INDIAN OCEAN COMMISSION

Selected Application of Statistics to Support Policy Planning for Resilience in the Indian Ocean Region

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Introduction

- The Indian Ocean Commission – a very brief introductions
- Selected applications of statistics to support policy planning
  - Indicators of Vulnerability and Resilience
  - Vulnerability Resilience Profiling (VRP) – with UNDESA
  - Ecosytems Natural Capital Account (ENCA) - Mauritius

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Indian Ocean Commission

COMMISSION DE L'OCÉAN INDIEN

- An intergovernmental organization

- Brings together five countries: Union of the Comoros, Reunion, Madagascar, Mauritius, and the Seychelles.

- Four strategic objectives, which consist in developing for and within the region:
  - A political, diplomatic, and human development force,
  - A safe regional space where smart economic growth is promoted,
  - A common island and ocean environment that is resilient and sustainable, and
  - A strong identity.

Policy-induced Resilience in Island States

- Island states have inherent vulnerabilities (smallness, limited resource base, limited human capacity, trade openness, distance to markets, exposure to natural disasters/CC, …),

- Island states should prioritize policies & strategies to build resilience against these vulnerabilities

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Policy-induced Resilience in Island States

- ISLANDS project of the IOC has provided technical assistance to countries in the Indian Ocean Region to build resilience

- Use of statistics is critical to support policy-induced resilience building (3 selected examples are shown)

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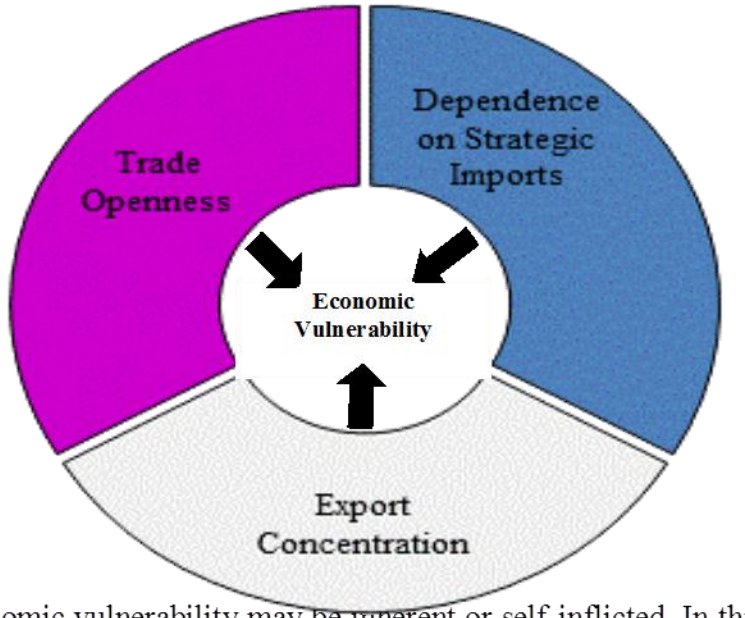
Indicators of Economic Vulnerability and Resilience

Meaning of Economic Vulnerability

- Economic vulnerability refers to inherent proneness of an economy to exogenous shocks.
- Such vulnerability arises from the fact that the economies of small states are, to a large extent, shaped by forces outside their control.

Figure 1
Inherent Features of an Economy that lead to Economic Vulnerability



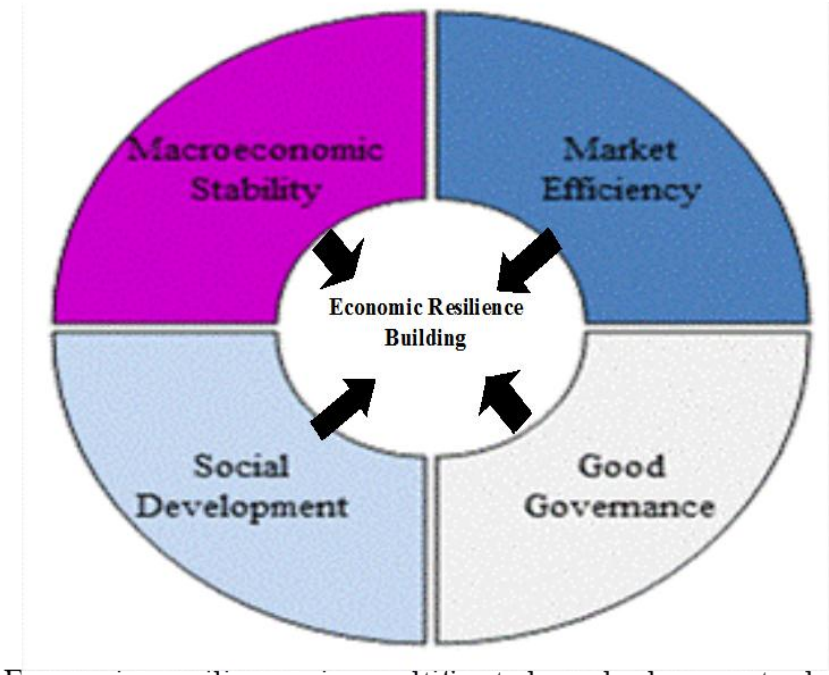
Economic vulnerability may be inherent or self-inflicted. In this study, vulnerability is considered at the result of inherent features which render an economy exposed to external shocks, as shown in the diagram. Policy-induced measures which exacerbate vulnerability are considered as self-inflicted, and therefore reduce the economic resilience of the economy, as discussed below.

Meaning of Economic Resilience (policy-induced)

Economic resilience refers to:

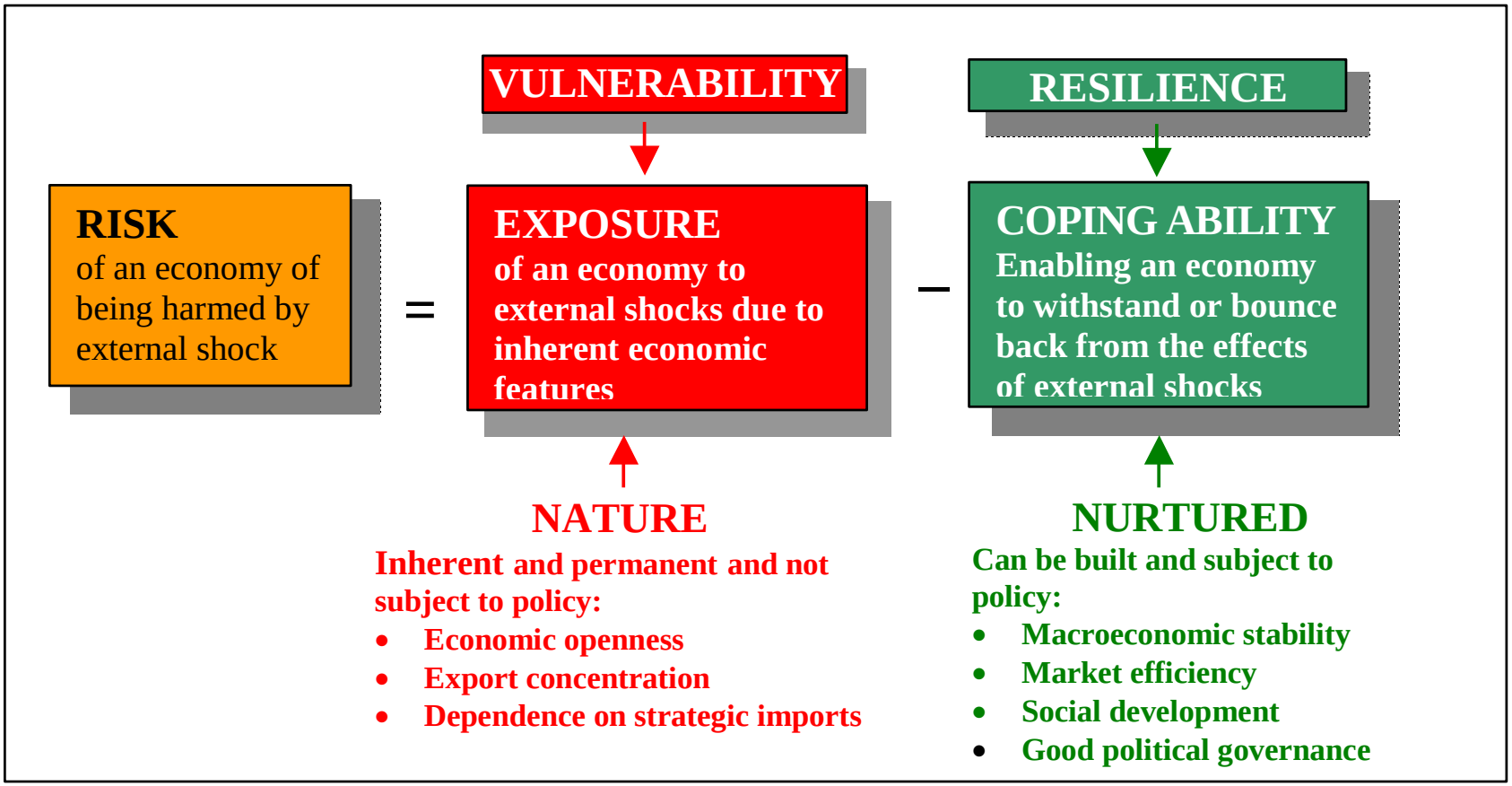
- the ability of an economy to recover quickly following adverse shocks: shock counteraction;
- The ability of an economy to withstand shocks: shock absorption

Figure 2
Policies that lead to
Economic Resilience Building



Economic resilience is multifaceted and does not depend exclusively on economic variables. The most important economic variables relate to stability and flexibility, however social and political factors may also enable an economy to better withstand or counteract the effects of external economic shocks.

Juxtaposing vulnerability & resilience (risk of being harmed by shocks)



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Some results (EVI & ERI)

Island states and country group	Trade openness	Strategic imports	Export concentration	EVI	Rank
Comoros	0.000	0.119	0.425	0.18	4
Madagascar	0.075	0.000	0.061	0.04	5
Mauritius	0.280	0.307	0.384	0.32	2
Seychelles	1.000	1.000	1.000	1.00	1
SIDS	0.234	0.345	0.000	0.19	3

	Macro-economic stability			Market efficiency	Social dev.	Good governance	Resilience index	Rank
	Debt ratio	Inflation	Current A/C					
Comoros	0.57	0.80	0.45	0.00	0.00	0.00	0.153	5
Madagascar	1.00	0.35	0.07	0.11	0.27	0.21	0.265	4
Mauritius	0.67	0.62	0.42	1.00	0.60	0.83	0.750	1
Seychelles	0.00	0.00	0.00	0.66	0.71	0.53	0.476	2
SIDS	0.47	0.67	0.28	0.47	0.26	0.60	0.450	3

Indicators of Environmental vulnerability and Resilience

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Environment Vulnerability and Environment Resilience index

Around 50 indicators are used to produce the index. It is based on 3 fundamental aspects – Hazard, Resistance and Damage and further subdivided into categories – Climate change, Biodiversity, Water, Agriculture and fisheries, Human health aspects, Desertification, and Exposure to natural disasters.

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Data

The data needed encompasses a range of environmental factors from meteorological data; sea surface temperature; geographical information; biological species and habitat data; reserves and human activities such as fishing, population, pollution, etc

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Indicators

Vulnerability		Resilience		
1. HIGH WINDS	11. LAND AREA	22. ENDANGERED SPECIES	32. PESTICIDES	42. MINING
2. DRY PERIODS	12. COUNTRY DISPERSION	23. EXTINCTIONS	33. BIOTECHNOLOGY	43. SANITATION
3. WET PERIODS	13. ISOLATION	24. VEGETATION COVER	34. PRODUCTIVITY OVERFISHING	44. VEHICLES
4. HOT PERIODS	14. RELIEF	25. LOSS OF COVER	35. FISHING EFFORT	45. Population
5. COLD PERIODS	15. LOWLANDS	26. HABITAT FRAGMENTATION	36. RENEWABLE WATER	46. POPULATION GROWTH
6. SEA TEMPERATURES	16. BORDER	27. DEGRADATION	37. SULPHUR DIOXIDE EMISSIONS	47. TOURISTS
7. VOLCANOES	17. ECOSYSTEM IMBALANCE	28. TERRESTRIAL RESERVES	38. WASTE PRODUCTION	48. COASTAL SETTLEMENTS
8. EARTHQUAKES	18. ENVIRONMENTAL OPENNESS	29. MARINE RESERVES	39. WASTE TREATMENT	49. ENVIRONMENTAL AGREEMENTS
9. TSUNAMIS	19. MIGRATIONS	30. INTENSIVE FARMING	40. INDUSTRY	50. CONFLICTS
10. SLIDES	20. ENDEMICS	31. FERTILISERS	41. SPILLS	
	21. POPULATION			

Some results Environmental vulnerability index

		Comoros	Madagascar	Mauritius	Seychelles
Vulnerability (Inherent)		2.95	2.52	3.11	3.42
Resilience (Policy induced)		2.50	3.00	4.21	3.71
Enivironmental Vul. Index		2.77	2.79	3.58	3.55
		Vulnerable	Vulnerable	Highly Vulnerable	Highly Vulnerable
		Mostly inherent features		Could be reversed by appropriate policy	Could be reversed by appropriate policy

Vulnerability-Resilience Profile (with UNDESA and work in progress)

Vulnerability Resilience Profile, VRP

- An analytical framework to help Small Islands Developing States monitor and evaluate their progress towards building resilience in the context of the Barbados Plan of Action and its implementation through the Mauritius Strategy for implementation (MSI)

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Vulnerability Resilience Profile, Methodology

- VRP methodology is based on a five steps systematic and participatory process

- The five steps are carried out using an inclusive process based on multi stakeholder and multi disciplinary consultations

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VRP framework/steps

Preparatory Step	**Assembling for the VRP** Prepare a Baseline Report based on: i. Stocktaking of national statistical systems to determine availability of and gaps in data sets required for identifying vulnerabilities and resilience of MSI thematic areas ii. Capacity assessment of national statistical systems Identify and assemble data sources and reports on MSI thematic areas Identify training participants representing cross section of public, private and civil society organisations
Step 1	**Selecting Priority Themes and Major Issues** Rank the 19 priority themes in the MSI Identify and select economic, social and environmental issues /concerns facing the country for each of the identified themes
Step 2	**Selecting criteria for determining vulnerability and resilience** Develop economic, social and environmental criteria for determining vulnerability and resilience of identified themes in step 1.
Step 3	**Selection of Indicators** Select indicators for the criteria identified in Step 2
Step 4	**Assessment and Rating** Develop and rating vulnerability and resilience scores using the criteria and indicators developed in Steps 2 and 3
Step 5	**Mapping and Justification** Map the vulnerability and resilience scores using an Excel scatter chart Create a country vulnerability-resilience profile for the selected MSI themes and formulate a narrative to justify the vulnerability and resilience scores and to formulate a VRP based on the overall scores

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Scope of required statistics
(will change in light of the SAMOA Pathway)

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Box 1: The 19 Priority Themes of the MSI

- Climate change and sea-level rise
- Natural and environmental disasters
- Management of wastes
- Coastal and marine resources
- Freshwater resources
- Land resources
- Energy resources
- Tourism resources
- Biodiversity resources
- Transport and communication
- Science and technology
- Graduation from least developed country status
- Trade: globalization and trade liberalization
- Sustainable capacity development and education for sustainable development
- Sustainable production and consumption
- National and regional enabling environments
- Health
- Knowledge management and information for decision-making
- Culture

Example for CC & SLR (Issues & Dimensions)

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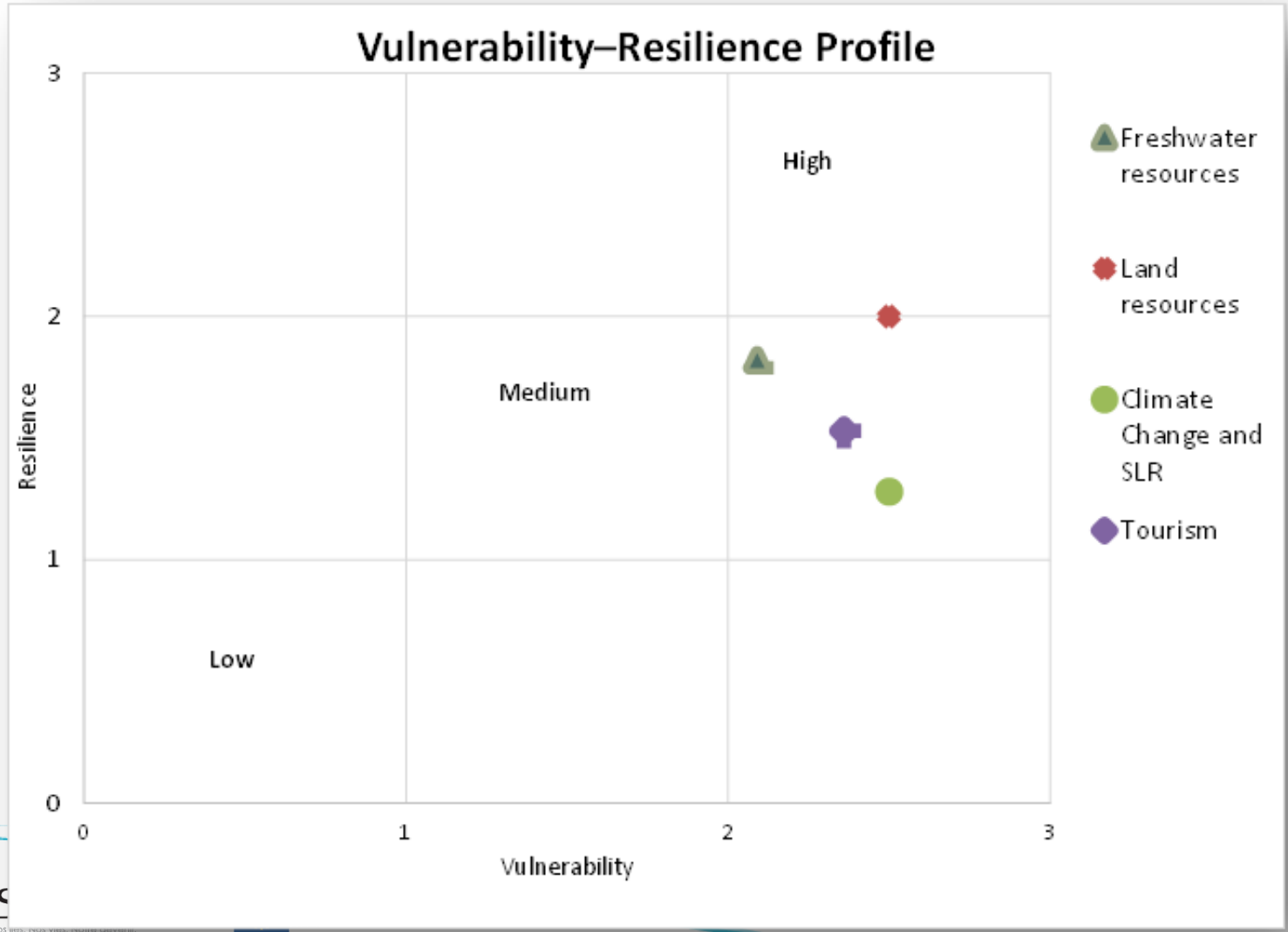
Climate Change & Sea Level Rise				
Criteria	**Issues**	**Dimensions**		
		Economic	**Social**	**Environmental**
1	Land degradation and desertification	Size of arable land reduced	Displacement of settlements	Ecological balance affected
2	Impact on rural livelihoods	Impact on rural livelihoods	Increase in level of indigence	Loss of indigenous plants and animals
3	Loss in Agricultural productivity	Loss in Agricultural productivity	Food consumption/calorie intake per capita in affected areas	Reduction in forest cover

Example for CC & SLR (Indicators)

Thematic Area: Climate Change and Sea Level Rise				
	Vulnerability		Resilience	
Dimension	Criterion	Indicator	Criterion	Indicator
Economic	Size of arable land reduced	% change in arable land in the last 20 years	Interventions in sustainable land management	# of SLM programmes introduced since 2004 Cabinet approved Policy on SLM implemented
	Decline in rural livelihoods	% change in number of persons involved in crop and livestock production in the last 20 years	Vocational training programmes for rural youth Value chain programmes introduced for crop and livestock	# of new agro processing facilities created in rural areas since 2004 # of youth trained in agricultural business
	Decline in agriculture's contribution to GDP	% change in agriculture contribution to GDP	Introduction of drought resistant new crops	Acreages under new crops

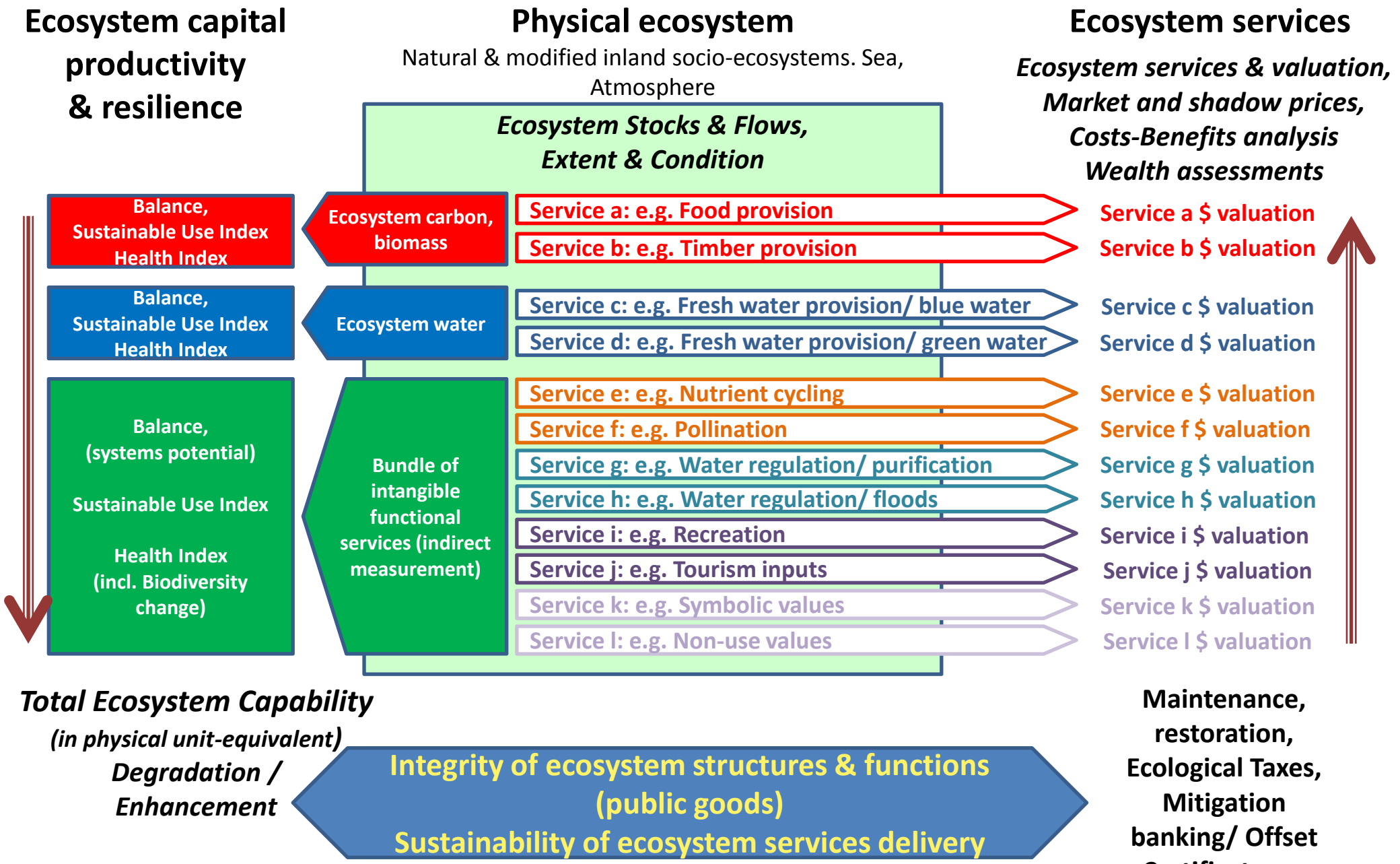
What would the results look like?

e.g. VRP (Jamaica)

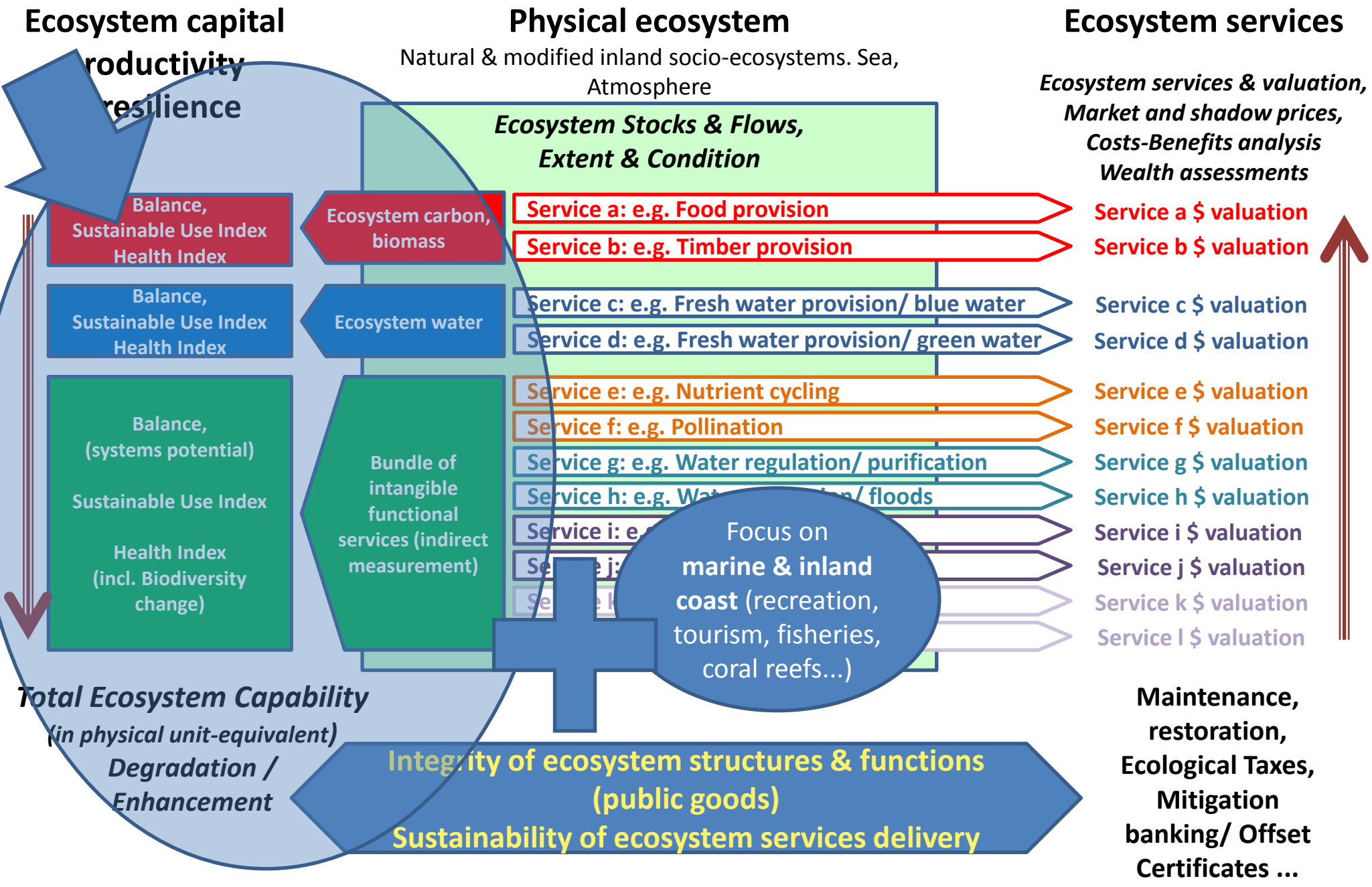


Ecosystems Natural Capital Account (ENCA) - Mauritius

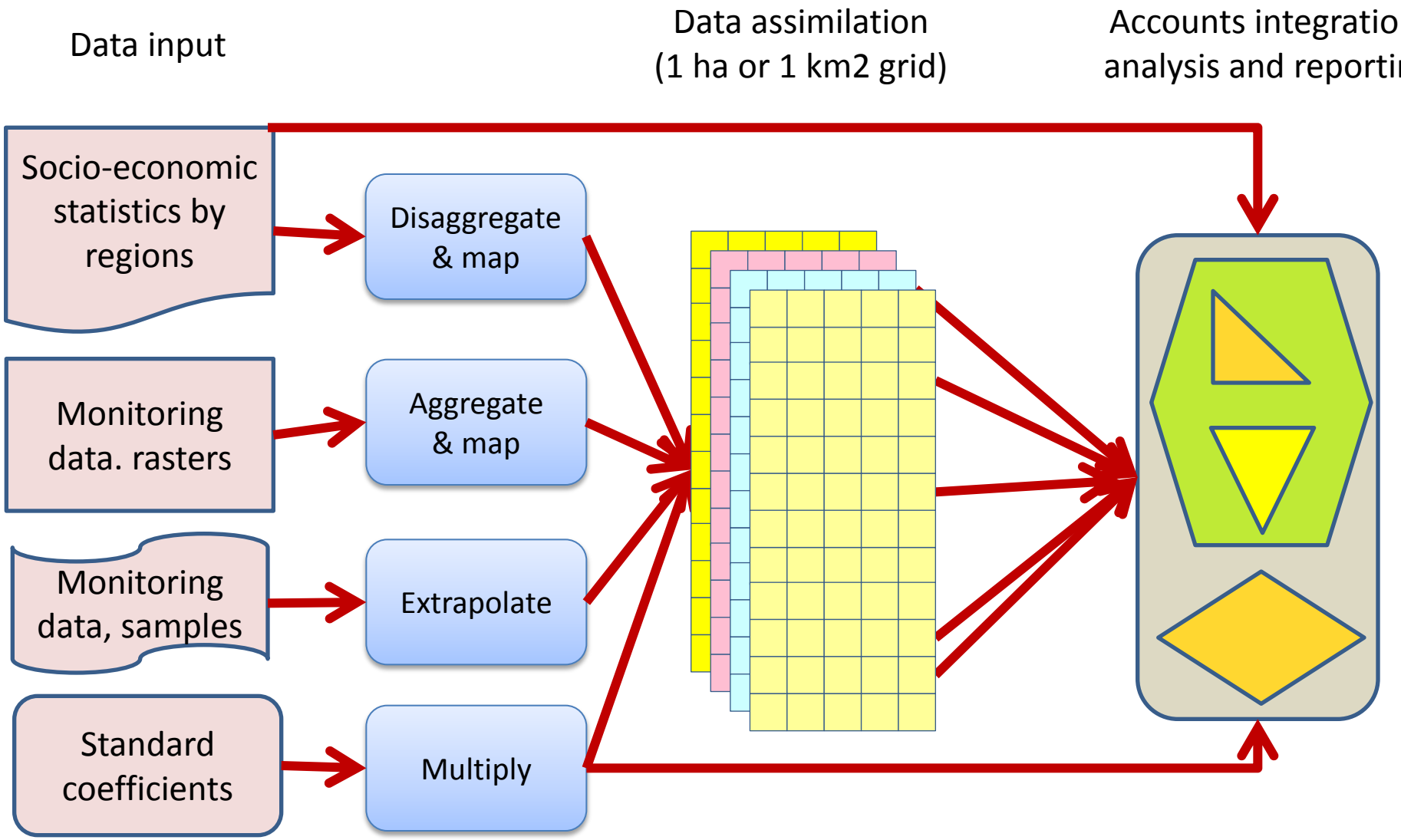
Two possible approaches to ecosystem accounting



Two possible approaches to ecosystem accounting

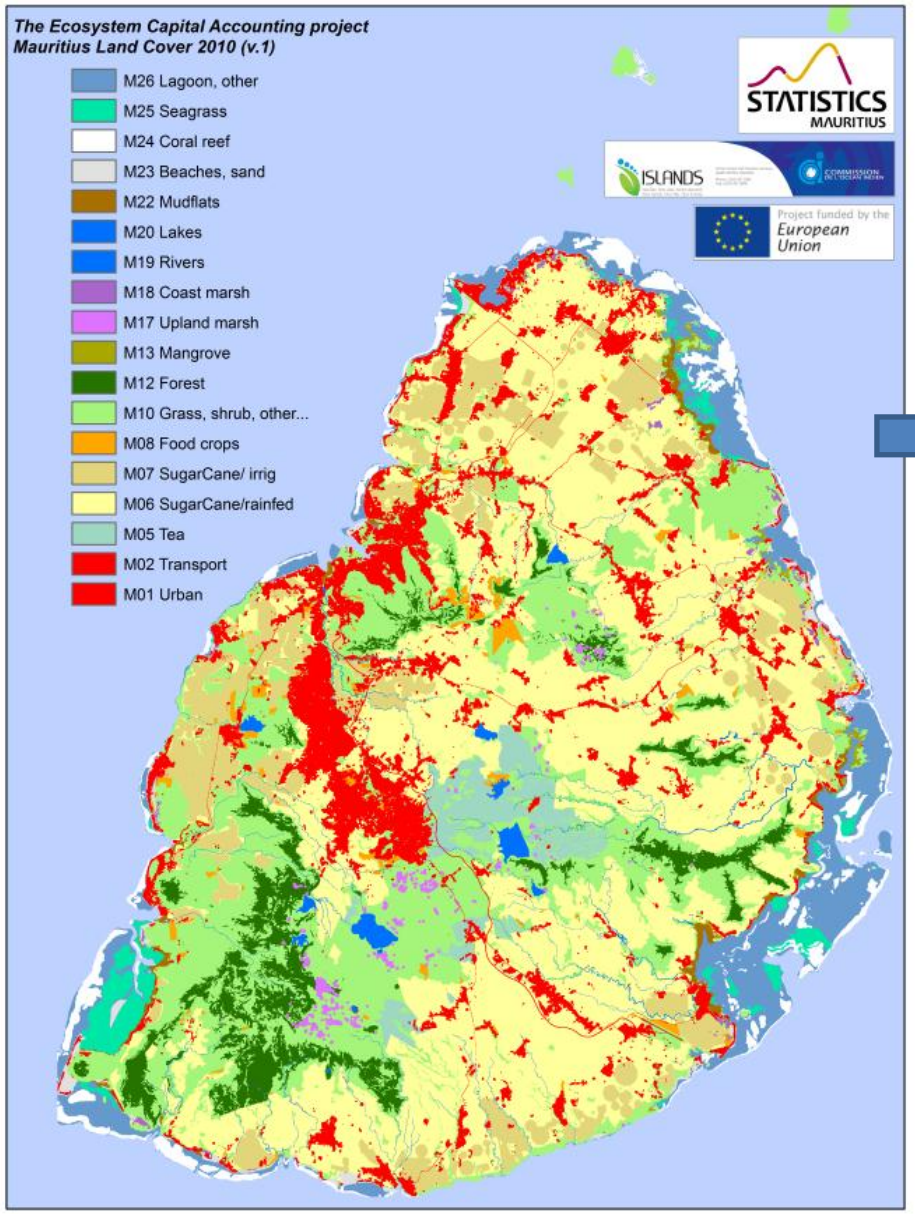


Main data flows to compile ecosystem natural capital accounts



SEEA-ENCA Mauritius preliminary results :

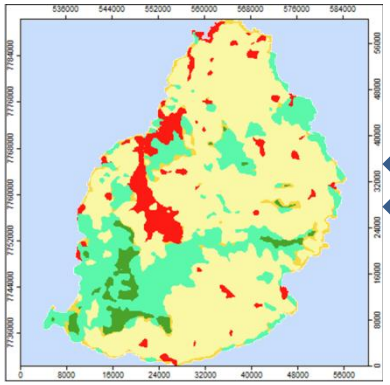
Creation of Ecosystem Accounting Units



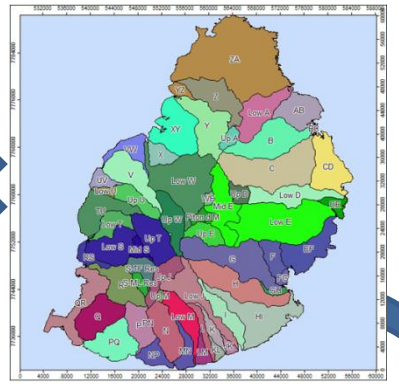
A land cover map has been produced from the start for:

1. **Defining statistical units for accounting (EAU) and**
2. **Computing the land cover account (next slide)**

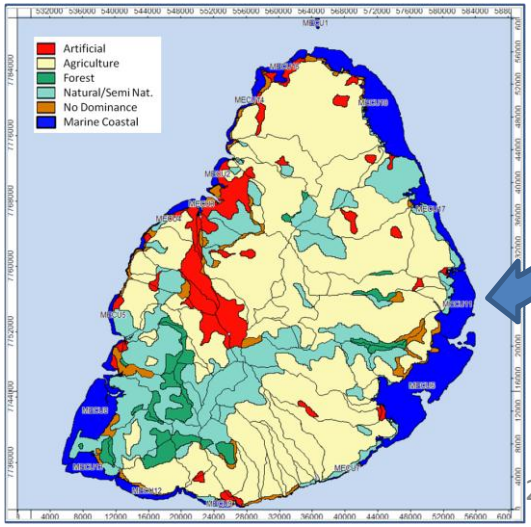
Dominant land cover types (>50%)



River sub-basins

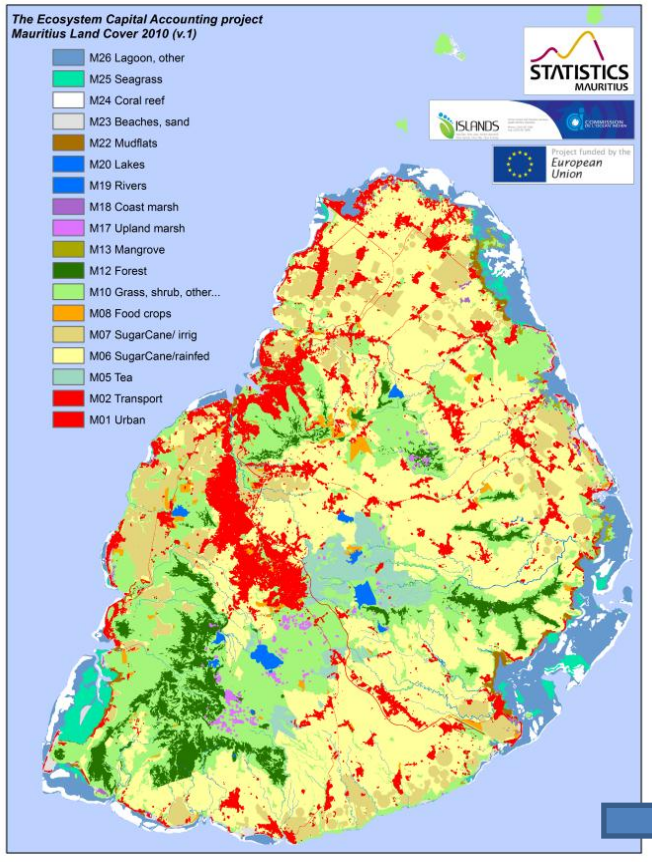


Socio-ecological landscape units (SELU) & Marine Coastal Units (MCU)



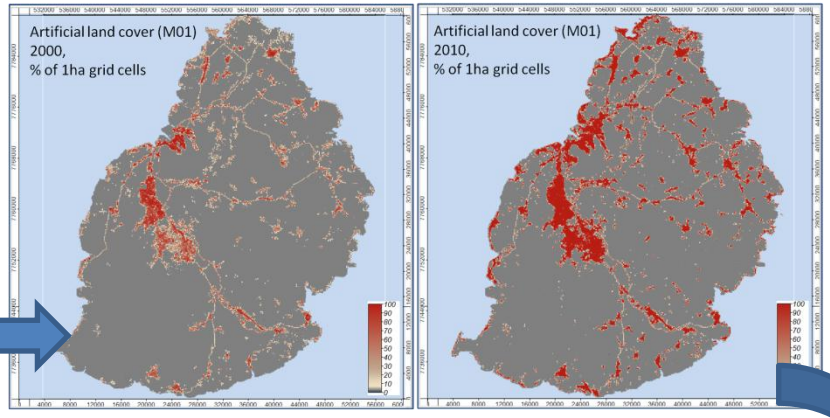
SEEA-ENCA Mauritius preliminary results :

Land cover and change from 2000 to 2010



The land cover data are stored using geographical datasets which use grids (10m x 10m and 100m x 100m) at the most detailed level.

Urban land cover 2000 & 2010



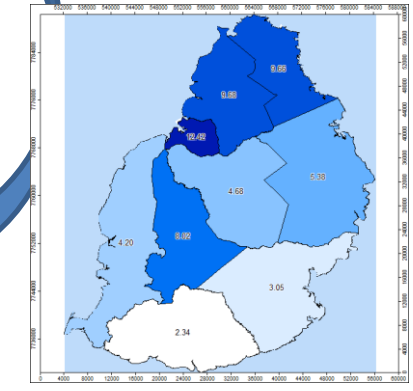
These grids allow computing statistics and producing ecosystems/natural capital accounts for various statistical units such as municipal and village council areas, districts, coastal zones, river basins, socio-ecological landscape units and any relevant zoning.

Land cover stock and change account/ urban sprawl **2000 2010 - km2**

Provisional

	Rivière du Rempart	*Pamplemousses*	*Flacq*	*Moka*	*Grand Port*	*Plaines Wilhems*	*Black River*	*Savanne*	*Port Louis*	**TOTAL**
District AREA SQKM	14703	18019	29826	23512	26134	19839	25558	24758	3976	186325
M01 Urban land cover 2000 v0	747	705	405	282	406	2060	334	266	2667	7872
M01 Urban land cover 2000 v1, adjusted	1225	1172	667	510	549	2456	542	379	3284	10782
lf1 Urban sprawl	478	467	263	228	143	396	208	112	616	2911
M01 Urban land cover 2010	1704	1639	930	738	691	2852	749	491	3900	13693

Urban sprawl 2000-2010 by Districts



SEEA-ENCA Mauritius preliminary results :

The biomass-carbon account

Carbon Accounts show the capacity of the ecosystems to produce biomass and the way it is used by crops harvests and trees removal or sometimes sterilised by artificial developments or destroyed by soil erosion or forest fires (in line with IPCC guidelines).

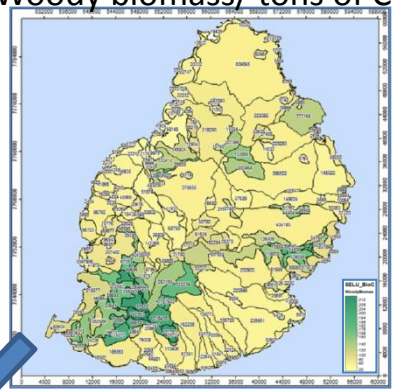
Accounts are compiled using various sources such as products based on earth observation by satellite (e.g. MODIS NPP), on in situ monitoring (for IPCC-LULUCF, FAO/soil, FRA2010) and official statistics .

Simplified bio-carbon accounts by districts, 2010 — **Tons of carbon**

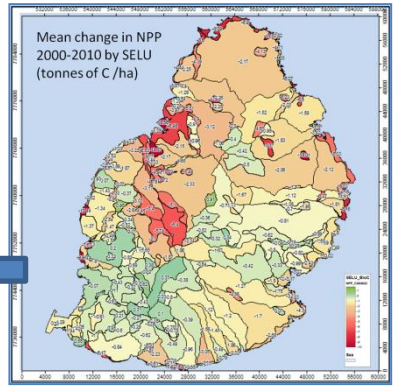
Provisional

2010	Riviere du Rempart	Pamplemousses	Flacq	Moka	Grand Port	Plaines Wilhems	Black River	Savanne	Port Louis	Tot
Initial stock 2010	**1457955**	**2101934**	**4135543**	**4165122**	**2855365**	**3327114**	**3173857**	**3196601**	**432317**	**24845808**
Woody biomass	873403	1137222	2068571	1744337	1796040	1643485	2224653	2409579	265193	**14162483**
Topsoil organic carbon	584551	964712	2066972	2420785	1059325	1683629	949204	787022	167124	**10683324**
Flows/inputs	**335582**	**417954**	**819601**	**675923**	**736068**	**454057**	**642970**	**739278**	**68922**	**4890354**
Net Primary Production	335582	417954	819601	675923	736068	454057	642970	739278	68922	**4890354**
Flows/outputs and decrease	**349143**	**448659**	**870542**	**708508**	**725853**	**481532**	**650835**	**744290**	**74976**	**5054339**
Removals, harvests	65446	90345	108405	56498	90172	35596	87914	81900	1698	**617974**
Wood removals										**0**
Sugarcane	*63718*	*86585*	*104230*	*52531*	*87208*	*31984*	*83773*	*80223*	*912*	**591165**
Food crops	*1727*	*3759*	*4175*	*3656*	*2918*	*3565*	*4141*	*1633*	*786*	**263**
Other cops	*0*	*0*	*0*	*311*	*46*	*46*	*0*	*44*	*0*	**447**
Decrease due to land use change	4102	4761	5762	3629	3240	5216	2881	2290	1388	**33269**
Other decrease (fire, erosion…)	14580	21019	41355	41651	28554	33271	31739	31966	4323	**248458**
Soil/decomposers respiration v2	265016	332534	715020	606730	603888	407449	528301	628133	67567	**4154638**
Net Ecosystem Carbon Balance 1 (flows)	***-13562***	***-30705***	***-50941***	***-32585***	***10215***	***-27475***	***-7865***	***-5012***	***-6054***	**-163985**
Statistical adjustment	16597	28379	33235	15034	-29421	11163	-19714	-15632	6178	**45819**
Net Ecosystem Carbon Balance 2 (stocks)	***3035***	***-2326***	***-17706***	***-17551***	***-19206***	***-16312***	***-27579***	***-20644***	***123***	**-118166**
Final Stock 2010	**1460990**	**2099608**	**4117837**	**4147571**	**2836159**	**3310802**	**3146278**	**3175957**	**432440**	**24727642**
Woody biomass	876438	1134896	2050865	1726786	1776835	1627173	2197074	2388935	265316	**14044318**
Topsoil organic carbon	584551	964712	2066972	2420785	1059325	1683629	949204	787022	167124	**10683324**
Net accessible bio-carbon resource 2010	**73600**	**83094**	**86875**	**51642**	**112974**	**30296**	**87089**	**90500**	**1479**	**617550**
Change in stocks in the previous year	3035	-2326	-17706	-17551	-19206	-16312	-27579	-20644	123	**-118166**
Flows/inputs (+)	335582	417954	819601	675923	736068	454057	642970	739278	68922	**4890354**
Soil/decomposers respiration v2 (-)	265016	332534	715020	606730	603888	407449	528301	628133	67567	**4154638**
Index of intensity of use of bio-carbon 2010	**112**	**92**	**80**	**91**	**125**	**85**	**99**	**111**	**87**	**100**

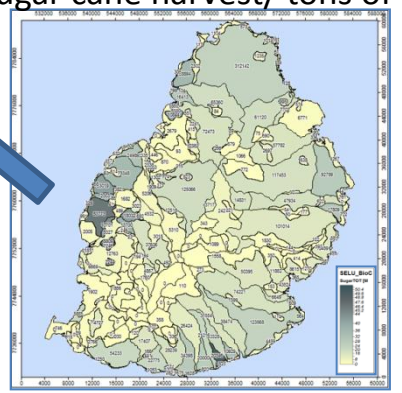
Woody biomass/ tons of C



Change in NPP/ tons of C



Sugar cane harvest/ tons of C

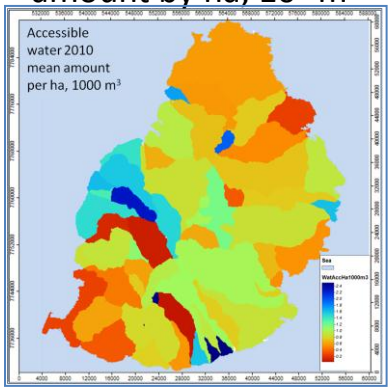


SEEA-ENCA Mauritius preliminary results :

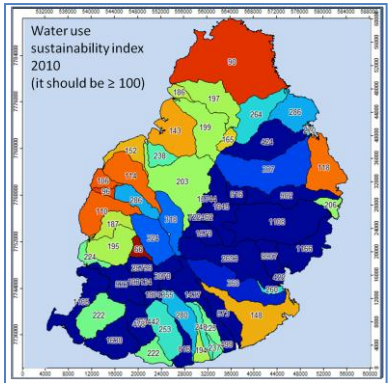
The ecosystem water account

The ecosystem water accounts follows the SEEA Water methodology and use preliminary results of the national water accounts. They are detailed by river basins and sub-basins where the hydrological system can be described consistently. Stocks of water are mainly aquifers and lakes/reservoirs, which play important role in Mauritius. Data have provided by the meteorological and water agencies. Water use by sub-basins is estimated from population census data and irrigation map. Satellite products have been used for evapotranspiration. The outcome is the calculation of the water really accessible for use and of an index of stress from water use intensity.

Accessible water, mean amount by ha, 10^3 m^3



Water use intensity stress index (stress when <100)



Simplified water accounts by Districts, 2010 — **Mm3**

Provisional

2010	Riviere du Rempart	Pamplemousses	Flacq	Moka	Grand Port	Plaines Wilhems	Black River	Savanne	Port Louis	Total
AREA_ha	*14703*	*18019*	*29826*	*23512*	*26134*	*19839*	*25558*	*24758*	*3976*	*186325*
Boreholes_nb	*105*	*164*	*100*	*83*	*110*	*146*	*131*	*30*	*12*	*881*
River runoff districts coeff	*35*	*20*	*150*	*150*	*100*	*100*	*80*	*100*	*20*	*755*
Lake 2010 ha	*0*	*103*	*0*	*468*	*41*	*511*	*109*	*19*	*0*	*1251*
Stocks	**3345**	**5231**	**3189**	**2681**	**3510**	**4687**	**4183**	**961**	**383**	**28170**
Aquifers	3343	5222	3184	2643	3503	4649	4171	955	382	28052
Lakes/reservoirs	0	7	0	32	3	35	7	1	0	86
Rivers	2	2	5	6	5	3	4	4	1	32
Soil/vegetation										
Net Inflows	**75**	**176**	**292**	**342**	**355**	**293**	**155**	**353**	**12**	**2052**
Rainfall	173	236	579	633	629	484	302	603	49	3688
EvapoTranspitation (actual), total	155	199	367	290	338	224	308	326	40	2247
EvapoTranspitation (actual), spontaneous	109	115	310	268	294	207	167	269	40	1779
Net transfers surface - groundwater	11	14	23	18	20	15	20	19	3	143
Transfers between basins		41		-41						0
Abstraction and Uses	**63**	**109**	**80**	**36**	**63**	**83**	**152**	**69**	**23**	**678**
Municipal Water Production	17	23	23	13	18	64	11	11	22	202
Use of water	*8*	*12*	*11*	*7*	*9*	*32*	*5*	*6*	*11*	*101*
Loss of water in distribution	*8*	*12*	*11*	*7*	*9*	*32*	*5*	*6*	*11*	*101*
Irrigation	46	85	57	22	44	17	141	57	0	468
Other	1	1	1	1	1	3	0	0	1	8
Waste water to rivers	**6**	**8**	**8**	**5**	**6**	**22**	**4**	**4**	**8**	**70**
Outflow to the sea	**78**	**46**	**324**	**318**	**217**	**212**	**172**	**213**	**50**	**1632**
Rivers runoff	74	42	318	318	212	212	170	212	42	1602
Waste water to the sea	4	4	6	0	5	0	2	1	8	30
Induced ETA, Evaporation	**46**	**85**	**57**	**22**	**44**	**17**	**141**	**57**	**0**	**468**
Net Flows	-103	-52	-156	-29	41	2	-304	19	-46	-626
Closing stocks	**3242**	**5179**	**3034**	**2652**	**3551**	**4690**	**3879**	**980**	**337**	**27544**
Accessible renewable water	**83**	**124**	**217**	**200**	**219**	**187**	**228**	**213**	**36**	**1507**
Water use intensity (1): Average/ha	**132**	**114**	**270**	**561**	**345**	**224**	**150**	**310**	**155**	
Water use intensity (2): 1st decile	**90**	**90**	**118**	**203**	**148**	**114**	**110**	**222**	**143**	

SEEA-ENCA Mauritius preliminary results :

The functional services account (depending from integrity and biodiversity)

The biodiversity of systems and species account is made of two accounts which describe the state of ecosystems green infrastructure (landscapes, rivers and sea coastal zones) on the one hand and changes in species biodiversity on the other hand.

The NLEP index combines the green character of ecosystems and their fragmentation by roads which may alter their good functioning. Land cover is then weighted with NLEP.
Highest NLEP values can be found where forests, shrubs, grass and natural habitats are predominant, in particular in mountainous and land coastal areas. Low NLEP values correspond to urbanised areas and intermediate score reflect agriculture dominated catchments.

Green Infrastructure Accounts

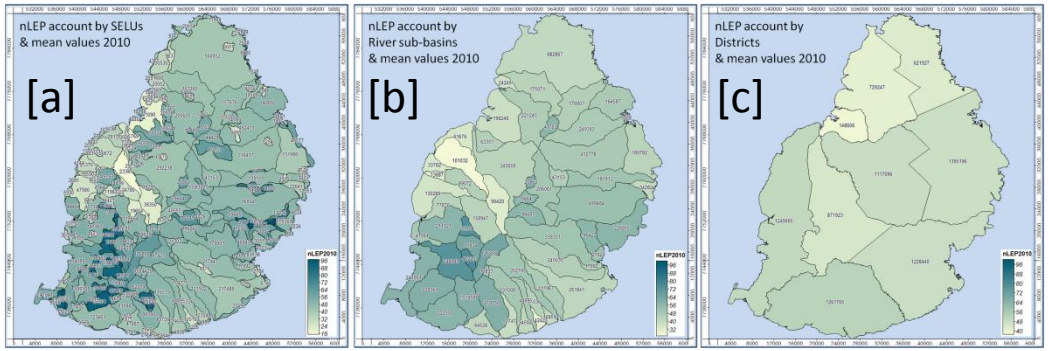
Provisional	*Riviere du Rempart*	*Pamplemousses*	*Flacq*	*Moka*	*Grand Port*	*Plaines Wilhems*	*Black River*	*Savanne*	*Port Louis*	**Total** / *Mean values*
AREA_ha	14703	18019	29826	23512	26134	19839	25558	24758	3976	186325
Indexes (0-100 value per ha)										
GBL 2000 index	*43.4*	*41.7*	*49.7*	*55.6*	*50.1*	*53.4*	*61.0*	*53.7*	*58.6*	*51.9*
Fragmentation index	*8.6*	*9.8*	*7.3*	*6.2*	*6.9*	*7.9*	*5.1*	*5.1*	*6.9*	*6.9*
nLEP 2000 index	*39.7*	*37.6*	*46.0*	*52.1*	*46.6*	*49.2*	*57.9*	*51.0*	*54.5*	*48.4*
Green Infrastructure Account										
GBL 2000 / weighted ha	638105	751152	1481482	1307506	1309039	1060139	1559660	1330151	232911	9670145
nLEP 2000 / weighted ha	583021	677761	1373059	1226033	1218167	976061	1479992	1262700	216727	9013521

Indexes (0-100 value per ha)										
GBL 2010 index	*42.0*	*40.6*	*49.2*	*55.1*	*49.8*	*52.4*	*60.5*	*53.5*	*50.7*	*51.1*
Fragmentation index	*8.6*	*9.8*	*7.3*	*6.2*	*6.9*	*7.9*	*5.1*	*5.1*	*6.9*	*6.9*
nLEP 2010 index	*38.4*	*36.7*	*45.6*	*51.6*	*46.4*	*48.2*	*57.4*	*50.8*	*47.2*	*47.7*
Green Infrastructure Account										
GBL 2010 / weighted ha	617999	732184	1468542	1294945	1301938	1039397	1547086	1324150	201660	9527900
nLEP 2010 / weighted ha	564651	660647	1361066	1214254	1211558	956963	1468060	1257003	187648	8881851

Change in nLEP 2000-2010	**-18370**	**-17114**	**-11993**	**-11779**	**-6608**	**-19097**	**-11932**	**-5697**	**-29079**	**-131670**

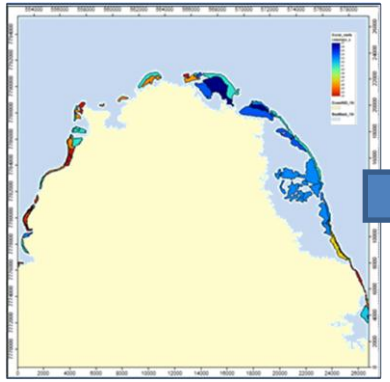
Change in nLEP index % 2000-2011	**-3.2**	**-2.5**	**-0.9**	**-1.0**	**-0.5**	**-2.0**	**-0.8**	**-0.5**	**-13.4**	**-1.5**

Net Landscape Ecosystem Potential (NLEP) 2010 by SELU [a], River basins [b] and Districts [c]

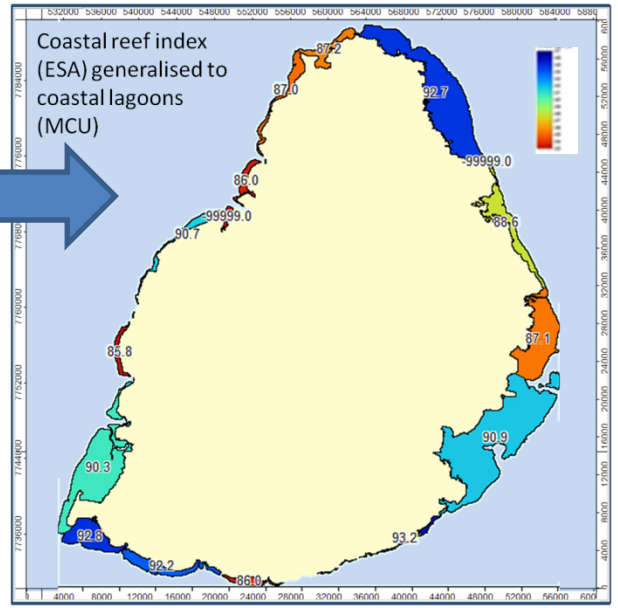


SEEA-ENCA Mauritius preliminary results :
the Sea Coastal Ecosystems test account

Coastal ecosystems play important role in Mauritius and a test has been done in a domain where little practical accounting experience exists. The methodology for land ecosystems has been extended to the lagoons for which ecosystem accounting units (EAU) have been defined and mapped . A test account of been produced using the inventory of "Environmentally Sensitive Areas", using the indicator of coral reefs vulnerability, on the one hand and urban pressure on coastal ecosystems on the other hand .The conclusion is that the SEEA-ENCA methodology can be implemented in full.



Coral reefs vulnerability index (ESA project)



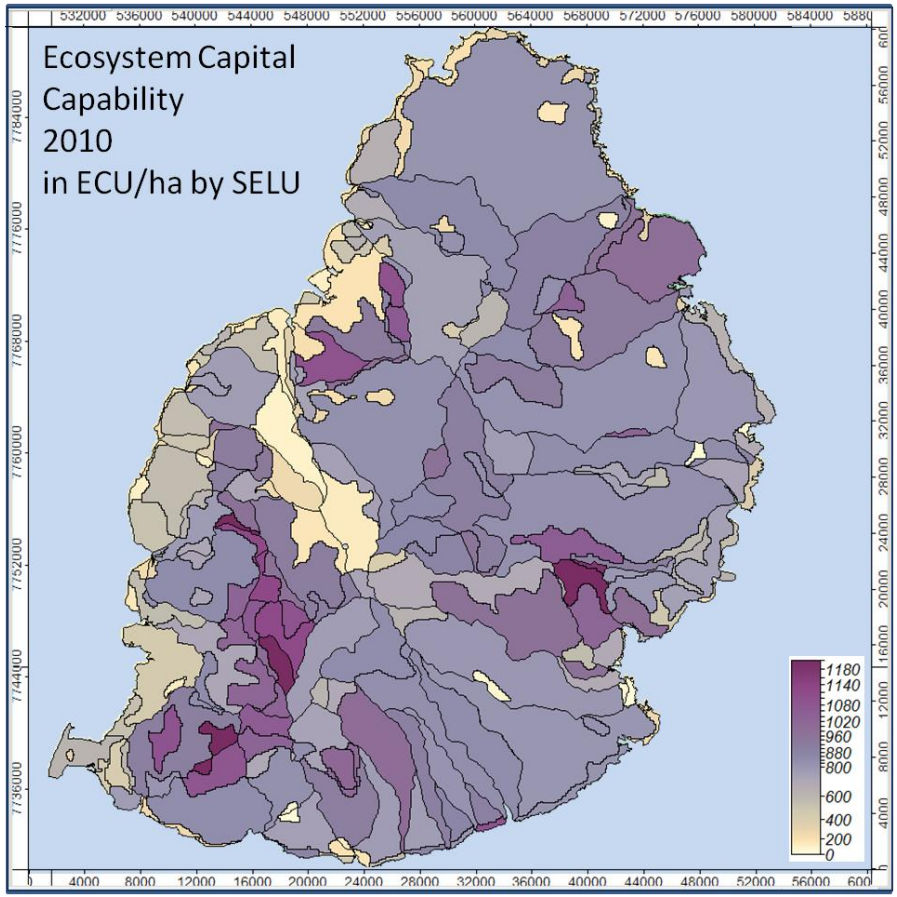
Sea Coastal Units
Biodiversity test account, stock 2010

Provisional

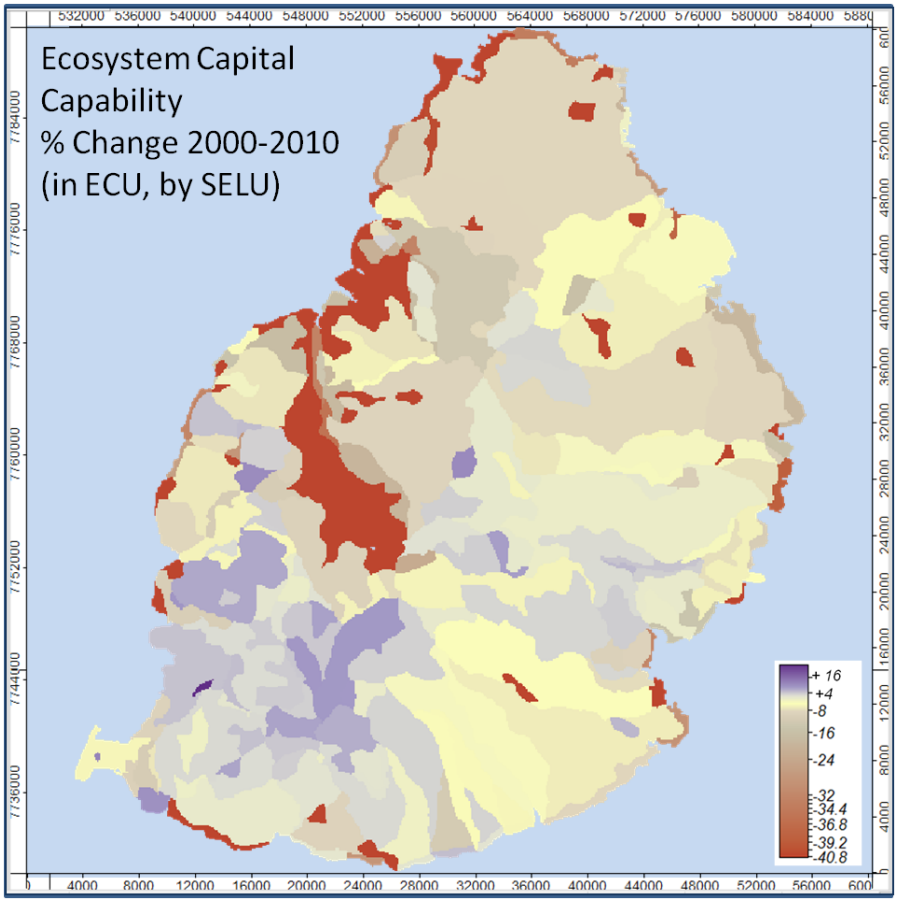
B - Sea Ecosystem Coastal Units / Only for test with coaral reefs vulnerability index; 2000 = 100.										
Coral_reefs area ha	2222	658	1472	No coast	2167	No coast	1821	814	No reef	9154
Conventional coral reef stock (bio-carbon not available)= ha x 10	22220	6580	14720	No coast	21667	No coast	18210	8143	No reef	91540
SECU/ Lagoons area ha	61009	13244	45083	No coast	46136	No coast	45952	14540	537	226501
Coral_reefs Index 2000	100	100	100	No coast	100	No coast	100	100	100	
Coral_reefs Index 2010	92	87	88	No coast	91	No coast	91	94	100	
SECU/ Lagoons capability/coral reefs, 2000	2222000	658000	1472000		2166700		1821000	814300		9154000
SECU/ Lagoons capability, coral reefs 2010	2050327	570745.8	1291775.3		1975381.6		1653196.5	766500.99		8307927
Net change in Laggos Ecosystem Capability 2000-2010, in ECU, v0	-171673	-87254	-180225	0	-191318	0	-167803	-47799	0	-846073
Net change in lagoons Ecosystem Capability 2000-2010, in ECU, % v0	**-7.7**	**-13.3**	**-12.2**		**-8.8**		**-9.2**	**-5.9**		**-9.2**

Ecosystem capital capability and change

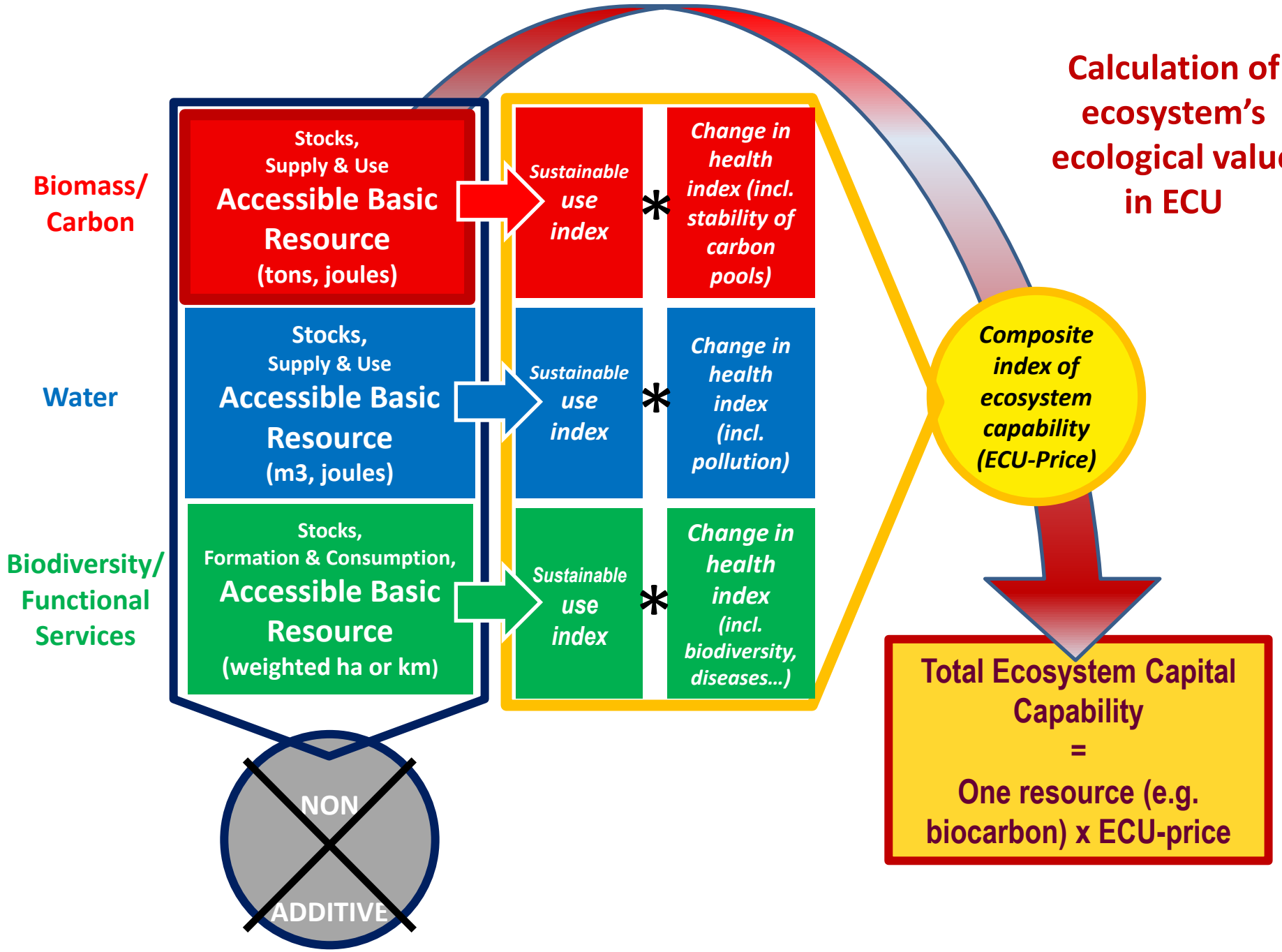
Ecosystem Capital Capability:
ECU value by Socio-Ecological Landscape Units, 2010



Ecosystem Capital Capability (inland):
Change in ECU value, % by Socio-Ecological Landscape Units, 2000-2010



Provisional


Calculation of ecosystem's ecological value in ECU
Biomass/ Carbon
Water
Biodiversity/ Functional Services
Stocks, Supply & Use Accessible Basic Resource (tons, joules)
Stocks, Supply & Use Accessible Basic Resource (m3, joules)
Stocks, Formation & Consumption, Accessible Basic Resource (weighted ha or km)
Sustainable use index
Change in health index (incl. stability of carbon pools)
Change in health index (incl. pollution)
Change in health index (incl. biodiversity, diseases…)
Composite index of ecosystem capability (ECU-Price)
Total Ecosystem Capital Capability = One resource (e.g. biocarbon) x ECU-price
NON
ADDITIVE

Conclusions

- We hope to have demonstrated the critical need and usefulness of statistics (e.g. socio-economic and environmental) to frame and support policy decision making in order to build the resilience of island states

- The focus of the presentation was not on the generation of statistical data but rather on their application

- Please contact the IOC (christophe.legrand@coi-ioc.org) or SM (for ENCA-Mauritius) for details of these studies.

THANK YOU