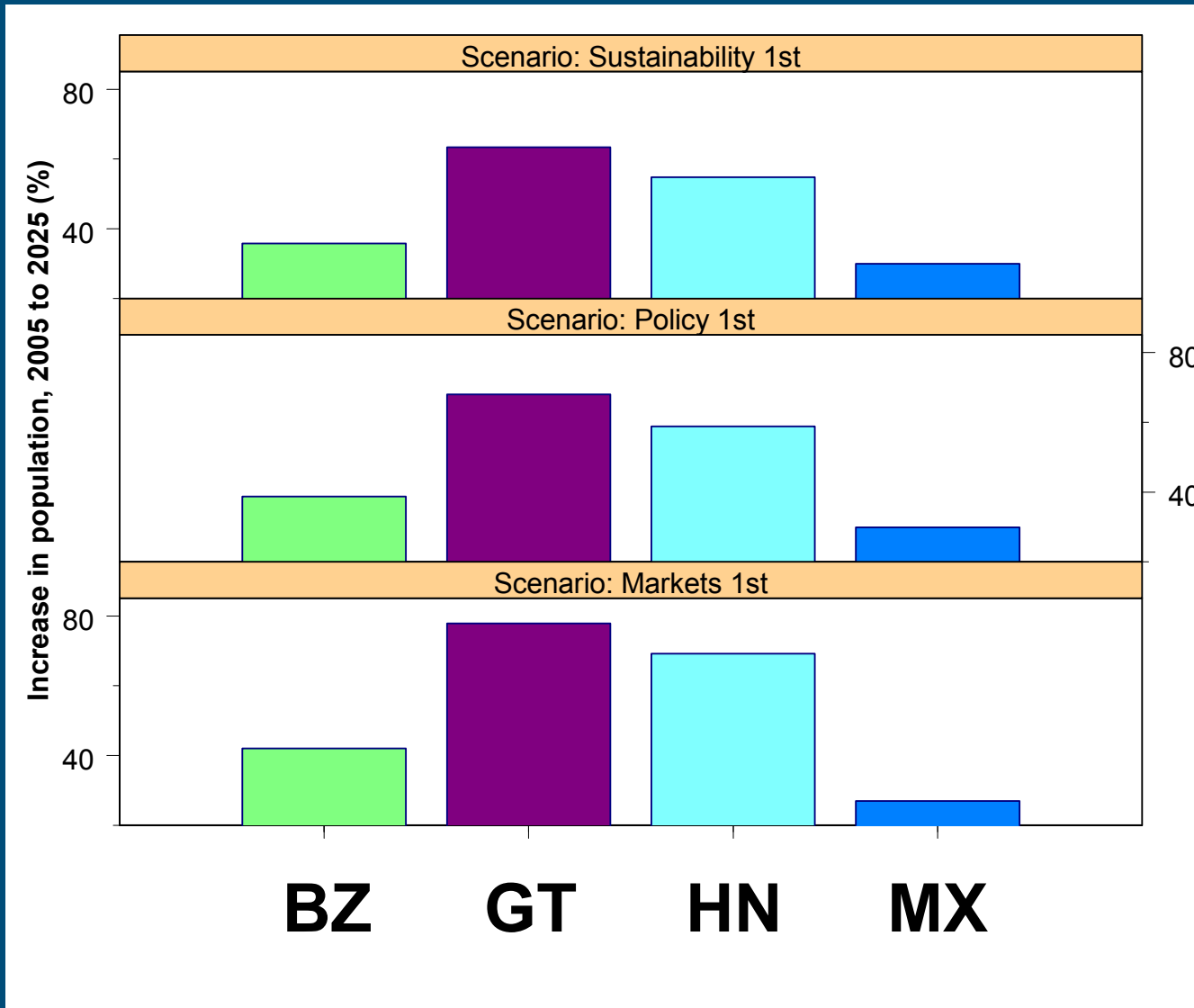
Protected areas – global trends

Figure 1: Cumulative Growth in Protected Areas by 5 Year Increment: 1872-2003
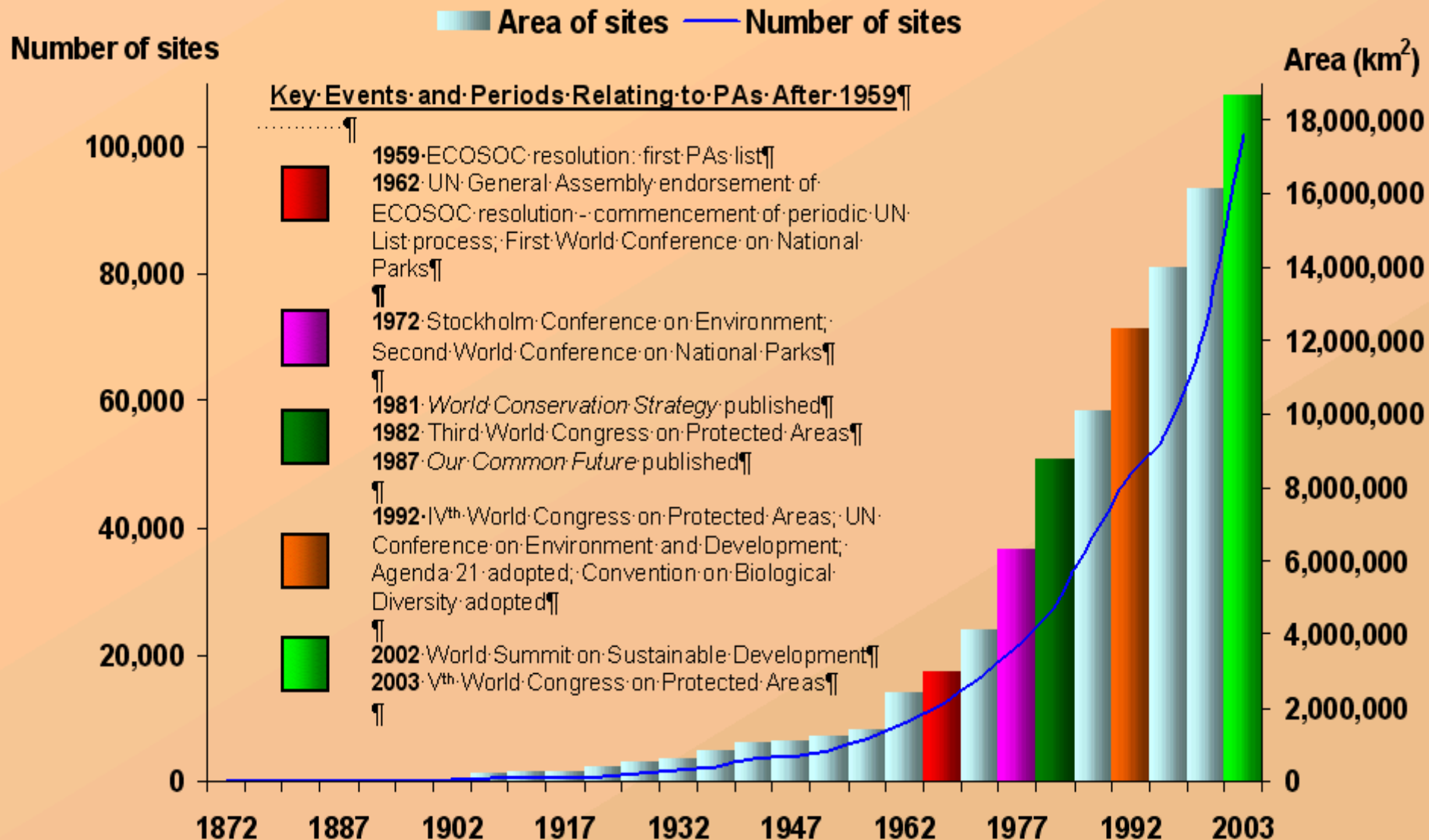
Protected areas – scenarios

- **Represent one hypothetical expansion of the network, rather than a recommended set of designations.**

  - No-use. IUCN categories I-IV (fully protected)
    - Remains the same during entire simulation period
  - Sustainable use (partially protected; dynamic)
    - IUCN categories V – VI. May be designated at any time (they have been applied in particular to Honduras, see maps)
  - Failed (no protection from land cover change)
    - Some no-use or sustainable use areas will fail.

Protected areas - scenarios

Scenario	Description	Split for new areas
Markets First	expansion of terrestrial network to 10% of all biomes/countries by 2025	20% no-change 60% sustainable-use 20% failed
Policy First	expansion of terrestrial network to 10% of all biomes/countries + all single-site endemic species by 2025	65% no-change, 25% sustainable-use 10% failed
Sustainability First	expansion of terrestrial network to 10% of all biomes/countries + all single-site endemic species by 2025	30% no-change 65% sustainable-use 5% failed

USAID FROM THE AMERICAN PEOPLE   UNITED NATIONS FOUNDATION   UNEP   ICRAN International Coral Reef Action Network   UNEP   WCMC   WRI

Quantification of land cover change

International Futures

[Provides socio-economic drivers to IMAGE]

What proportion of regional change occurs in each country?

IMAGE
Global integrated assessment model

What is the rate of change in the region? What proportion of change occurs in each land use type?

Baseline (2000) Ecosystem map

Rate of change per land cover type

CLUE-S
Land use change (allocation) model

Where does land cover change occur within the MAR region? A spatial dimension is added!

http://www.ifsmodel.org/

http:www.mnp.nl/image/

http://www.cluemodel.nl/

Thank you!