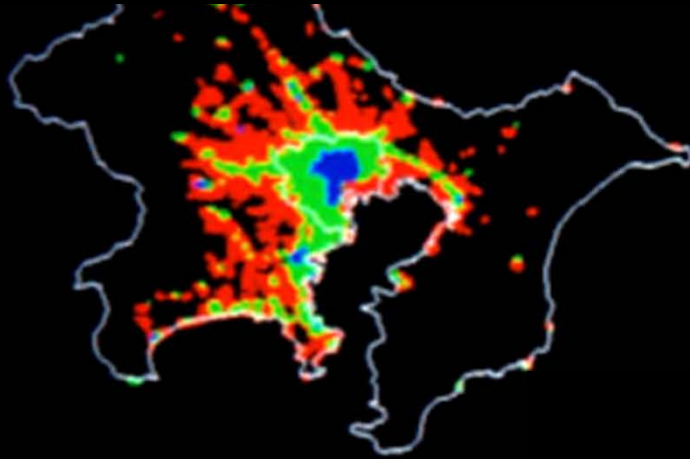
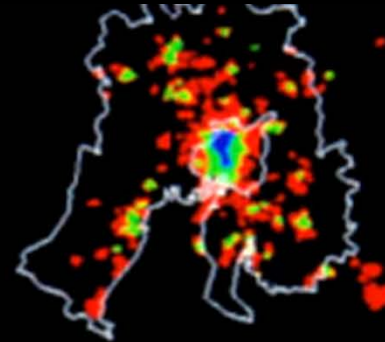


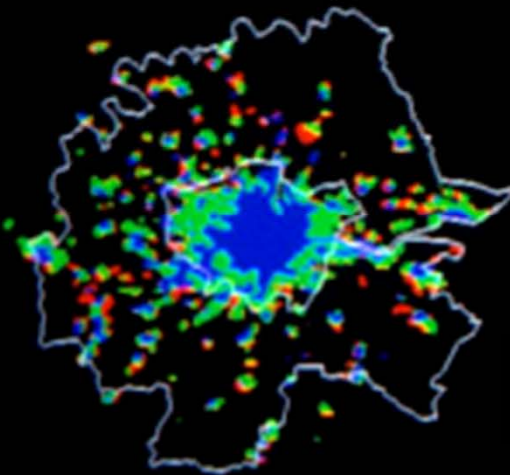
Change in Built-up Areas



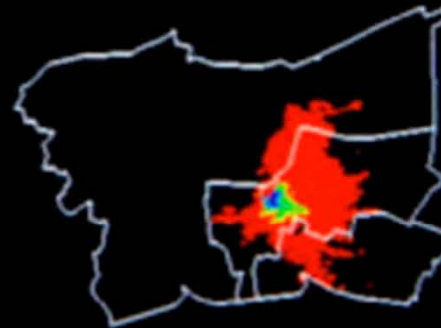
Tokyo



Nagoya



London



Bangkok



Population Density (1988)

Tokyo

max. 15,400

Nagoya

max. 17,100

London

max. 11,500

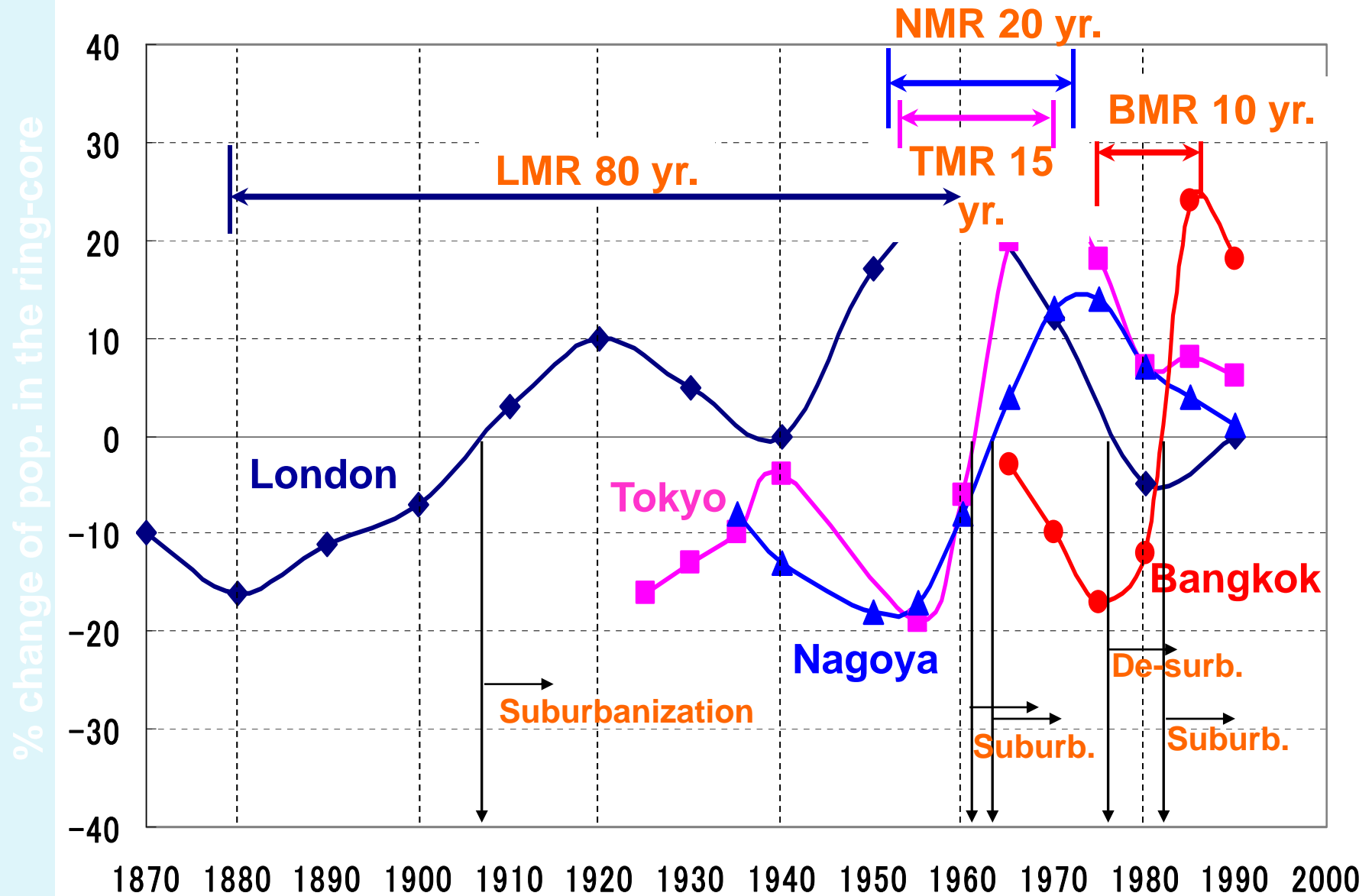
Bangkok

max. 42,200

人/km²
20,000

0 5 50 km

Urbanization Progress



How to manage the changing
Eco-balance and Sustainability?
-from Concept to Research Process-

Earth is like “Cliff Top”

Collapse of cliff
= **Excess human activities causing the environmental deterioration**
(Decline in **Environmental Capacity**)

The area of cliff top
= **Environmental Capacity**

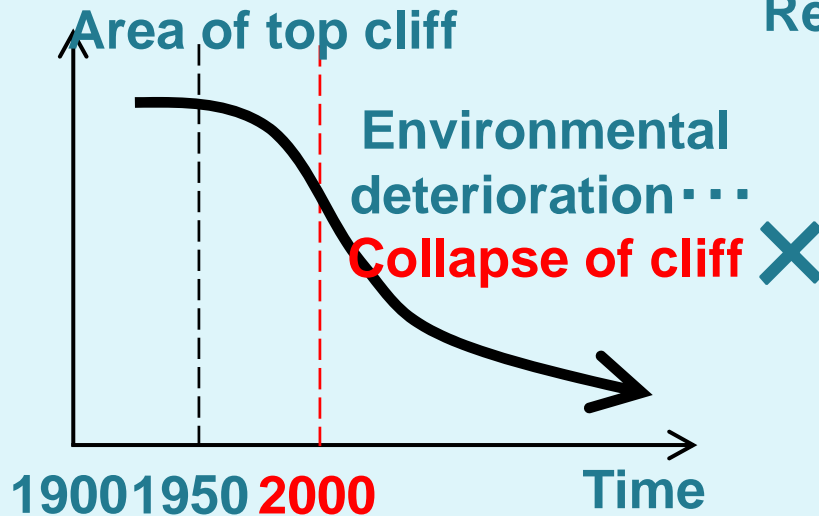
Taking position at the cliff top = Unfair usage of natural resources

Mankind having to survive at this narrow cliff top

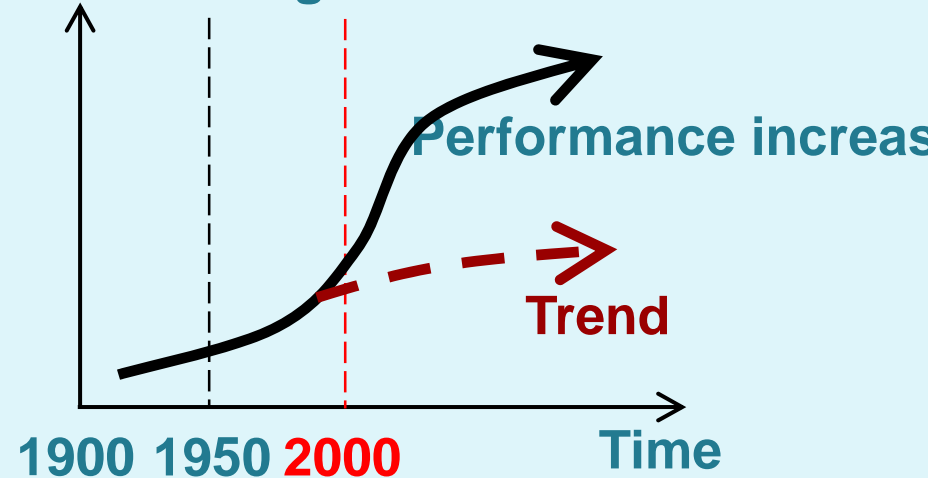
-> **How to keep the cliff existing without collapsing (if possible, enlarging)**
= **Sustainability**

Change in Balance between Resource and Living Environment

Remaining usable resources:



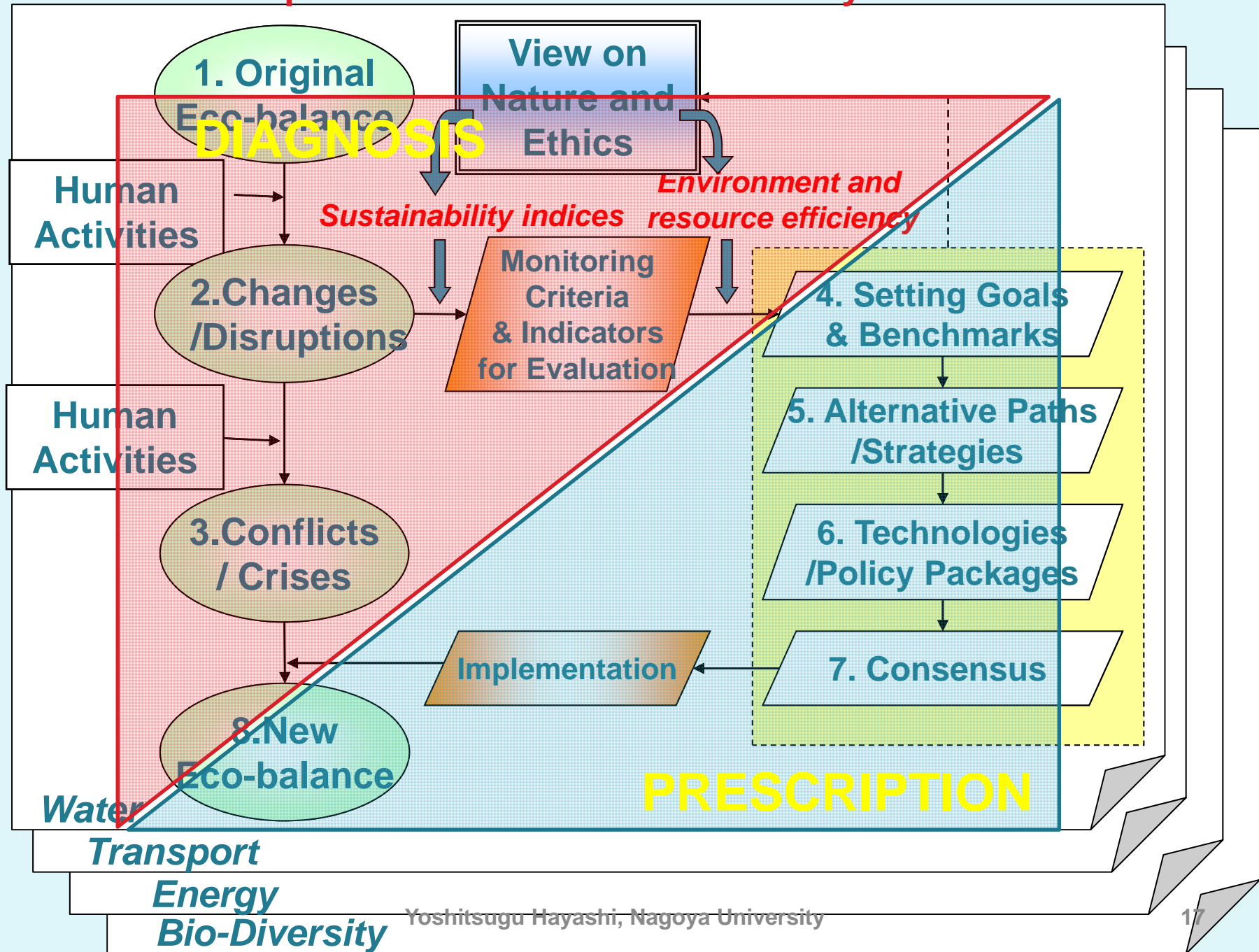
Resource change rate (=FACTOR X)



Living environment of mankind



Proposed Process for Sustainability Studies



Systematic Menu From Diagnosis to Prescription

	<i>Water Environment</i>	<i>Sustainable Transport</i>	<i>Sustainable Energy</i>	<i>Bio-Diversity</i>
1.Original Eco-balance	Water environment balance; Eco-system balance	Non-motorized transport	Earth energy balance	Eco-system balance
2.Changes / Disruptions	Increasing in water use and pollution	Environmental load due to increased mobility and suburbanization	Human consumption of energy exceeding what is left	One species dies every 13 minutes
Sustainability indicators	“Virtual water”	Car ownership that can be sustained by earth	ECOSON (Population that can be sustained by earth resources)	Population Biology Index
3.Confricts / Crises	Lack of water; Health damage; Eco-system destruction	Global environmental load; Local pollution; Congestion; Traffic accident	Lack of energy	Unavailability of genetic resources / food crisis
4.Goals / Benchmarks	Desirable balance between water circulation and land use	FACTOR X : More efforts to reduce environmental load than improve serviceability	Efficiency; Recycle energy use rate; Demand-supply scenario	Post 2010 target /2020 short term /2050 long term
5.Alternative Paths / Strategies	Securing resources; Improving water quality; Flood control, Verifying human and water engagement	EST: Improving vehicle and fuel technology; transport system and demand management	Alternative energy to petroleum, New energy use technologies	Eco-System approach For 12 strategy
6.Technologies / Policy Packages	Engineering, Landscape design	Vehicles; TDM; Land use; Public transport; Information	Energy business, Management, Low-energy consumption	Biotope network Satoyama ABS, L&R
7. Consensus	Public involvement in water catchment's area society	Mobility management; Solidarity and Cooperation	Post Kyoto Protocol	Nagoya Protocol

Diagnosis
of Interaction between
Urbanisation and Nitrogen Circulation

Proposed Process for Sustainability Studies

