Africa 2050: Emerging Results from IFs Modelling Tool

Julius Gatune

The Futures of Africa Project

University of Denver

Nov 2007

Items To Be Covered

- Introduction to Frederick S. Pardee Centre for International Futures
- The International Futures (IFs) Model
- Africa 2050: Plan of Attack
- Africa 2050: Emerging Results

Jump to first page

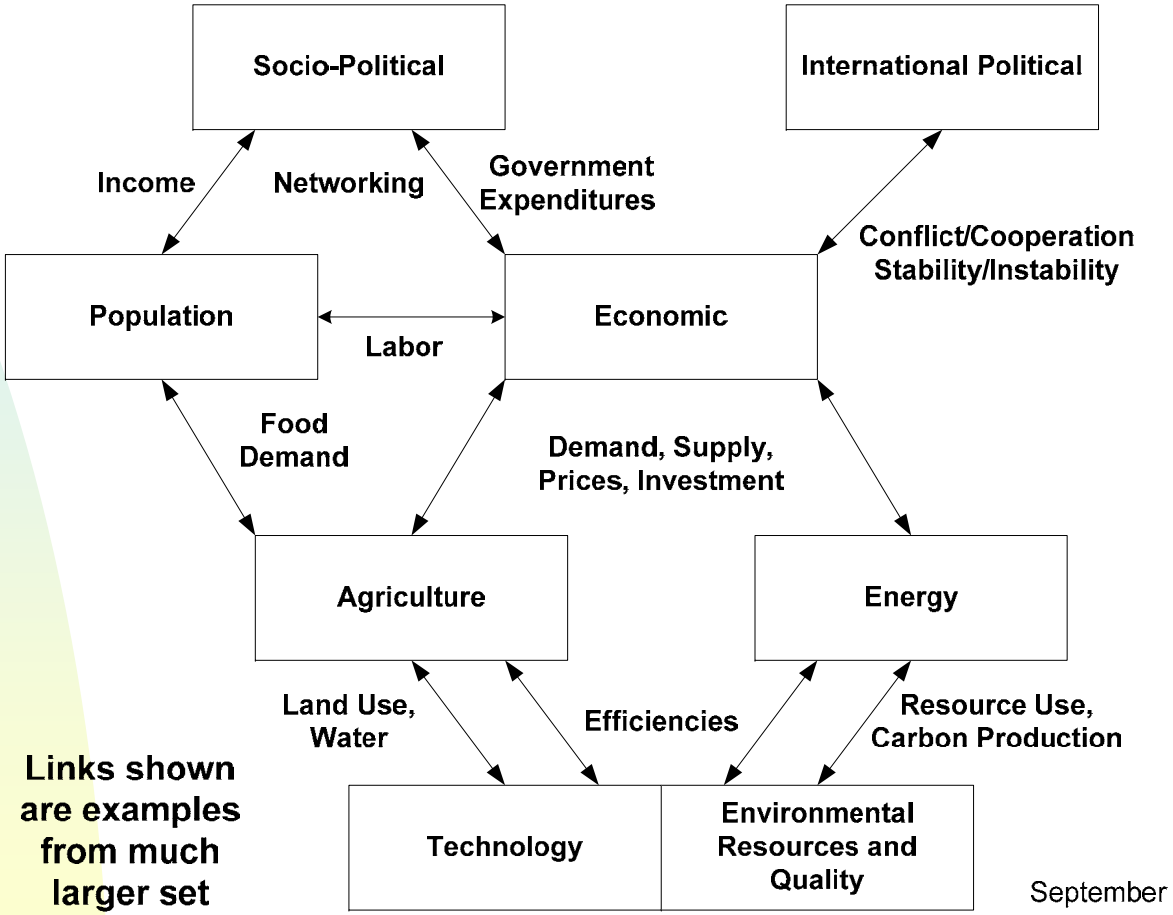
IFs Background and History

- Deep roots in the world models of 1970s
- Inspired by the World Integrated Model (Club Of Rome , Mesarovic and Pastel 1974) in which IFs founder Prof. Barry Hughes was involved
- Also draws on Leontif World Model (1977), the Bariloche Foundation World Model (1976) and Systems Analysis Research Unit Model (SARU 1977)
- First Generation released in Fortran in 1980 and used by the US Foreign Service Institute for mid-career training program
- 2nd Generation on microcomputer platform released in 1985 and is now in 5th generation
- IFs is available for free and is currently funded by **Fredrick S. Pardee** who has given a $7.5 million to create the Frederick S. Pardee International Futures Centre at the University of Denver

Jump to first page

IFs Structure

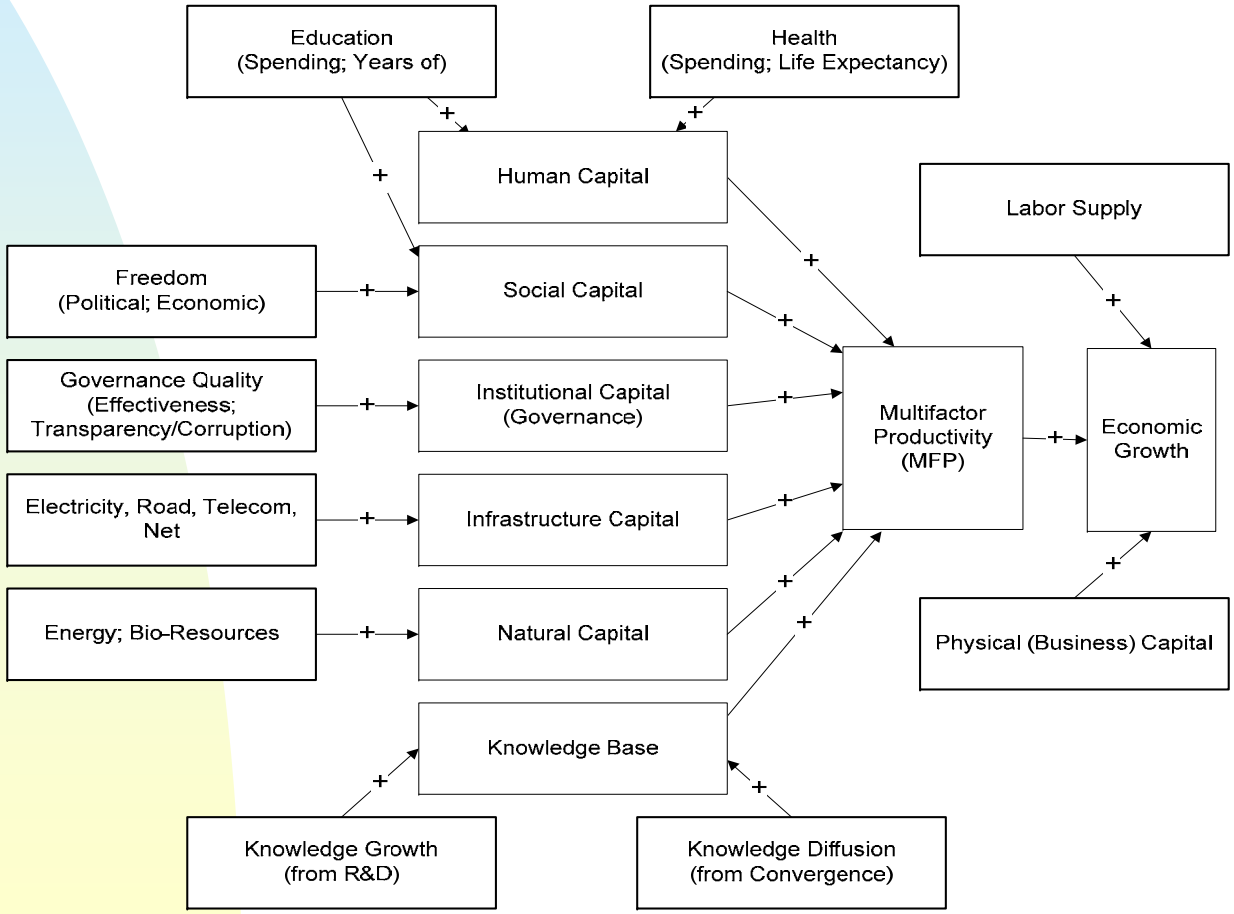
- **Modules (Technology module distributed throughout)**



Jump to first page

IFs: Structure

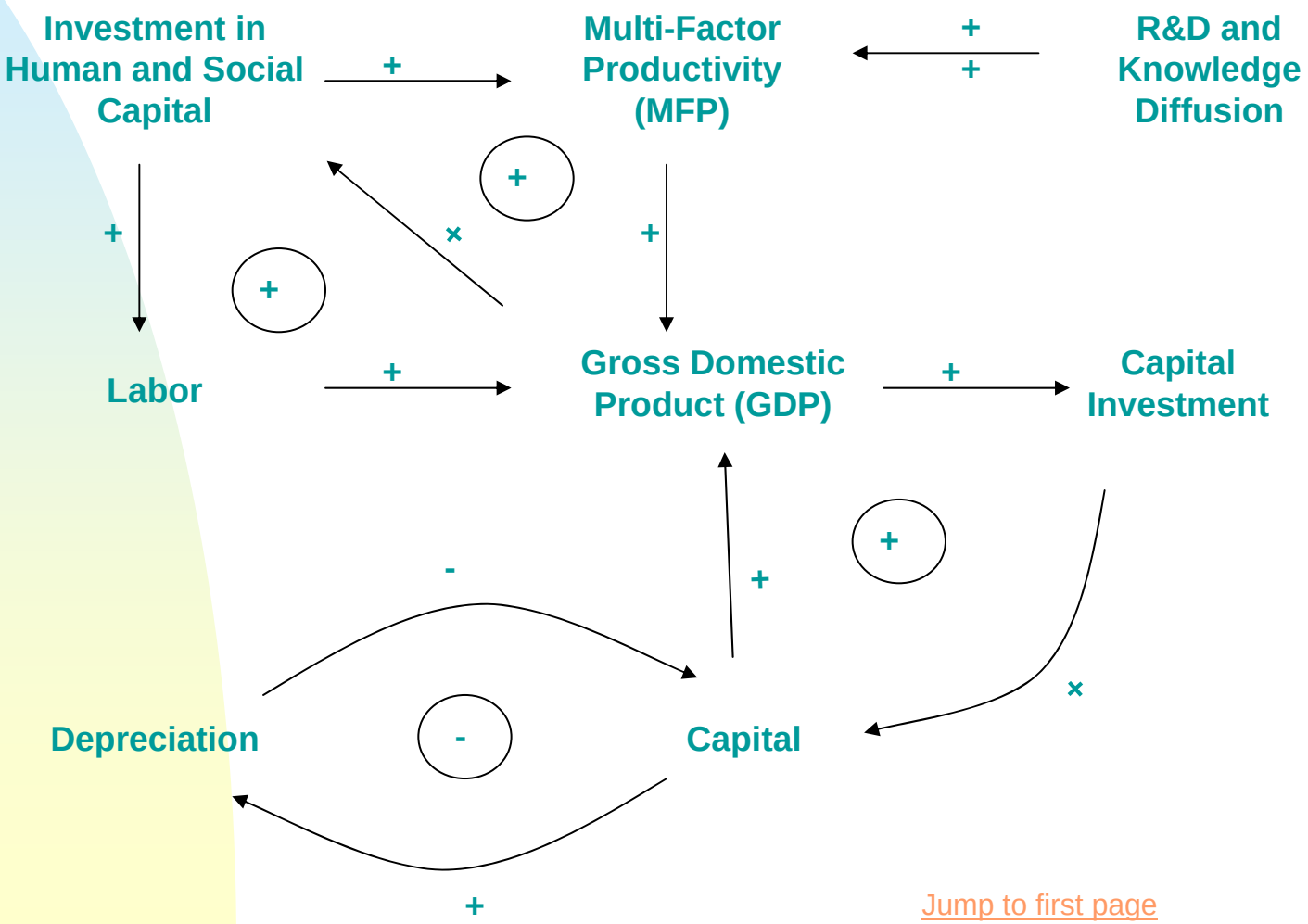
- Unpacking MFP components provides the policy handles that makes IFs a policy analysis tool



Jump to first page

IFs: Structure

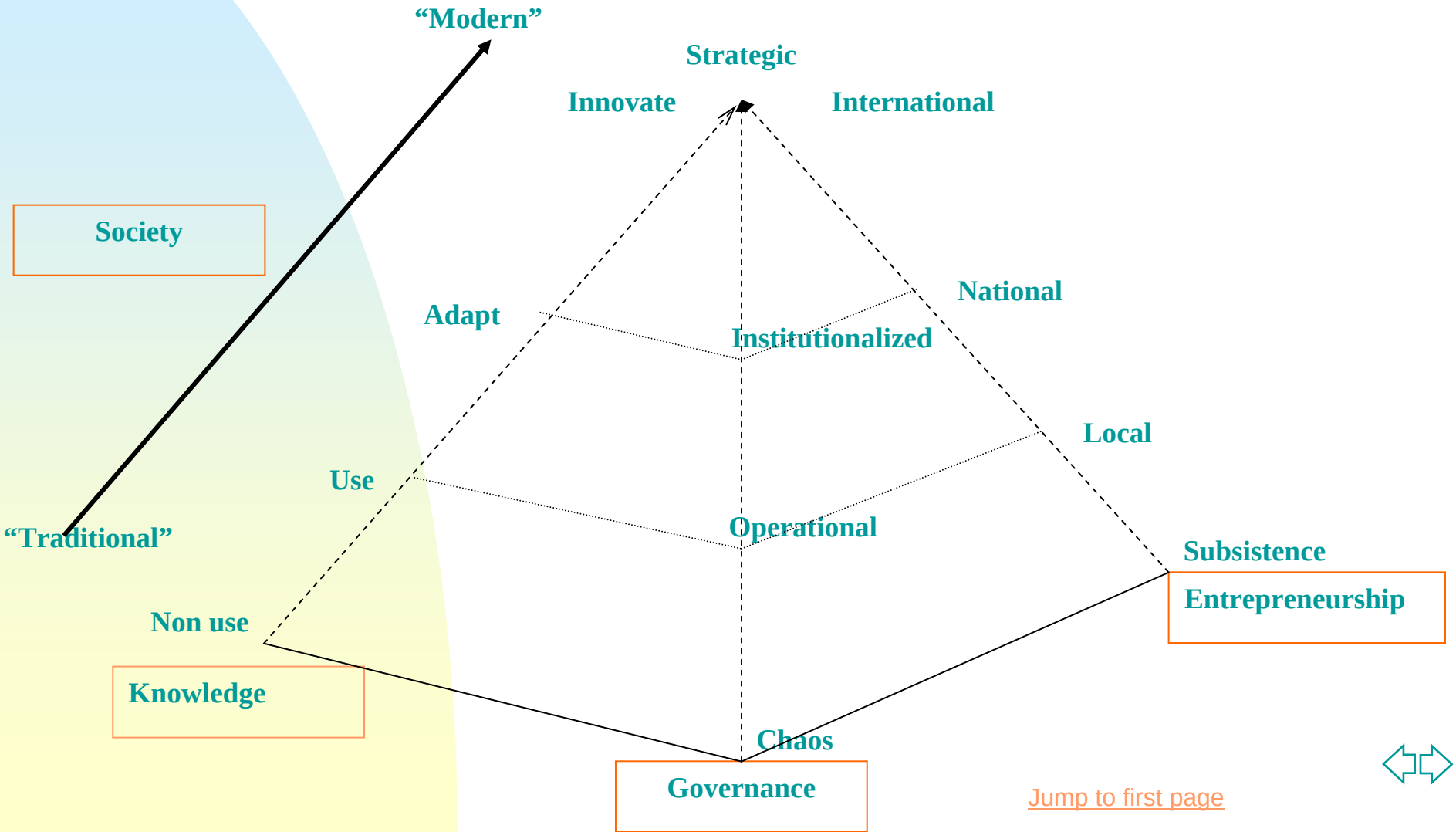
Systems Dynamics



Jump to first page

Africa Futures: Plan of Attack

Africa 2050: The Pillars



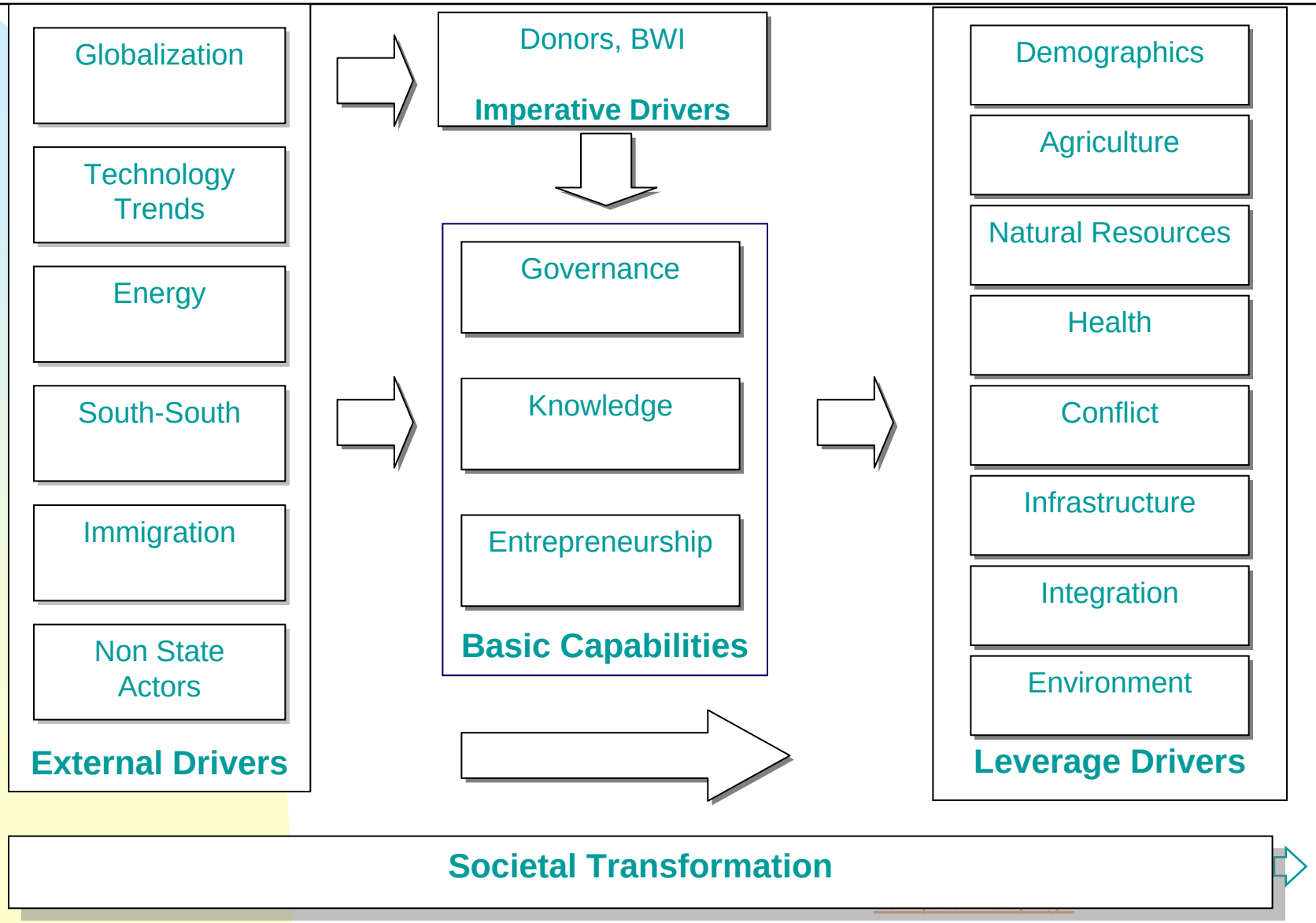
Jump to first page

Africa 2050: Key Pillars

- **Key Pillars**
  - Governance:
    Chaos, Operational, Institutionalized, Strategic
  - Knowledge:
    Non-Use, Use, Adaptation, Innovation/Creation
  - Entrepreneurship:
    Subsistence, Local, National, International
  - Society
    “Traditional” , “Modern” (New society)

Jump to first page

The Futures of Africa: Drivers



The Futures of Africa: Plan of Attack

- The key pillars are basically capabilities that first need to be acquired
- Model how the key pillars can be used to manage the Internal drivers and thus shape the future
- External and Imperative drivers are more or less given and what one can do is manage their impact

Jump to first page

The Futures of Africa: Jua Kali Scenario

- Africa 2050 Scenarios

I. Jua Kali Africa Scenario: Business as Usual

II. Broken Stool Scenario

III. Emerging Africa Scenario

IV. Jabali Africa Scenario

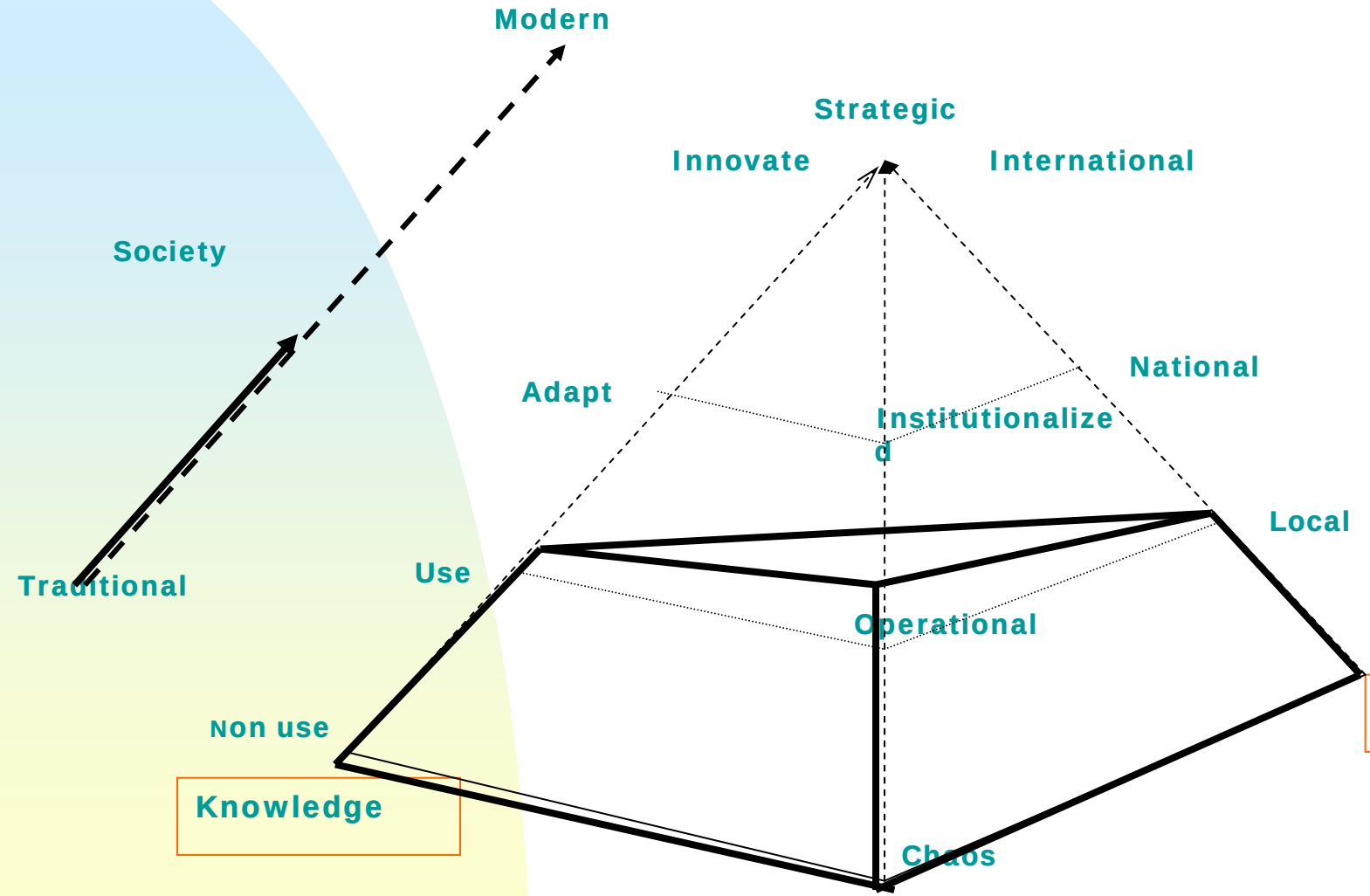
Jump to first page

The Futures of Africa: Jua Kali Scenario

- **Key Pillars**
  - Governance:
    - Operational. day to day politics dominate, civil service inefficient, weak institutions
  - Knowledge:
    - High use in some areas e.g. mobile telephony, some knowledge gets transferred and implemented with various degrees of success
  - Entrepreneurship:
    - Huge informal sector (Jua Kali); Private protection dominate as hard to enforce contracts; Possibility of predation by government deters creation of large-scale enterprises
  - Society:
    - Family and kinship relationship dominate in all spheres of interaction (jobs, business, social life)

Jump to first page

Scenarios: Jua Kali (Business As Usual)



Jump to first page

Simulation with IFs

Base Case: Selected Variables (SSA)

VARAIABLE	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
POPULATION	702.1	790	885.4	988	1096	1210	1326	1445	1561	1674
URBAN POPULATION	263.8	312.1	360	407.5	458.6	515.1	576.7	642.3	711.1	781.9
GDP (PPP)	1165	1363	1626	1929	2337	2874	3559	4451	5558	6846
GDP PER CAPITA	1.659	1.726	1.836	1.953	2.132	2.376	2.683	3.081	3.56	4.09
GDP GROWTH RATE	3.075	4.335	4.327	4.423	5.211	5.18	5.76	5.999	5.942	5.382
LIFE EXPECTANCY	43.84	45.7	48.43	52.15	56.41	59.58	61.58	62.79	63.81	64.64
YEARS OF SCHOOLING	3.35	3.876	4.38	4.833	5.232	5.583	5.905	6.205	6.49	6.764
NO. ON $1/DAY	289	313	333.2	356.5	373.5	391.6	407.2	418.4	426.3	430
IMPORTS	145.2	223.3	312.1	367.9	437.9	547.4	689.6	862.7	1039	1224
EXPORTS	116.9	141.3	195.3	239.1	307.8	380.1	495.1	647.6	852.9	1164

Jump to first page

Simulation with IFs

Base Case: Selected Variables (Regional Variation)

	West			Sahel			Horn		
	2005	2050		2005	2050		2005	2050	
Population (Millions)	240.2	559.6	133%	59.81	141.2	136%	88.92	225.1	153%
Urban Population	110.6	306.9	177%	21.33	64.17	201%	17.44	69.43	298%
GDP (PPP 2000)	275.5	1622	489%	61.44	308.4	402%	61.44	308.4	402%
GDP per Capita	1.147	2.899	153%	1.274	4	214%	0.691	1.37	98%
GDP Growth	4.335	3.388	-22%	5.203	4.162	-20%	3.005	7.161	138%
Life Expectancy	44.8	64.13	43%	52.72	66.54	26%	44.11	58.43	32%
Years of Schooling	2.879	6.85	138%	2.151	5.427	152%	2.041	5.004	145%
No. Living in $1/day	128.3	195.2	52%	23.49	35.31	50%	23.97	52.93	121%
Imports (Billions)	43.83	231.8	429%	5.484	41.97	665%	4.119	43.08	946%
Exports (Billions)	36.43	314	762%	3.982	72.37	1717%	1.73	31.84	1740%

Jump to first page

Simulation with IFs

Base Case: Selected Variables (Regional Variation)

	East			Central			South		
	2005	2050		2005	2050		2005	2050	
Pop(Millions)	129.7	310.3	139%	110.8	325.4	194%	87.62	132.2	51%
Urban Population	35.5	131.9	272%	42.66	145.3	241%	43.75	79.96	83%
GDP (PPP 2000)	116.2	1698	1361%	123.3	959.8	678%	534.1	1951	265%
GDP per Capita	0.896	5.47	510%	1.113	2.949	165%	6.095	14.76	142%
GDP Growth	4.278	7.551	77%	3.28	4.846	48%	1.997	4.882	144%
Life Expectancy	42.82	68.29	59%	43.84	64.64	47%	40.01	71.95	80%
Yrs Of Schooling	3.084	7.987	159%	3.35	6.764	102%	6.357	10.26	61%
No. On $1/day	47.64	40.36	-15%	45.77	83.41	82%	19.74	11.16	-43%
Imports (Billions)	10.73	281	2519%	24.59	179	628%	54.3	434.7	701%
Exports (Billions)	6.512	238.3	3559%	18.22	166.9	816%	47.72	355.8	646%

Jump to first page

Simulation with IFs

Base Case: Selected Variables (Selected Countries)

	Nigeria			Ethiopia			Kenya		
	2005	2050		2005	2050		2005	2050	
Pop. (Millions)	130.5	311.7	139%	73.77	183.7	149%	34.38	73.96	115%
Urban Population	69.01	189.6	175%	13.05	54.76	320%	12.82	34.32	168%
GDP (PPP 2000)	116.4	756.5	550%	50.77	259	410%	35.41	347.3	881%
GDP per Capita	0.892	2.427	172%	0.688	1.41	105%	1.03	4.696	356%
GDP Growth	4.743	1.801	-62%	3.101	7.851	153%	3.226	8.53	164%
Life Expectancy	42.38	65.32	54%	43.48	58.66	35%	47	70.32	50%
Yrs of Schooling	2.579	7.229	180%	2.084	5.422	160%	4.808	10.48	118%
No. on $1/day	92.8	137.3	48%	16.79	34.25	104%	6.903	6.355	-8%
Imports (Billions)	27.53	90.99	231%	2.78	35.06	1161%	3.7	60.54	1536%
Exports(Billions)	24.12	174.2	622%	1.224	26.26	2045%	3.21	50.97	1488%

Jump to first page

Simulation with IFs

Base Case: Selected Variables (Selected Countries)

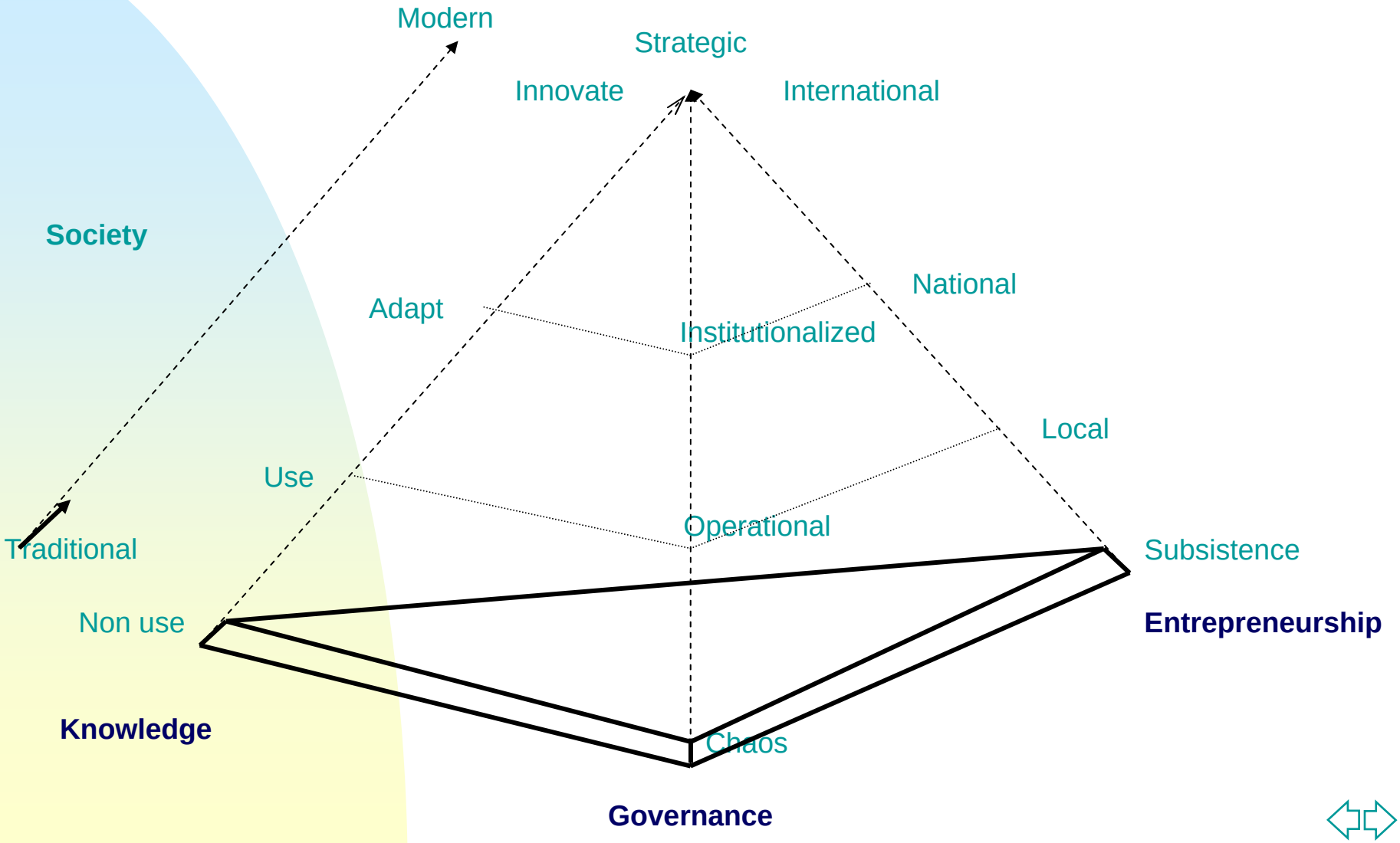
	Congo			South Africa		
	2005	2050		2005	2050	
Population (Millions)	57.74	197.4	242%	46.81	55.69	19%
Urban Population	3.364	1.977	-41%	28.14	39.62	41%
GDP (PPP 2000)	45.91	565.6	1132%	438.6	1,257	187%
GDP per Capita	0.795	2.865	260%	9.369	22.58	141%
GDP Growth	5.327	6.662	25%	1.625	4.53	179%
Life Expectancy	44.72	63.83	43%	40.39	73.64	82%
Years of Schooling	3.369	5.081	51%	8.695	14.52	67%
No. Living in $1/day	24.93	48.05	93%	4.637	0	-100%
Imports (Billions)	2.801	67.27	2302%	41.87	254	507%
Exports (Billions)	0.528	97.94	18449%	38.67	192.8	399%

Jump to first page

Domain		Country	2005	2050	% Change
Population (Millions)	Max	Congo DRC	57.74	197.4	242%
	Min	South Africa	46.81	55.69	19%
Urban Population	Max	Rwanda	0.869	7.34	745%
	Min	South Africa	28.14	39.62	41%
GDP (PPP 2000)	Max	Uganda	34.88	687.2	1870%
	Min	Djibouti	1.826	2.611	43%
GDP per Capita	Max	Tanzania	0.632	5.087	705%
	Min	Djibouti	2.53	2.332	-8%
GDP Growth	Max	Lesotho	0.79	6.04	66.50%
	Min	Sierra Leone	2.493	0.77	-131%
Life Expectancy	Max	Botswana	36.49	75.46	107%
	Min	Sierra Leone	28.74	28.7	0%
Years of Schooling	Max	Mali	0.956	4.116	331%
	Min	Djibouti	4.723	6.09	29%
No. Living in $1/day	Max	Eritrea	1.747	4.846	182%
	Min	South Africa	4.637	0	-100%
Imports (Billions)	Max	Uganda	1.9	99.6	5142%
	Min	Djibouti	0.326	0.455	40%
Exports (Billions)	Max	Congo DRC	0.528	97.94	18449%
	Min	Djibouti	0.277	0.503	82%

Jump to first page

Scenarios: Broken Stool



Jump to first page

The Futures of Africa: Broken Stool Scenario (BSS)

- **Key Pillars**
  - **Governance**: Collapsed or in process of state failure, citizens are subjected to double predation from “government” and from fellow citizens
  - **Knowledge**: Low Levels of knowledge as the best have left and education collapsed, indigenous knowledge exists and not organized at all
  - **Entrepreneurship**: Citizens revert to subsistence under the impact of the breakdown of public security
  - **Society**: Superstitions of the past are back and secret societies thrive as people seek all kinds of supernatural powers for protection in this the “First Man” Hobbesonian (or Kaplan) world

Jump to first page

Simulation: Broken Stool Scenario

Broken Stool: Key Assumptions

- Basic Capability Drivers **(BCD)**
  1. Reduce governance variables by 20-80% over a period of 15 years (over the base case)
  2. Reduce education expenditure by 50% over 15 years
  3. Reduce economic freedom, Investment, and FDI by 20-50% over 15 years

- Other Drivers
  1. Increase fertility by 20%
  2. Increase military spending by 20-30%
  3. Reduce agricultural yields by 20%
  4. Reduce Health indicators by 20%
  5. Reduce infrastructure by 20%

- Regional and country variations also added

Jump to first page

Simulation: Broken Stool

Broken Stool: Simulation Results

Domain	Variable	Base	BCD		PLD		BSS	
Demographics	Population	1,715	1,809	5%	1,431	-17%	1441	-16%
	Urban Population	798	782	-2%	593	-26%	571.8	-28%
Economics	GDP (PPP)	6,678	3,207	-52%	1,804	-73%	1223	-82%
	GDP/ Capita PPP	3.895	1.773	-54%	1.261	-68%	0.848	-78%
Human Conditions	Life Expectancy	64.4	58.4	-9%	33.5	-48%	26.23	-59%
	Years of Schooling	6.0	5.2	-12%	5.5	-9%	4.884	-18%
	No. on $1/Day	452	684	51%	610	35%	696.4	54%
Globalization	Imports	1,199	558	-53%	346	-71%	220.8	-82%
	Exports	1,118	431	-61%	249	-78%	127	-89%

Jump to first page

Simulation: Broken Stool

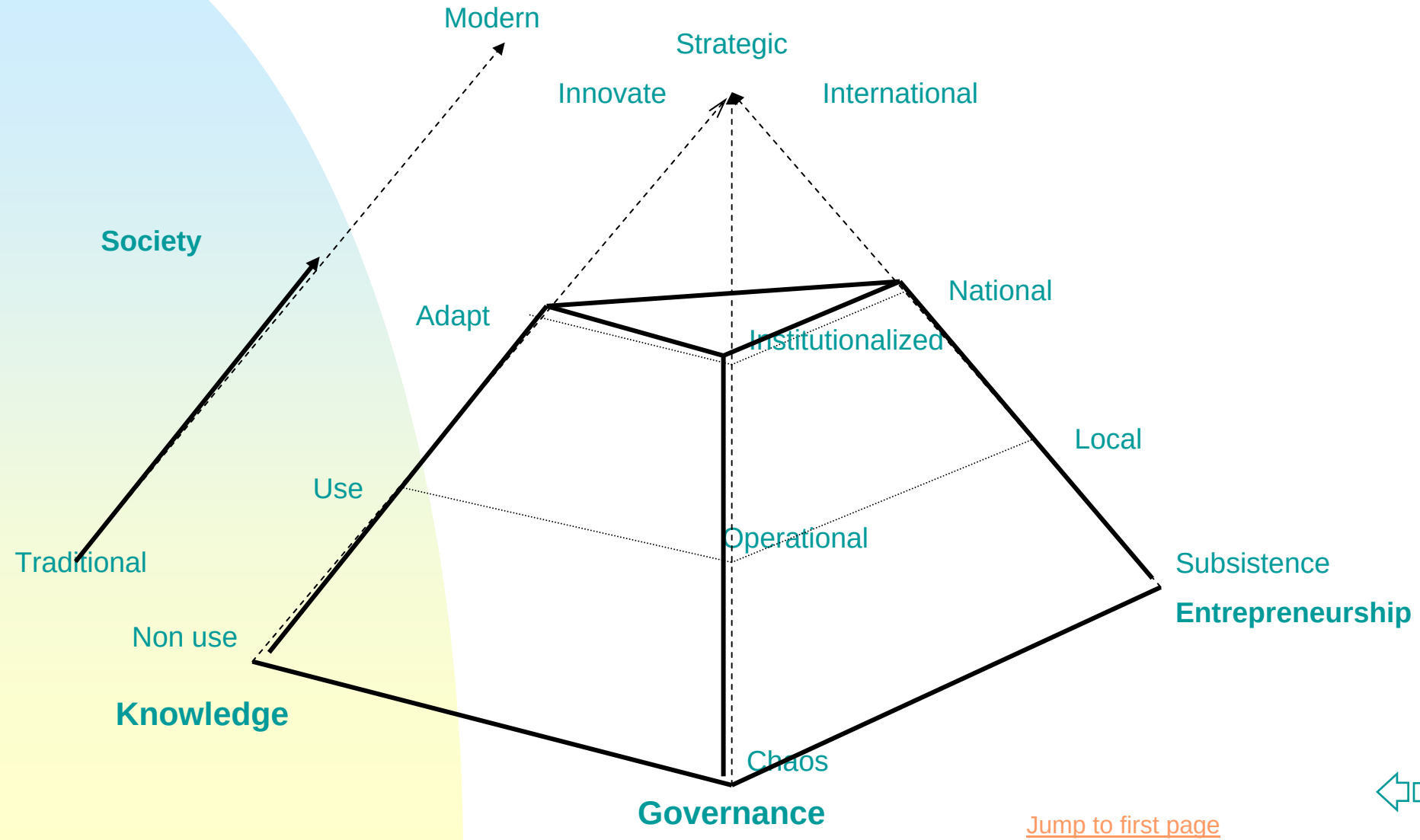
Broken Stool: Sensitivity

- Note the huge improvements if the health levels are maintained at base levels. This scenario is most sensitive to health variables

Domain	Variable	Base	BSS		Caring World (Health at Base)	
Demographics	Population	1,715	1441	-16%	1950	14%
	Urban Population	798	571.8	-28%	821.1	3%
Economic	GDP (PPP)	6,678	1223	-82%	2497	-63%
	GDP/ Capita PPP	3.895	0.848	-78%	1.28	-67%
Life Conditions	Life Expectancy	64.4	26.23	-59%	53.46	-17%
	Years of Schooling	6.0	4.884	-18%	5.116	-15%
	No. on $1/Day	452	696.4	54%	749.7	66%
Globalization	Imports	1,199	220.8	-82%	651.9	-46%
	Exports	1,118	127	-89%	329.6	-71%

Jump to first page

The Futures of Africa: Emerging Africa Scenario



Jump to first page

The Futures of Africa: Emerging Africa Scenario

- **Emerging Africa: Key Pillars**

  - **Governance**: The key innovation is institutions which have been created and strengthened to limit the government hand but at the same time make it strong enough to maintain the state. Government bureaucracy functions well.

  - **Knowledge**: Knowledge levels are high and local capacity exists to adapt knowledge acquired elsewhere to local conditions.

  - **Entrepreneurship**: The process of adaptation unleashes the entrepreneurship capacities of the people and new businesses are created. Businesses become national as successful local entrepreneurs branch out and grow

  - **Society**: Self confidence has grown and people start believing in themselves. They are willing to question their own values and those of the west and chart a new path

Jump to first page

Simulation: Emerging Africa

Simulate Three Strategic Approaches

- Strategy 1: Self-Sustainment Focus (SSF)
- Strategy 2: Export Promotion Focus (EPF)
- Strategy 3: Human Development Focus (HDF)

- Each requires different sets of assumptions and IFs allows one to incorporate these as deviations from base case

Jump to first page

Simulation: Emerging Africa

- As a first step the basic capabilities are need and they apply as the necessary condition to emerge

- Assumptions that apply to all policy initiatives
  I. Improve governance variables by 20% over a period of 10 years (over the base case)
  II. Improve education expenditure by 20% over 10 years
  III. Improve economic freedom, Investment, and FDI by 20%-50% over 10 years

Jump to first page

Simulation: Emerging Africa

Strategy 1: Self-Sustainment

- Objective is to achieve food self sufficiency, this will require actions to facilitate a green revolution

I. Double R&D expenditures over the base case over a period of 10 years
II. Increase roads density by a factor of 3 over the base case in 25 years
III. Telephone density increases by a factor of 3 over the base case in 25 years
IV. Agricultural yield double over the base case over a period of 25yrs

Jump to first page

Simulation: Emerging Africa

Strategy 2: Export Focus

- Main Assumptions
  I. Shift Exports by 4% per year over the forecast horizon
  II. Double economic freedom over a period of 15 years
  III. Increase investment levels by 50% over a period of 15 years
  IV. Double FDI over a period of 15 years
  V. Increase number of networked people rise a factor of three over a period of 15 years
  VI. Roads and electricity density triple over a period of 25 years
  VII. Internet and telephone density triple over 15 years

Jump to first page

Simulation: Emerging Africa

Strategy 3: Human Development Focus (Key Assumptions)

I. Improve health and education spending by 30% over 15 year period
II. Improve education spending on girls at primary school by 20% over 15 years
III. Increase R&D spending by 20% over 15 years
IV. Reduce military spending over 20% over 15 years
V. Increase forest protection by 20% over 15 years
VI. Reduce HIV infection rate of advance by 50% over 15 years
VII. Reduce Aids deaths rate as % of infection by HIV by 50% over 15 years
VIII. Improve agricultural yields by 20% over 15 years
IX. Reduce fertility by 20% over 25 years
X. Increase number of networked people by 100% over 15 years
XI. Improve telephone density by 100 % over 15 years

Jump to first page

Simulation: Emerging Africa

Compare Strategies

Variables	Base	SSF		EPF		HDF	
		2050	% Change	2050	% Change	2050	% Change
Population	1,674	1,589	-5%	1,589	-5%	1,411	-16%
Urban Population	781.9	795	2%	795.7	2%	700.1	-10%
GDP (PPP)	6,846	15,811	131%	17,276	152%	10,220	49%
GDP/ Capita PPP	4.09	9.95	143%	10.87	166%	7.242	77%
Life Expectancy	64.64	69.02	7%	69.55	8%	69.24	7%
Years of Schooling	6.764	7.295	8%	7.291	8%	7.202	6%
No. on $1/Day	430	271.2	-37%	249	-42%	248	-42%
Imports (Millions $)	1,224	3,163	158%	4,519	269%	2,095	71%
Exports (Millions $)	1,164	2,929	152%	4,130	255%	1,975	70%

Jump to first page

Simulation: Emerging Africa

Compare Strategies

	Lower SSF		Low EDF		MOR	
	2050	Change	2050	Change	2050	Change
Population	1603	-4%	1626	-3%	1625	-3%
Urban Population	791.4	1%	787.6	1%	800.6	2%
GDP (PPP)	11632	70%	11564	69%	10857	59%
GDP/ Capita PPP	7.257	77%	7.114	74%	6.681	63%
Life Expectancy	67.85	5%	67.22	4%	67.17	4%
Yrs Of Schooling	7.21	7%	7.075	5%	7.105	5%
No. on $1/Day	310.2	-28%	316.8	-26%	332.2	-23%
Imports (Millions$)	2307	88%	2369	94%	2188	79%
Exports (Million$)	2044	76%	2411	107%	2091	80%

Jump to first page

Simulation: Emerging Africa

Managing External Drivers (Strategic Focus)- Assumptions

I. Global Trade: Africa pushes its agenda in WTO and other forums get preferential trade deals e.g. EPAs, Exports accelerate (2.5%)

II. Africa manages to negotiate better on technology transfer regimes including patents and intellectual property

III. Leveraging the heightened efforts in encouraging R&D on diseases and other issues that afflict Africa especially by private foundations and building on these efforts

IV. A strategic outlook that seeks faster diffusion of technology from outside through trade, training etc accelerating productivity by 0.25%

V. Africa manages a make the West to follow on their commitments to Africa.

- This scenario assumes that Africa has mastered enough diplomatic and negotiation resources to make these provisions are a reality

Jump to first page

Simulation with IFs: Emerging Africa

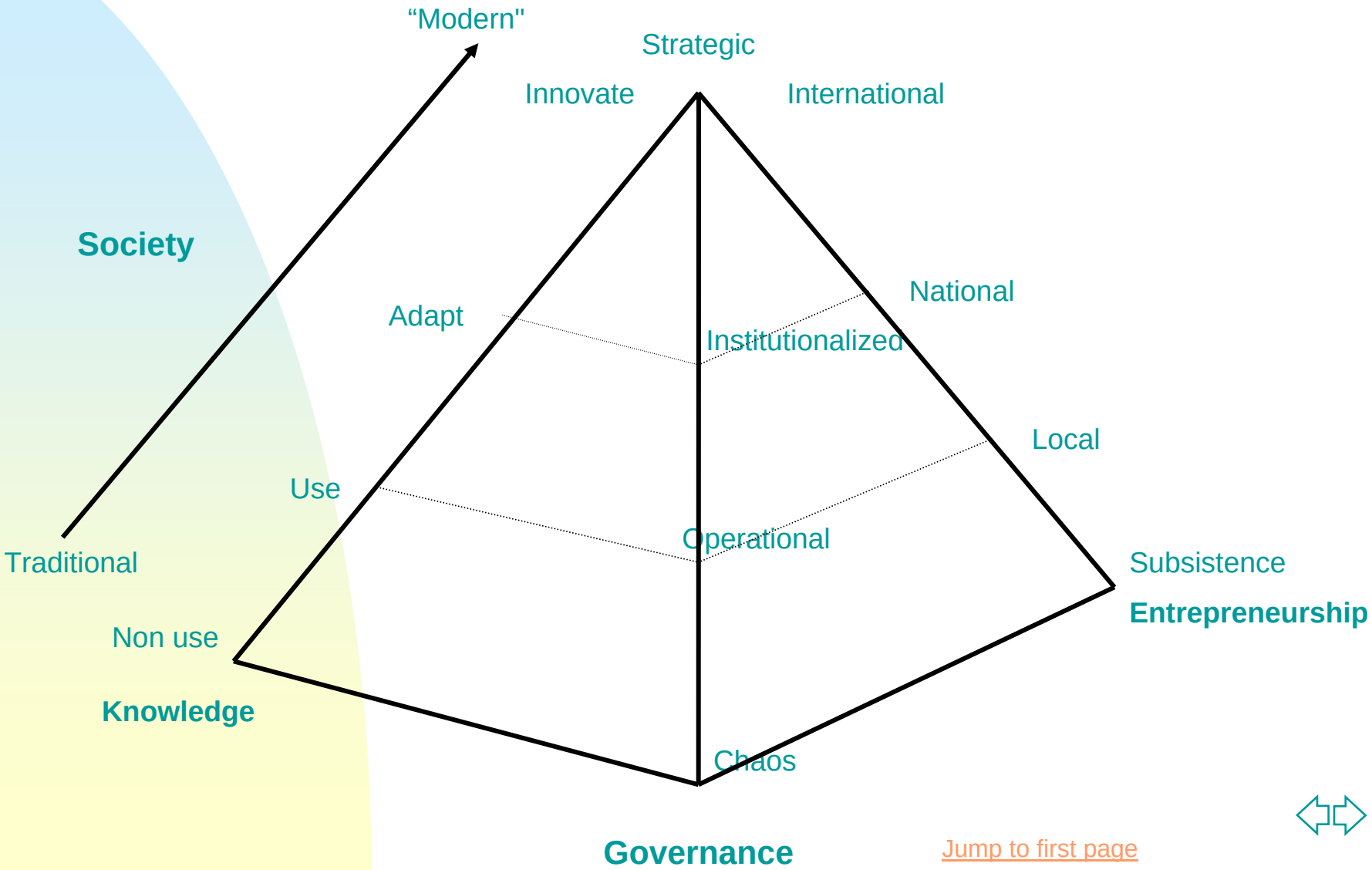
Impact of Strategic Outlook (External Drivers Impact)

	Base	MOR		MOR+NS		BD +SF	
Population	1674	1625	-3%	1628	-3%	1500	-10%
Urban Population	781.9	800.6	2%	795.9	2%	781.6	0%
GDP (PPP)	6846	10857	59%	10141	48%	21694	217%
GDP/ Capita PPP	4.09	6.681	63%	6.228	52%	14.46	254%
Life Expectancy	64.64	67.17	4%	66.48	3%	72.96	13%
Years of Schooling	6.764	7.105	5%	7.009	4%	7.751	15%
No. on $1/Day	430	332.2	-23%	350.4	-19%	144.5	-66%
Imports	1224	2188	79%	1834	50%	8441	590%
Exports	1164	2091	80%	1858	60%	7755	566%

- Cost of downside is low but the opportunity cost of upside is high

Jump to first page

The Futures of Africa: Jabali Africa Scenario



Jump to first page

The Futures of Africa: Jabali Africa Scenario

Key Pillars: Jabali Africa

- **Governance:** Strategic leadership, global leadership and influence in the global system of interactions. Africa is functioning well and is fully integrated

- **Knowledge:** Knowledge levels are high and local capacity exists to adapt knowledge acquired elsewhere to local conditions. New knowledge comes from many sources including better education, spillovers from Increasing FDI, growing support of R&D

- **Entrepreneurship:** Africa domiciled multinationals are numerous. Global multinationals have also established key presence locating critical production facilities in Africa. The local business environment is highly competitive

.

- **Society:** Africans travel all over the world spreading the culture and tastes. Western, Eastern and African cultures are cross pollinating though each developing in its own ways and creating global lifestyles.

Jump to first page

The Futures of Africa: Jabali Africa Scenario

Jabali Africa (Key Assumptions

- **Basic Capability Drives (BCD)**
  - I. Increase government effectiveness by a factor of 1.5; Political freedom and control of corruption by 50% over 25 years.
  - II. Expenditures in education and in R& D doubles over 25 yrs
  - III. Economic freedom doubles over 25 years, Investment by 150% and FDI by a factor of 2 over 25 yrs

- Other Drivers
  - I. Accelerated MFP by 1.0%
  - II. Increase exports by 4%
  - III. Increase rate of discovery of energy (reserves by a factor of 3)
  - IV. Increase health expenditure by 50% and reduce HIV infection rates and deaths as in HDD
  - V. Reduce fertility by 10% over 25 years
  - VI. Reduce Military spending by 20%
  - VII. Increase infrastructure and number of networked people by a factor of 3 over 25 years

Jump to first page

The Futures of Africa: Jabali Africa Scenario

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	Base
Population	702	787	874	961	1047	1129	1206	1278	1342	1401	1674
Urban Pop	264	311	356	401	450	503	561	623	688	756	782
GDP (PPP)	1173	1485	2002	2796	4182	6507	10308	16591	25853	39684	6846
GDP/ Capita	1.67	1.89	2.29	2.90	3.99	5.77	8.547	12.99	19.26	28.33	4.09
GDP Growth	4	7.2	8.7	9.8	11.2	11.6	12	11.9	10.7	10.4	5.4
Life Exp.	43.9	46.6	50.6	56.4	62.2	66.3	69.5	72.3	75	77.7	64.6
Yrs School	3.4	3.9	4.4	4.9	5.3	5.8	6.3	6.8	7.3	7.8	6.8
No. $1/Day	288	301	300	292	267	227	181	130	78	32	430
Imports	147	242	417	695	1199	1710	2633	4645	6882	10578	1,224
Exports	118	155	271	451	719	1131	1836	2995	5321	9306	1,164

Jump to first page

The Futures of Africa: But Embedded in the World System

- Much as Africa may want to choose its future it is part of the larger world and thus gets impacted by the world

- The scenarios will play out in a given world which may or may not be shaped by the happenings in Africa.

- UNEP GEO Worlds
  I. Markets First World
  II. Security First World
  III. Policy First World
  IV. Sustainability First World

Jump to first page

The Futures of Africa: But Embedded in the World System

UNEP GEO Worlds; Security First

- Assumes a world of striking disparities where inequality and conflict prevail. Socio-economic and environmental stresses give way to waves of protest and counteraction. Exclusion, armament, and lack of cooperation prevail

I. Increasing protectionism globally, rising to 20% fall in global trade
II. Decreasing liberalization of domestic economies globally, leading to a 10% loss of "economic freedom.“
III. Immigration falls by 25%
IV. FDI falls 40%
V. Fertility rises by 20%
VI. Military spending rise by 20%
VII. Increase in disease burdens like SARs increases mortality by 10%
VIII. Drop in productivity gains by 0.5%

Jump to first page

The Futures of Africa: But Embedded in the World System

UNEP GEO Worlds: Markets First

- Most of the world adopts the values and expectations prevailing in today's industrialized countries
  I. Increased trade liberalization with reduction of 20% traded costs
  II. Increased democratization (20%)
  III. Increased Global Migration by 30%
  IV. Increased global FDI (50%)
  V. Increased Energy discovery by 50% and Natural gas production by 1.5 by 2020
  VI. Increased global productivity gains by 0.25%

Jump to first page

The Futures of Africa: But Embedded in the World System

UNEP GEO Worlds: Policy First

- Decisive initiatives are taken by governments in an attempt to reach specific social and environmental goals

I. Attention to renewable energy technology that doubles the rate of cost reduction over 10 years

II. Attention to energy demand that reduces it by 20% over 50 yrs

III. Introduction of a tax on carbon of $200 per ton over 10 years in OECD ($50 in non-OECD)

IV. Attention to agricultural and food needs that raises yields over 10 years by 20%

V. Attention to fertility, with a 20% reduction in total fertility rates in non-OECD countries over 20 years

VI. Increase spending in R&D, in educational and health by 20% (10% in OECD countries) over 20 years

Jump to first page

The Futures of Africa: But Embedded in the World System

UNEP GEO Worlds: Sustainability First

- "A new environment and development paradigm emerges in response to the challenge of sustainability, supported by new, more equitable values and institutions. A more visionary state of affairs prevails, where radical shifts in the way people interact with one another and with the world around them stimulate and support sustainable policy measures". Assumptions include all Policy First assumption plus

I. Citizens in OECD countries effectively reduce their working lives by 45% over50 years and 70% over 100

II. Reduced emphasis on material achievement slows down emphasis on productivity rather than life-style and productivity rates globally drop by 0.5% over 20 years

III. Fertility rate decrease by as much as 40% in non-OECD

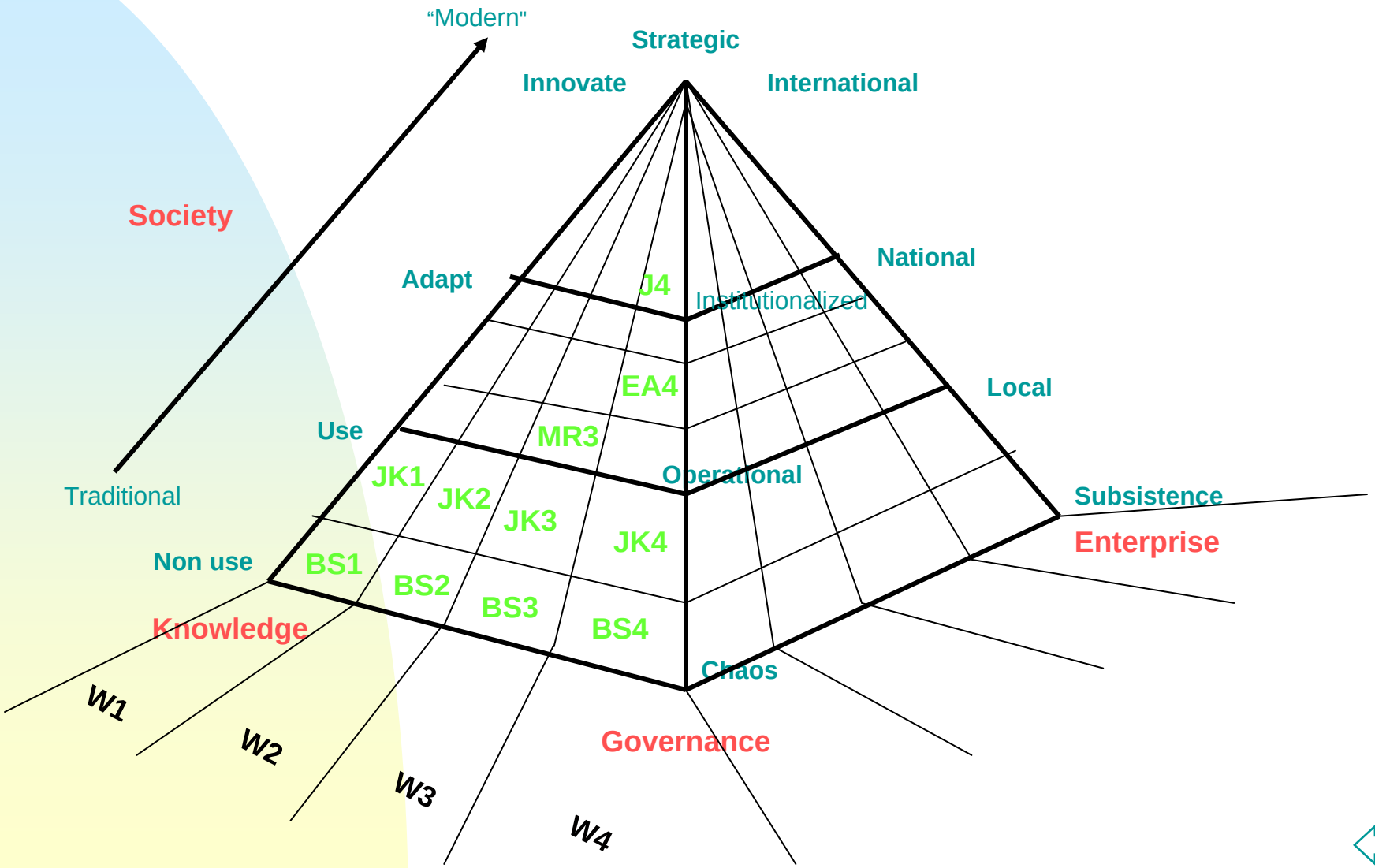
Jump to first page

The Futures of Africa: But Embedded in the World System

Variable	Base	MOR-B	MOR-SF	MOR-MF	MOR-PF	MOR-SF
Population	1674	1625	1848	1621	1492	1404
Urban Population	781.9	800.6	870.6	1.182	754.5	712.8
GDP (PPP)	6846	10857	7228	11737	12393	11219
GDP/ Capita PPP	4.09	6.681	3.911	7.242	8.308	7.993
Life Expectancy	64.64	67.17	63.4	67.53	69.15	68.98
Years of Schooling	6.764	7.105	6.841	7.122	7.317	7.305
No. on $1/Day	430	332.2	516.1	318.5	273.2	259.1
Imports	1224	2188	1268	3139	3075	2586
Exports	1164	2091	969.3	3286	2601	2034

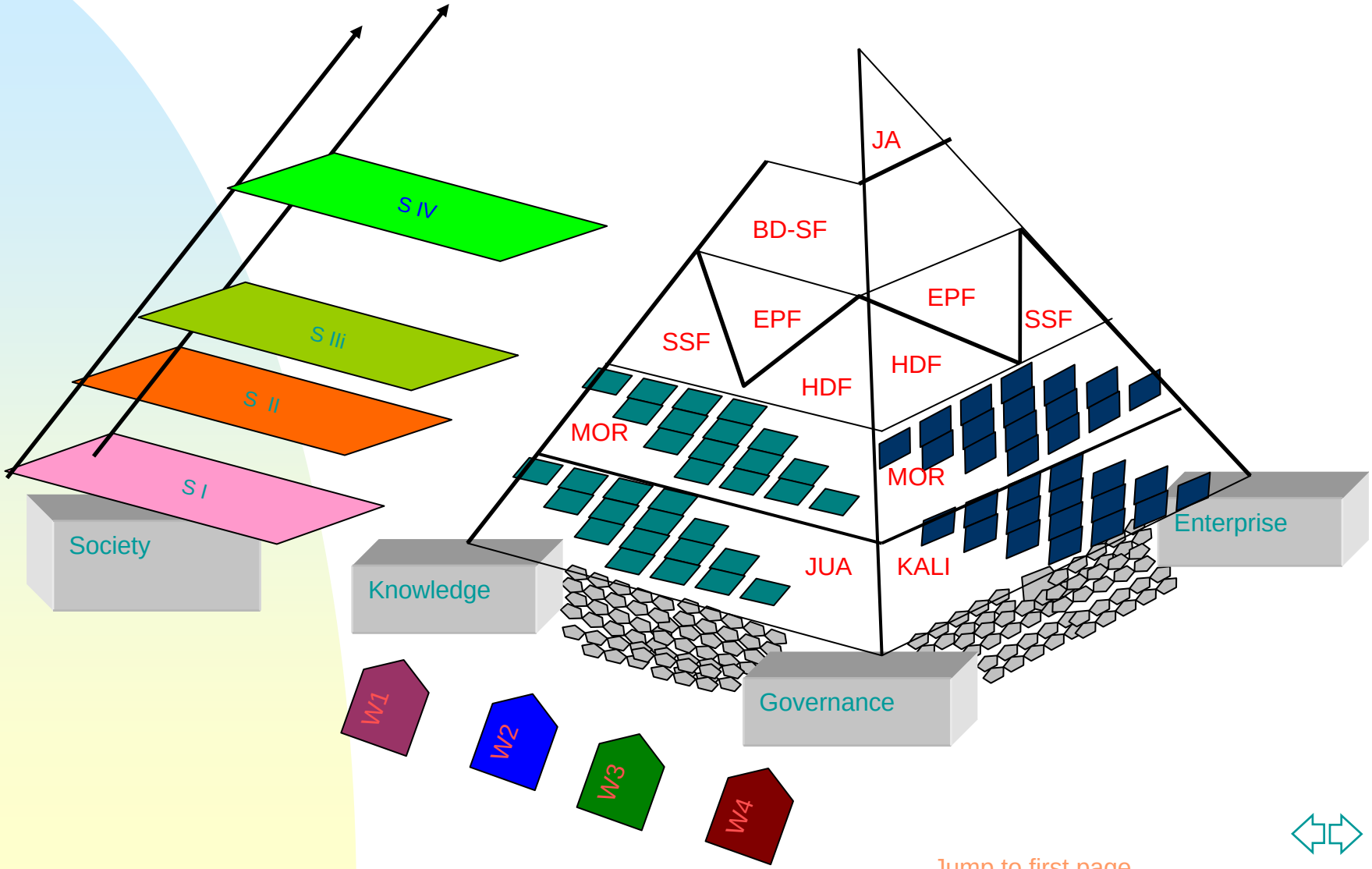
Jump to first page

The Futures of Africa: Many Fututres



Jump to first page

The Futures of Africa: Under Construction



Jump to first page