Animal Welfare, Environmental Conservation and Development in Africa: The Delicate Balance.

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WellBeing
INTERNATIONAL
SOLUTIONS FOR PEOPLE, ANIMALS AND ENVIRONMENT

Who We Are

- **WellBeing International is a U.S. charity seeking to improve the well-being of people, animals and the environment (the PAE Triad).**

- **Core projects include:-**
  - **a global dog campaign;**
  - **a Global Awareness project (incl. humane & environmental ed.);**
  - **a campaign to increase sustainability and reduce consumption (e.g. limit plastic waste); and**
  - **a program promoting land allocation for wildlife (incl. corridors and connectivity).**

- **We have a particular interest in Africa (ANR was born in Zimbabwe, raised in South Africa and cherishes his African origins and roots).**
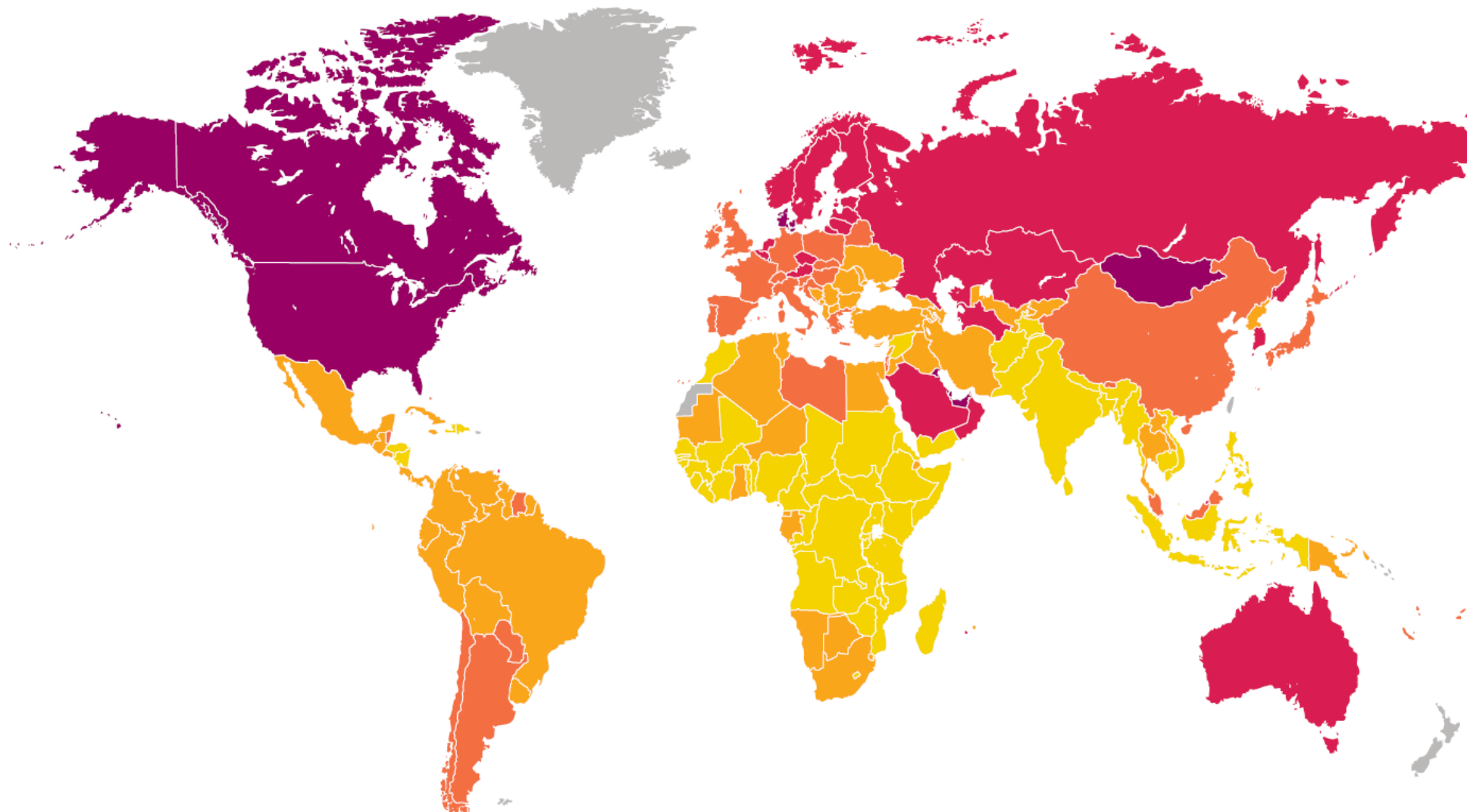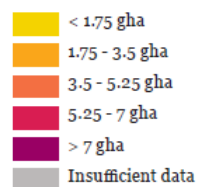
Outline of Talk

- **Consumption & Land Use in Africa**
- **Agricultural Land and Protected Spaces**
- **Human Population Growth in Africa (also cattle & goats)**
- **Wildlife Population Declines**
- **Kenya as an Exemplar Country (Draw on World Bank 2019 Report)**
- **Balancing Development and Conservation**
  - **Smarter Development (roads and linear infrastructure a specific threat)**
  - **Funding Conservation**
  - **Protected Areas but address traditional livelihoods**
- **Concluding Comments**

Global Consumption Patterns (from 5-maps-wwf-whats-wrong-world/)

Figure 4: Global map of Ecological Footprint of consumption, 2014 Total Ecological Footprint is a function of both total population and rates of consumption. A country's consumption includes the Ecological Footprint it produces, plus imports from other countries, minus exports[12].
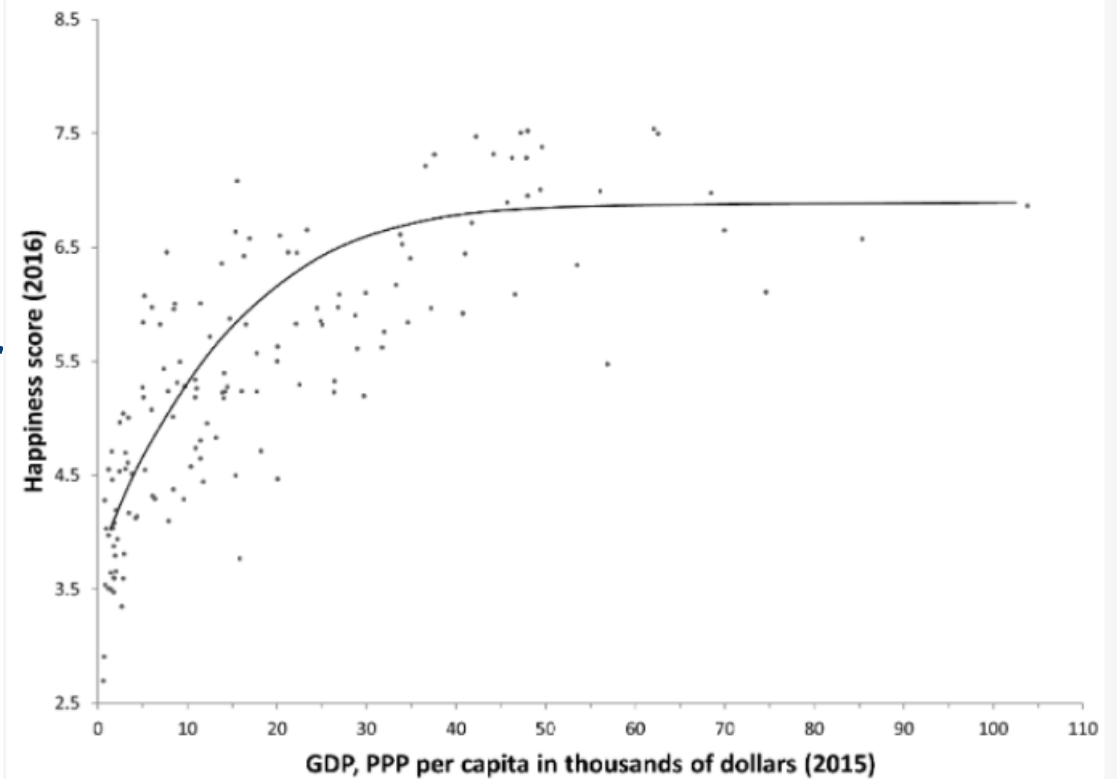
Key

	< 1.75 gha
	1.75 - 3.5 gha
	3.5 - 5.25 gha
	5.25 - 7 gha
	> 7 gha
	Insufficient data

Reduce Demand and Consumption

- **Challenge Growth – Steady State Economics & Grow Well-being**
- **Longer lasting products**
- **Re-use/recycle**
- **Design products with less material**

- **Track consumption via demand for major product categories (e.g. cement, steel, aluminium, animal products) – cement peaked?**

- **Reduce waste (e.g. GAIA – Zero Waste campaign - 650 NGOs)**
  (see - https://www.no-burn.org/wp-content/uploads/On-the-Road-to-Zero-Waste.pdf)
  - **San Francisco – approaching target of zero waste in next year or two**

  - **Pune, India - 2000 waste-pickers unionize, reduce waste stream**

  - **Alaminos, Philippines – successful bottom-up recycling campaign**

Consumption & Well-Being

- **Easterlin (1974) Paradox – reports Subjective Well-being (SWB) and GDP per cap not related above a certain level ($30K PPP in chart).**
- **SWB - Happiness in USA from 1946 through 2014 has been flat or declining despite a tripling of real GDP (Easterlin).**
- **However, recent critics argue that Easterlin Paradox is not real, and that well-being does vary with income.**
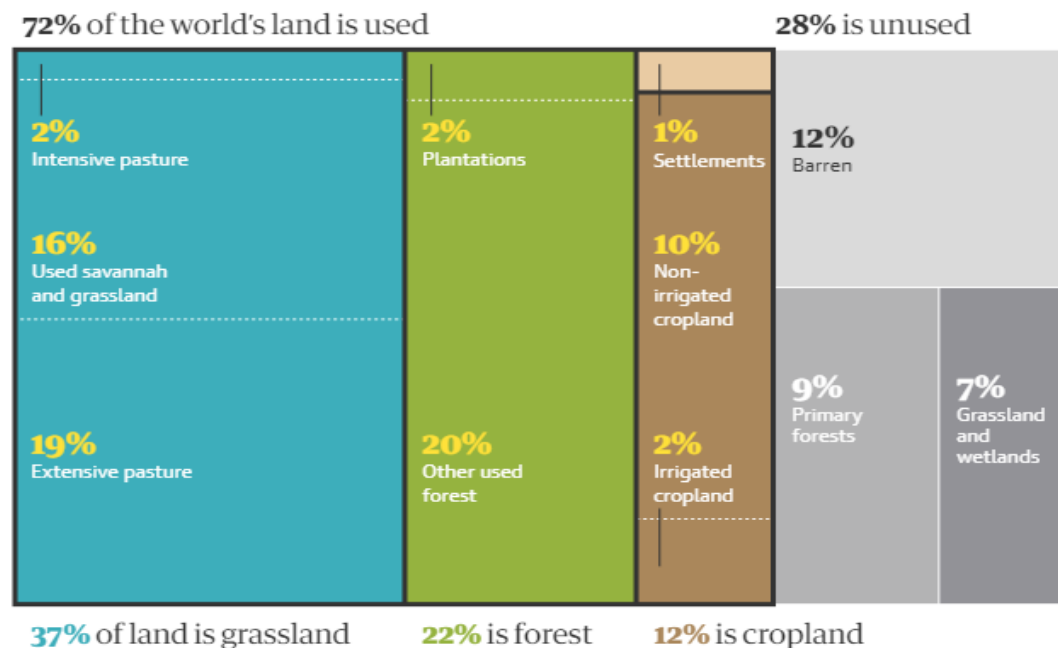

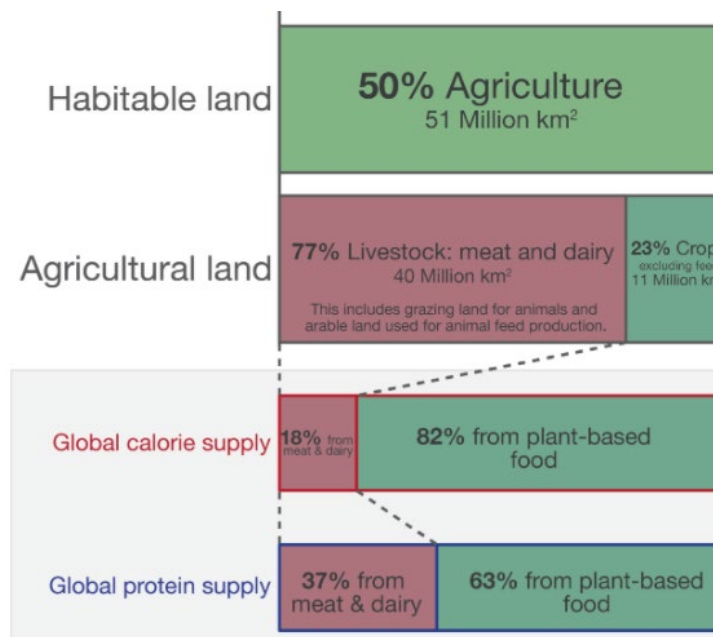From: https://www.mdpi.com/2071-1050/11/16/4374/htm

Consumption & Wildlife

- **Changes in food consumption & food policy is area that could have substantial impact on wildlife conservation by sparing land for wildlife (as opposed to producing animal products).**

Most of the planet's land is used by humans

72% of the world's land is used   **28%** is unused

| 2% Intensive pasture | 2% Plantations | 1% Settlements | 12% Barren |

16% Used savannah and grassland

19% Extensive pasture | 20% Other used forest | 10% Non-irrigated cropland | 9% Primary forests | 7% Grassland and wetlands

2% Irrigated cropland

37% of land is grassland   **22%** is forest   **12%** is cropland

Guardian graphic. Source: IPCC. Note: percentage of ice-free land shown

Habitable land — **50% Agriculture** 51 Million km²

Agricultural land — **77% Livestock: meat and dairy** 40 Million km² — This includes grazing land for animals and arable land used for animal feed production. — **23% Crops** excluding feed 11 Million km²

Global calorie supply — 18% from meat & dairy — 82% from plant-based food

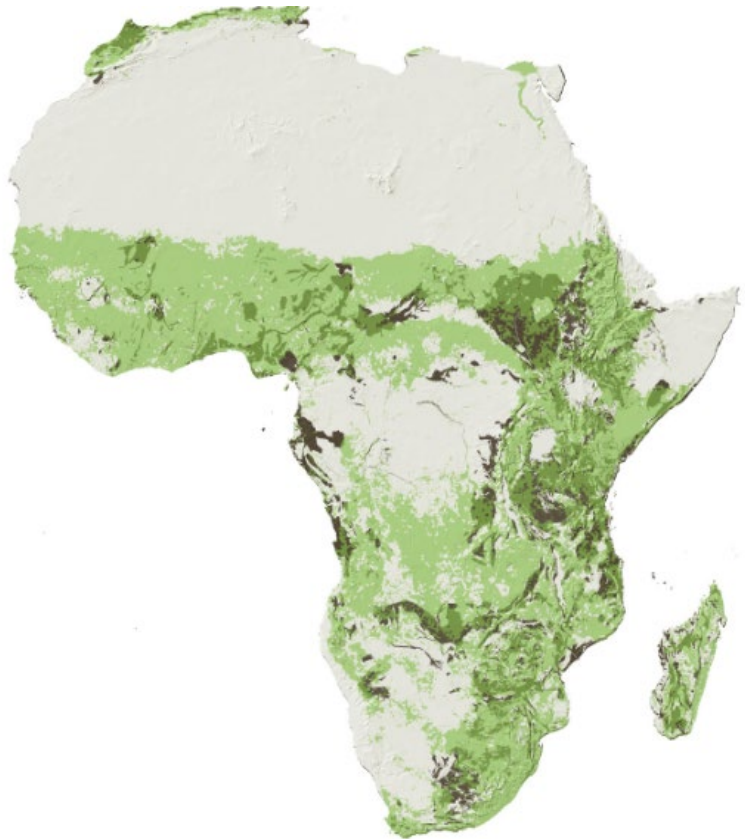Global protein supply — 37% from meat & dairy — 63% from plant-based food

Data source: UN Food and Agriculture Organization (FAO)
OurWorldinData.org – Research and data to make progress against the world's l...

- ➢ **IPCC Report – 72% land now used**
- ➢ **12% barren**
- ➢ <u>**16% remaining unused**</u>

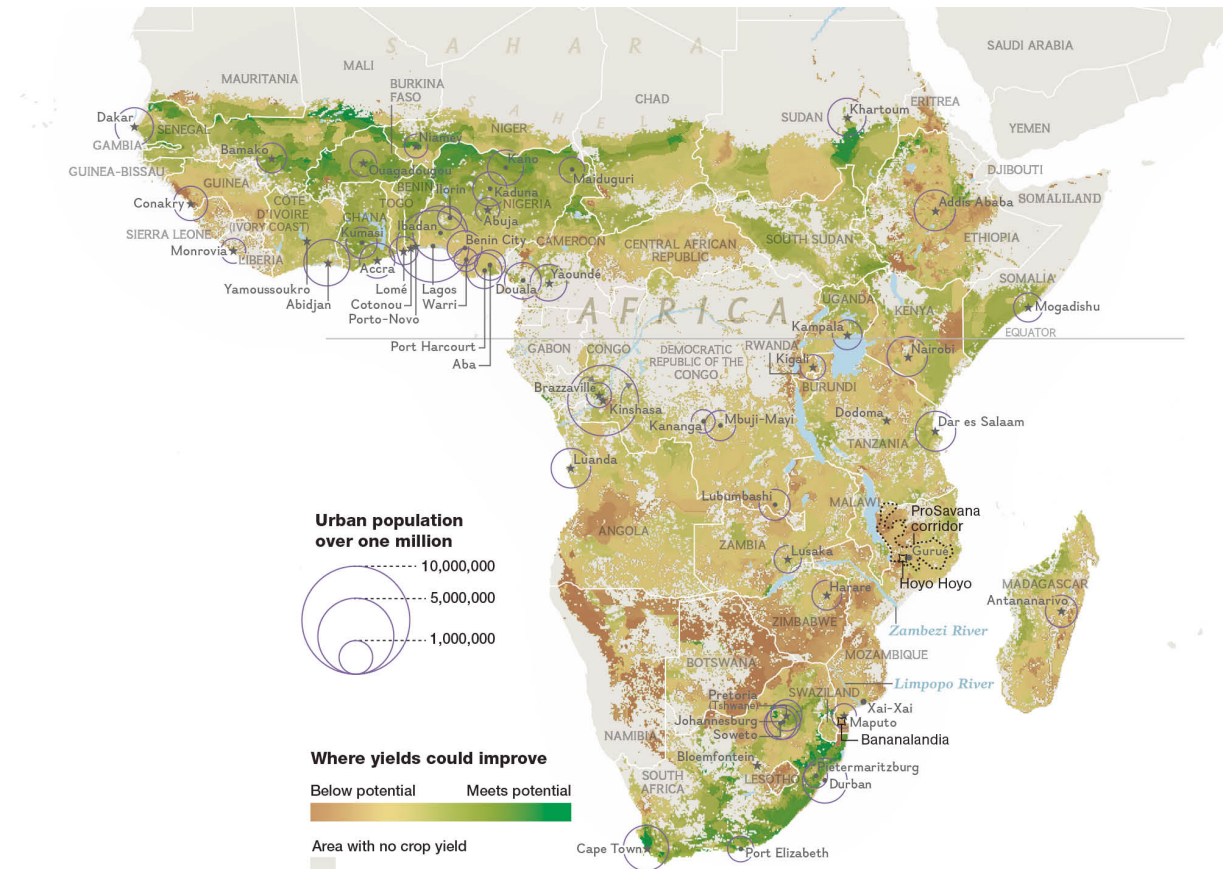- ❖ **Animal foods <u>very</u> inefficient – 77% of land produces 18% of global calorie & 37% of protein supply.**

Land Use in Africa

- **Cropland**

- **Cropland and potential yield**

Urban population over one million
- 10,000,000
- 5,000,000
- 1,000,000

Where yields could improve

Below potential — Meets potential

Area with no crop yield

Sub-Saharan Africa: Development & Wildlife

- ## Human Development
  - Sub-Saharan Africa: population has grown from 225 million in 1961 to 1.05 billion in 2020.
  - Projected to increase to 2.1 billion in 2050 and 3.8 billion in 2100.
  - Currently, around 230 million people are chronically undernourished.

- ## Wildlife Conservation
  - 17.7% of Sub-Saharan Africa in Protected Areas
  - Yet wildlife declines substantial over last 60 years - especially of larger species (elephant, rhino, hippo, giraffe, buffalo, lion).
  - Lion habitat in Africa declined from 11.9m Km^2 in 1960 (area with less than < 25 people/Km^2) to 3.4m Km^2 in 2010. There are now only 10 lion strongholds (4 in East Africa and 6 in Southern Africa).

Population Trends

- **UN Popln Div. projects a 3-fold increase in Africa by 2100.**

- **Density from 11 persons/Km² in 1961 to 100 in 2050. (EU in 2011 was 116.)**

(Millions of People)	1961	2016	2020	2050	2100
Africa	**290.2**	**1,213.0**	**1,340.6**	**2,489.3**	**4,280.1**
Northern Africa	65.0	228.3	246.2	371.5	504.9
Sub-Saharan Africa	**225.2**	**984.5**	**1,094.4**	**2,117.7**	**3,775.3**
West Africa	86.7	361.2	401.9	796.5	1,483.8
East Africa	85.7	400.3	445.4	851.2	1,451.8
Central Africa	32.9	159.1	179.6	382.6	746.1
Southern Africa	19.9	63.9	67.5	87.4	93.6

Not just a people issue - from 1961 to 2020, the number of cattle and goats in SSA grew from 105 to 310 million and from 80 to 390 million respectively.
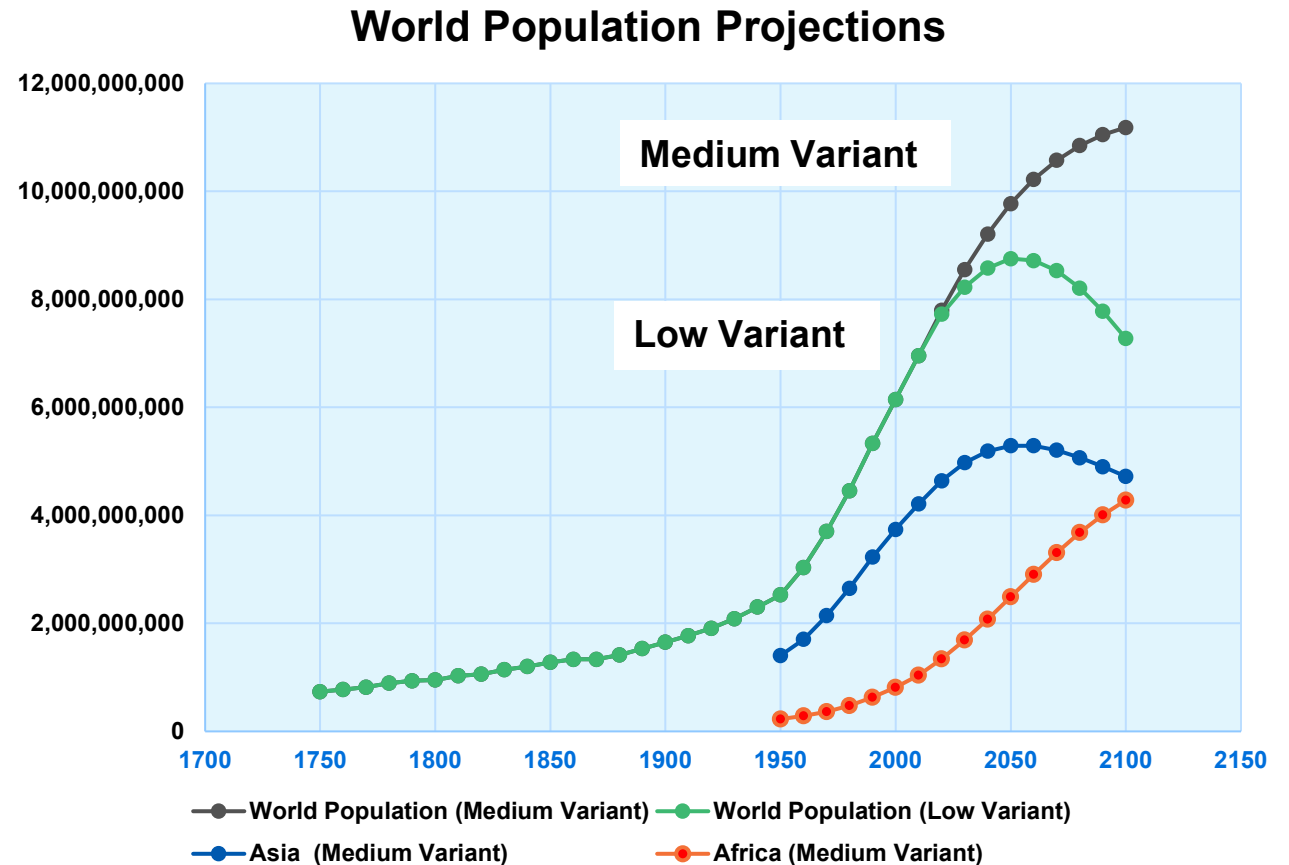
Population - 2

- Population projections make assumptions on fertility and mortality and base projections in part on those. But projections are NOT destiny. Population growth can be moderated by human agency. **Empower women!**

- For example a recent model (from the Gates sponsored IMHE in the US) projected that population of Subsaharan Africa would be 3.07bn in 2100 (not 3.8bn as UN projects).

- Population projections are constantly changing – and, as with the need to reduce consumption, we also need to address population!
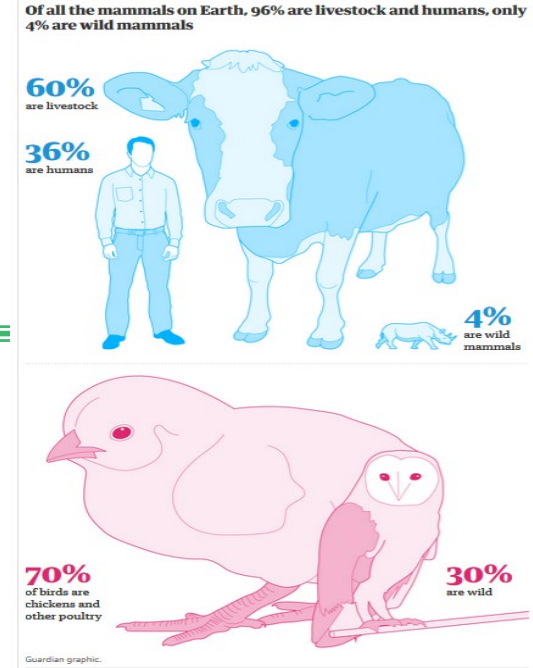
Population Growth

- **Low variant assumes minimal number of unplanned pregnancies.**

- **Not "pie-in-the-sky." Rwanda's fertility rate dropped 25% in 5(!) years following introduction of family planning initiatives.**

- **People, animals & environment all benefit from a reduction in the human footprint.**

World Population Projections

Medium Variant

Low Variant

Legend:
- World Population (Medium Variant)
- World Population (Low Variant)
- Asia (Medium Variant)
- Africa (Medium Variant)

Y-axis: 0 to 12,000,000,000
X-axis: 1700 to 2150

Declining Wildlife

- It is now broadly accepted that humans and domestic animals are the dominant mammalian species on the planet (accounting for 96% of all terrestrial mammalian biomass).

- In Africa, populations of
  - Elephant have declined from an estimated millions in 1960 to around 400,000 today;
  - Lion populations have dropped from 100,000 or more to under 30,000 and, today - only ten protected areas with sustainable populations of lions;
  - Rhino, hippo and giraffe have all declined significantly in past 50 years.

- With the human population in Sub-Saharan Africa projected to triple, how many of these wild animals will be around in 2100 to draw 70 million plus tourist visitors a year.

Of all the mammals on Earth, 96% are livestock and humans, only 4% are wild mammals

60% are livestock

36% are humans

4% are wild mammals

70% of birds are chickens and other poultry

30% are wild

Guardian graphic.

Kenya Case Study:
Development & Wildlife Conservation

- **Based on World Bank/GEF (2019) report –** *When Good Conservation becomes Good Economics: Kenya's Vanishing Herds.* **(Damania et al, 2020, https://elibrary.worldbank.org/doi/abs/10.1596/33083)**

- **Total wildlife biomass in Kenya dropped from 1.7 to 0.8m Kg from 1980 to 2000. Declines occurring at comparable rates outside AND within protected areas.**

- **There is a strong relationship between the presence of all-weather roads and wildlife decline – an 80% loss of wildlife within 20Km of an all-weather road plus predictable effects on fragmenting of habitat.**

- **One can press for wildlife-friendly development that brings economic benefits of BOTH tourism income and economic development.**
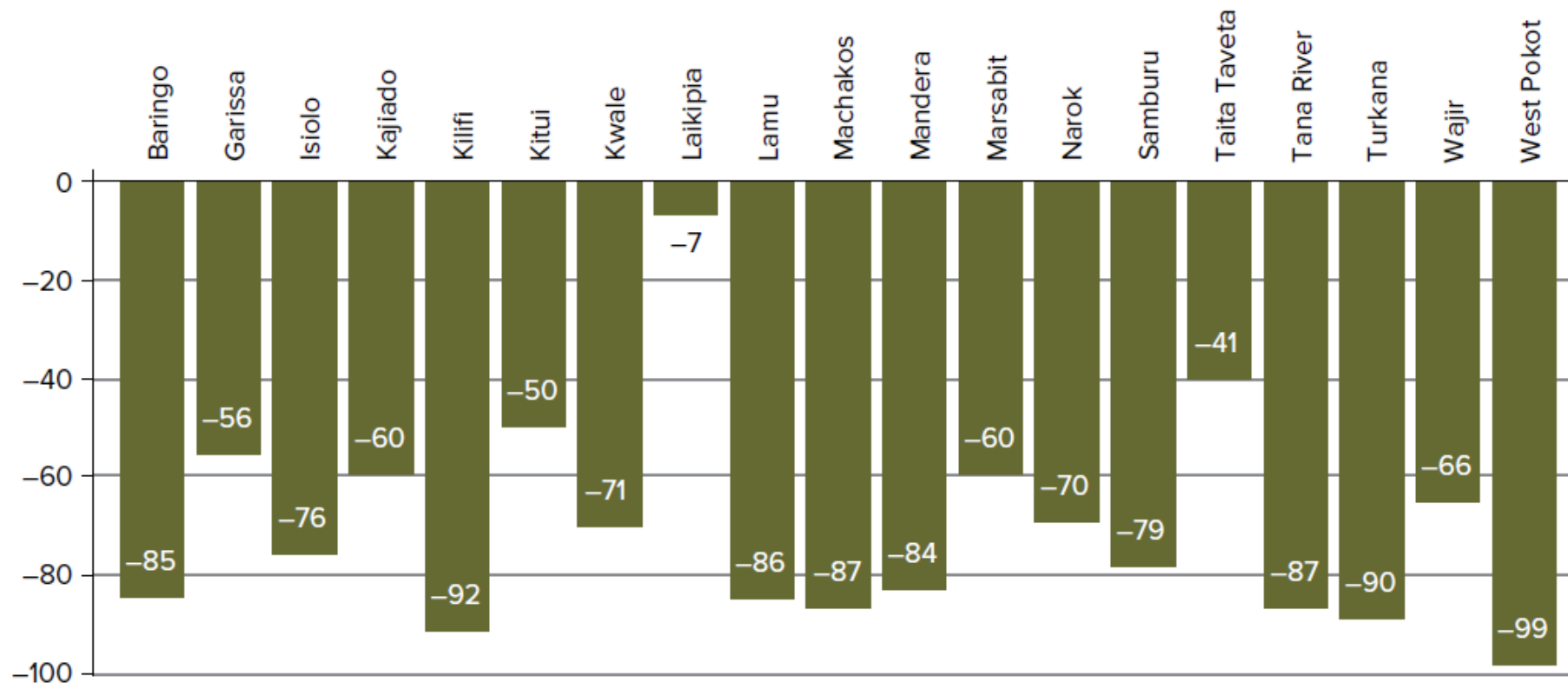
Kenya Wildlife Losses: 1977-2016

FIGURE 1.2: Wildlife trends in the 19 rangeland counties between 1977 and 2016 (percent)

Four major tourist counties are:-

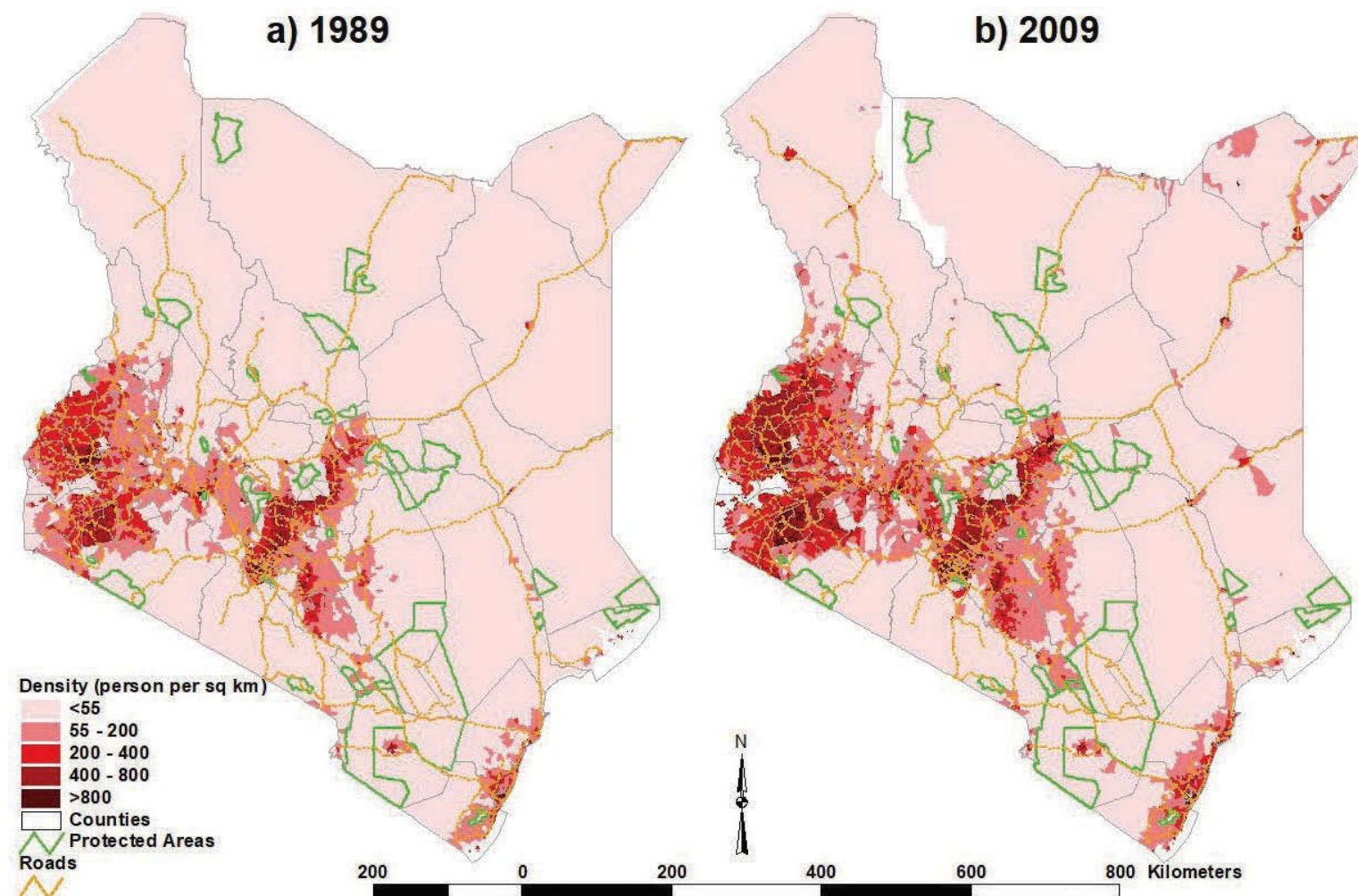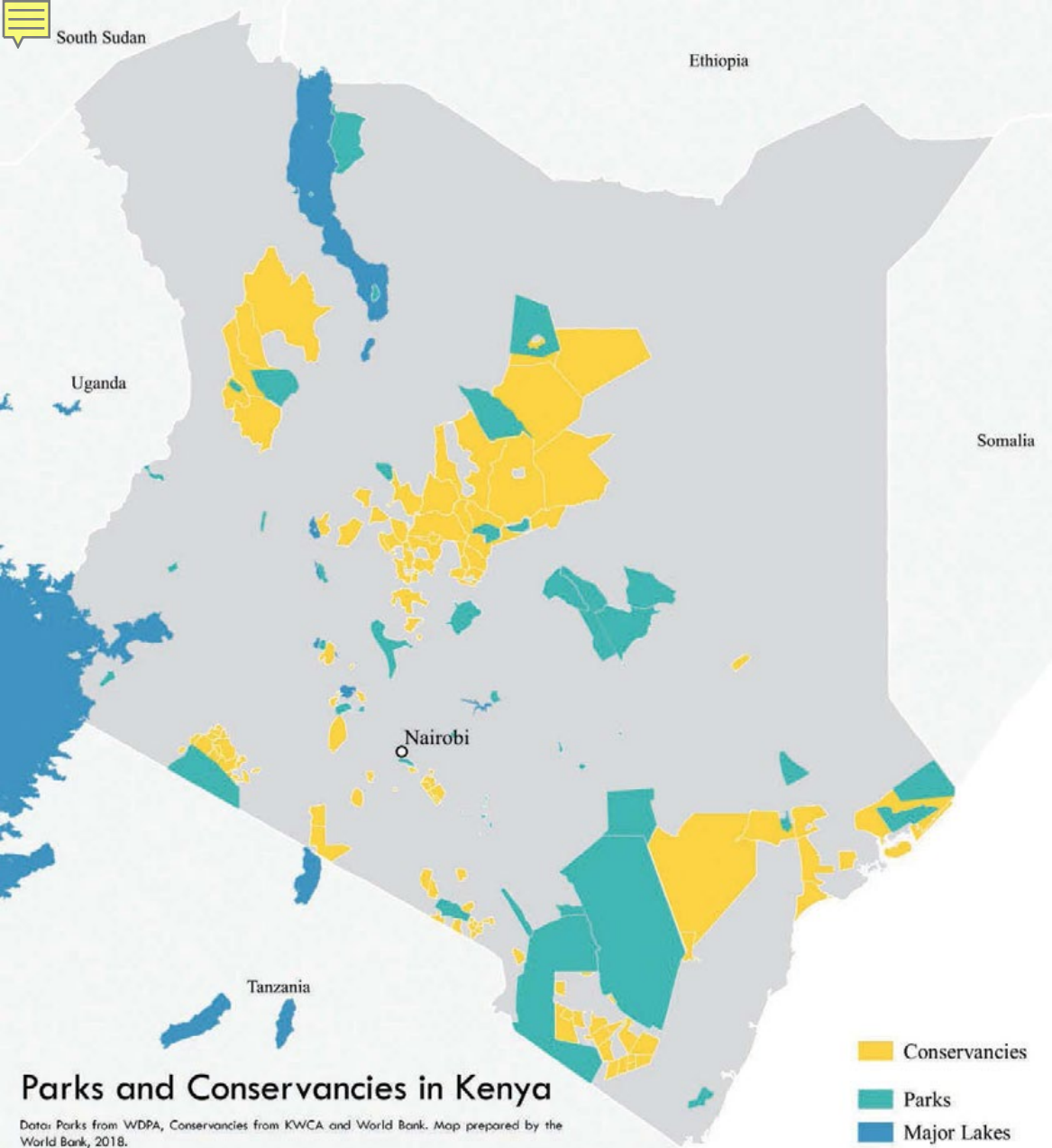Laikipia (- 7%), Narok (Mara - 70%), Kajiado (Amboseli - 60%) & Taita Taveta (Tsavo - 41%).

Bar chart showing wildlife trends by county:
- Baringo: −85
- Garissa: −56
- Isiolo: −76
- Kajiado: −60
- Kilifi: −92
- Kitui: −50
- Kwale: −71
- Laikipia: −7
- Lamu: −86
- Machakos: −87
- Mandera: −84
- Marsabit: −60
- Narok: −70
- Samburu: −79
- Taita Taveta: −41
- Tana River: −87
- Turkana: −90
- Wajir: −66
- West Pokot: −99

Source: Authors based on Ogutu et al. (2016).
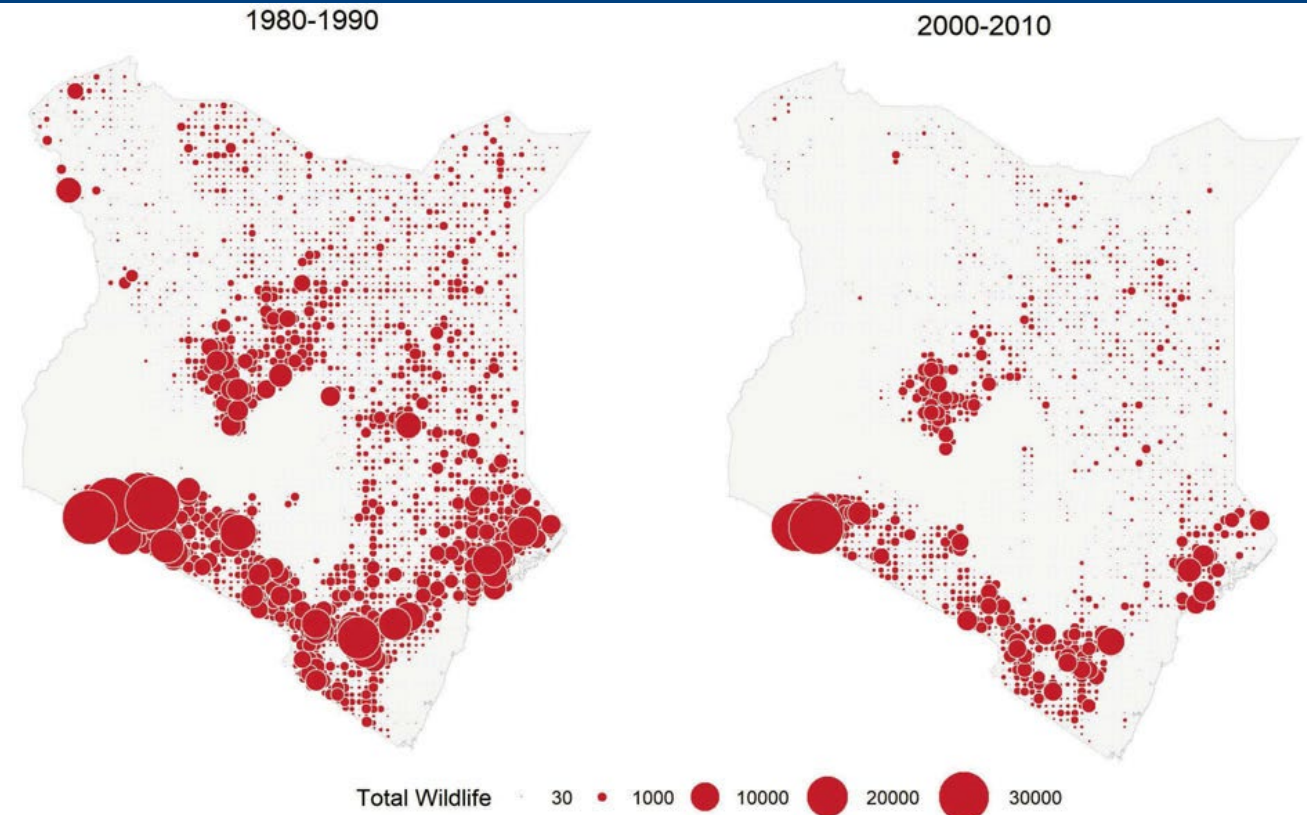
Kenya Population Density: 1989 & 2009

- **Human population density growth will be accompanied by growing livestock numbers, increased conversion of land to cropping and more road construction.**

a) 1989

b) 2009

Density (person per sq km)
- <55
- 55 - 200
- 200 - 400
- 400 - 800
- >800
- Counties
- Protected Areas
- Roads

N

200   0   200   400   600   800 Kilometers

Kenya's wildlife biomass dropped by 55% from 1980 to 2000 (and there were declines before 1980 and since 2000). Protected areas (IUCN I-IV) now at 12.4% of country. Arable land at 10.2% of country.

Development needs as population grew from **8.4m** in 1961 to **53.8m** in 2020 and currently projected to reach **91.6m** in 2050. Pressure on wildlife from people, cattle & goats will continue to intensify.

Parks and Conservancies in Kenya

Data: Parks from WDPA, Conservancies from KWCA and World Bank. Map prepared by the World Bank, 2018.

Conservancies
Parks
Major Lakes

From: World Bank Report, 2019. When Good Conservation becomes Good Economics: Kenya's Vanishing Herds
https://kwcakenya.com/download/world-bank-report-endorses-conservancies-as-a/

1980-1990   2000-2010

Total Wildlife   30   1000   10000   20000   30000

Economic Impact of New Roads

- Because land use change is the primary driver of biodiversity loss, it is no surprise that the rate of wildlife loss in Kenya between the 1980s and the end of the 2000s was significantly faster in areas in close proximity to roads. Almost all wildlife corridors have been affected by land conversion, though the extent varies (Ojwang et al. 2017).

- If a road causes losses of wildlife below a threshold (around 30%) then it will confer a net economic benefit according to the model. But wildlife losses that are larger produce a net loss in GDP because of lost tourism opportunities.

- **World Bank - If development consequences are managed better, it should be possible to obtain the benefits of infrastructure development as well as the benefits of tourism.**

Concluding Comments

➢ **Challenges of increasing consumption and increasing population in next 30 years are enormous.**

➢ **Wildlife losses in last 60 years exceed 60% globally.**

➢ **Africa facing particularly challenging situation – feeding & supporting 3X population in next 80 years while also protecting wild areas for both animals and people.**

➢ **It can be possible but will need skilled leaders, careful research and sensitive development.**