


Developing sustainable land-use options for mined sand dunes



4th Biennial Conference

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Everything

is

connected

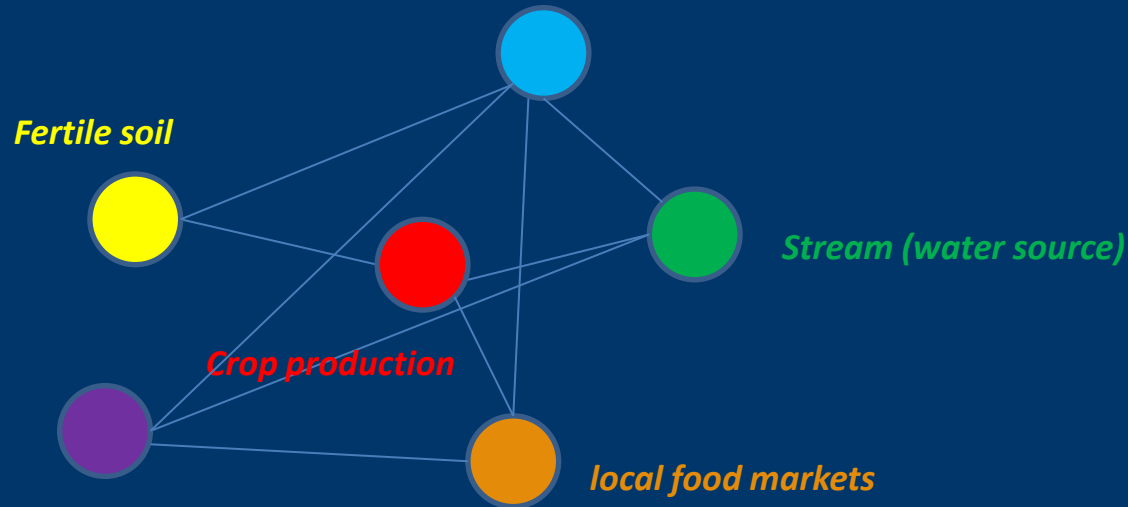
Islands, boundaries, relationships & context

What you see on the left
and what you see on the right
is the same thing ...



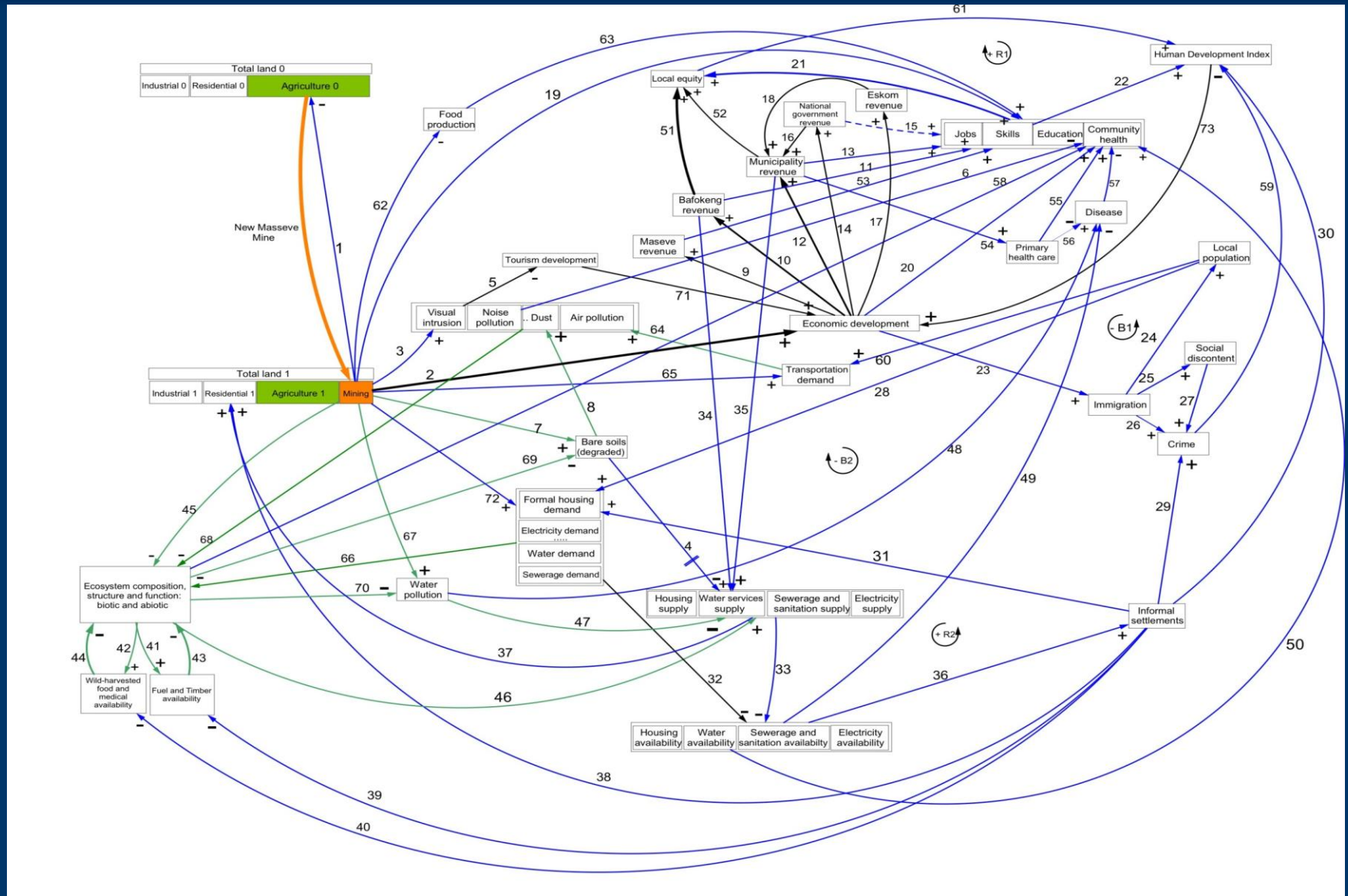
Complex social ecological systems approach

- Complex systems of human and ecosystem components and interactions



- Focus is on *relationships* (linkages)
- *Emergent properties* and *system resilience* in these linkages
- The greater the number of links, the greater the complexity, the greater the resilience >> sustainability
- Nested systems - systems within systems (all connected)

Developing a new mine : system & relationships



Mining & sustainability

- Mining operations cannot be sustainable – the resource or ore body is eventually depleted
- Mines have a limited life – operations cease, mine is decommissioned and closed, company leaves area
- Legacy i.t.o. sustainability – related to context and SES, not the mine (linkages created in the SES by the mining concern)

Sustainable land use options for mined sand dunes

- Richards Bay Minerals - mining for minerals in coastal sand dunes in N-KZN (early 1980s +)
- Visionary rehabilitation programme started simultaneously (restoration of natural forest / biodiversity beyond the EMPR stipulations)
- Evolution of rehabilitation programme over past 10 years:



- 2012 onward:
 - CSIR Technical Trial Phase 2*
 - Financial and market viability study*
 - Enterprise development for financially viable crop types*for large scale commercial cooperative production
- Mined land to be returned to community with a package of feasible, sustainable land use options

Sustainable land use options – context



Current mined dune rehabilitation (since 1980)



Existing rehabilitation (EMPR) to *Cassuarina* (beefwood) plantation & natural forest



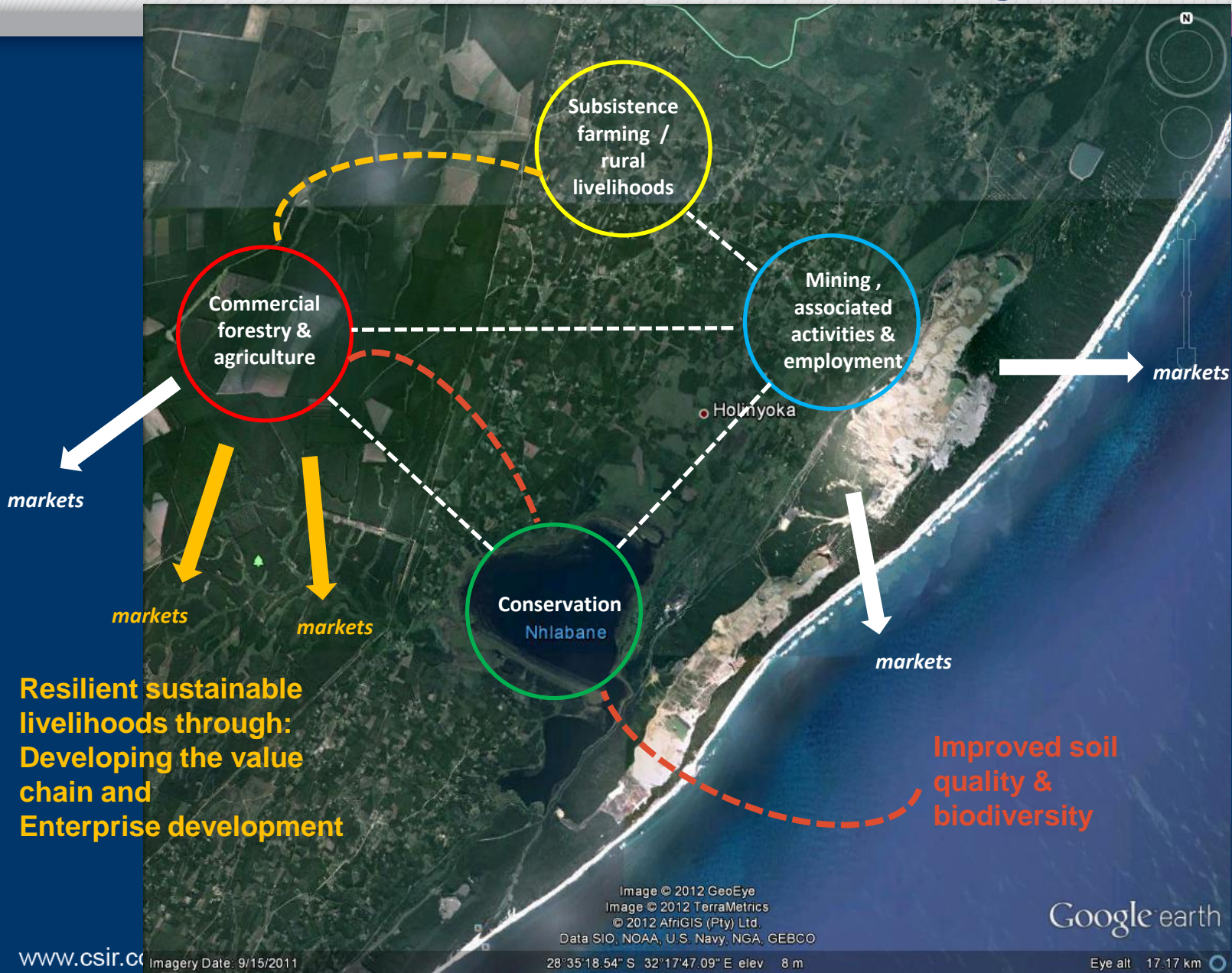
Crop trial for technical viability

Trial	Crop Types tested in the trial
Forestry Trial	Several <i>Eucalyptus</i> spp. / clones for commercial production (timber and / or pulp)
Agricultural Trial	Tea tree, rosemary, rose geranium for essential oil extraction for local and potentially export markets
	Macadamia nut trees for commercial production
	Banana, mango, litchi, orange trees for commercial production
	Indigenous and other grass species (X4) for pastures / grazing for commercial livestock husbandry
	Vegetables (pumpkin, chili, sweet potato, amadumbe) for commercial markets
Legumes (cowpeas, Bambara nuts, sugar beans, peanuts) for subsistence markets & soil improvement	

Crop trial for technical viability



Sustainable land use options – cultivating resilience



Resilient sustainable livelihoods through: Developing the value chain and Enterprise development

Thank you

