Aquatic ecology for sustainable development in Africa

Examples of capacity building

Luc Brendonck
What is sustainable development?

World Population Growth


Overconsumption and overpopulation
What is sustainable development?
What is sustainable development?

The relationship between the three pillars of development whereby economy and human society are confined by the carrying capacity of the environment.
What is sustainable development?

Top 10 countries with the biggest ecological footprint per person

1. Qatar
2. Kuwait
3. UAE
4. Denmark
5. USA
6. Belgium
7. Australia
8. Canada
9. Netherlands
10. Ireland

Top 10 African countries with the biggest ecological footprint per person

1. Mauritius
2. Mauritania
3. Botswana
4. South Africa
5. Egypt
6. Namibia
7. Tunisia
8. Chad
9. Mali
10. Gabon

* United Arab Emirates

Source: WWF
Symptoms of an unsustainable development – example the Aral Sea

Irrigation and water stress
Symptoms of an unsustainable development – the biodiversity crisis

OPINION
Are We in the Midst Of a Sixth Mass Extinction?

A Tally of Life Under Threat
The International Union for Conservation of Nature has evaluated 52,205 species, depicted here, for their ability to survive. Related Article »

Each symbol represents 100 species assessed:

- **THREATENED**
  - BIRDS: 93% of known species assessed, 8,601 not threatened
  - 1,253 threatened: 13% of those assessed

- **NOT THREATENED**
  - MAMMALS: 85% of known species assessed, 2,446 not threatened
  - 1,138 threatened: 25% of those assessed

Stark Indicators Of Extinction Risks
Because most known species of birds, mammals and amphibians have been evaluated, scientists are confident about the percentage of each group that is threatened.

- **AMPHIBIANS**: 70% assessed, 2,767 not threatened
  - 1,917 threatened: 41%
The biodiversity crisis – potential consequences for Africa
Importance of biodiversity for ecosystem services
Determination of environmental flow – “the ecological reserve”

Standard tool in European Water Framework Directive
Water stress in Africa

Yearly availability of freshwater (average 1989-2010)

Less than half of the people in Sub-Saharan Africa have access to safe water.
Capacity building: training and research

VLIR-UOS SI

VLIR-UOS EI (TEAM)

VLIR-UOS STI

VLIR-UOS NSS interactions

VLIR-UOS IUC

VLIR-UOS TEAM
Capacity building: training and research

**VLIR-UOS NSS:** bringing together complementary expertise

**UWC: VLIR-UOS IUC**
- water cycle, ground water

**NM-AIST: VLIR-UOS IUC**
- water and people, land use

**UNZI: VLIR-UOS IUC**
- fisheries biology, aquatic ecology
Case studies in South Africa: Ecology for the sustainable construction of dams
Case studies in South Africa: Sustainable abstraction of ground water
Case studies in South Africa: Determining environmental flows in the Pongola floodplain
Case studies in Zimbabwe:
Sustainable fisheries by delineating protected areas
Case studies in Zimbabwe:
Impact of sugar cane plantations on water and plant quality
Case studies in Zimbabwe: Hydroecology as a management tool
Case studies in Tanzania:
Construction of wetlands for water sanitation
Case studies in Tanzania:
Impact of land use on water quality and biodiversity in Upper Pangani
Conclusions

Biodiversity benefits for sustainable development targets
Thank you!