Population

Population

- Carrying capacity : We have a **Finite** Earth

- The Global Crises are to do with **Depletion**
  - Forest Loss, Species Extinction, Collapse of the Ocean biodiversity, Climate Change, Water Shortages, Soil Depletion, Air and water Pollution, Fossil fuel and uranium depletion.

- The carrying capacity of the Earth is being exceeded cause of:
  - **Our Way of Life** (consumption & production)
  - **Trade**
  - **Over-Population**

Exponential Growth

- Every time we ***double the population***, we will need ***more resources than*** we have ***ever*** used since the beginning of time (assuming our level of consumption stays the same).

No of Doubling Times	Units of Resources After Doubling	Cumulative Since Start
0	1	1
1	2	3
2	4	7
3	8	15
4	16	31
5	32	63
6	64	127

Exponential Growth

- The situation will only get worse; because, generally, individual ***consumption levels may increase***!
  - 'Less developed' countries will become 'developed'
  - E.g. China = the second largest economy is doubling in size every 7-9 years.

- People in 'developing' countries will use more resources than they are now!!!
  So, ***Doubling Population = More than Doubling Consumption***

- China, Russia and other developed countries are encouraging population growth to combat aging populations

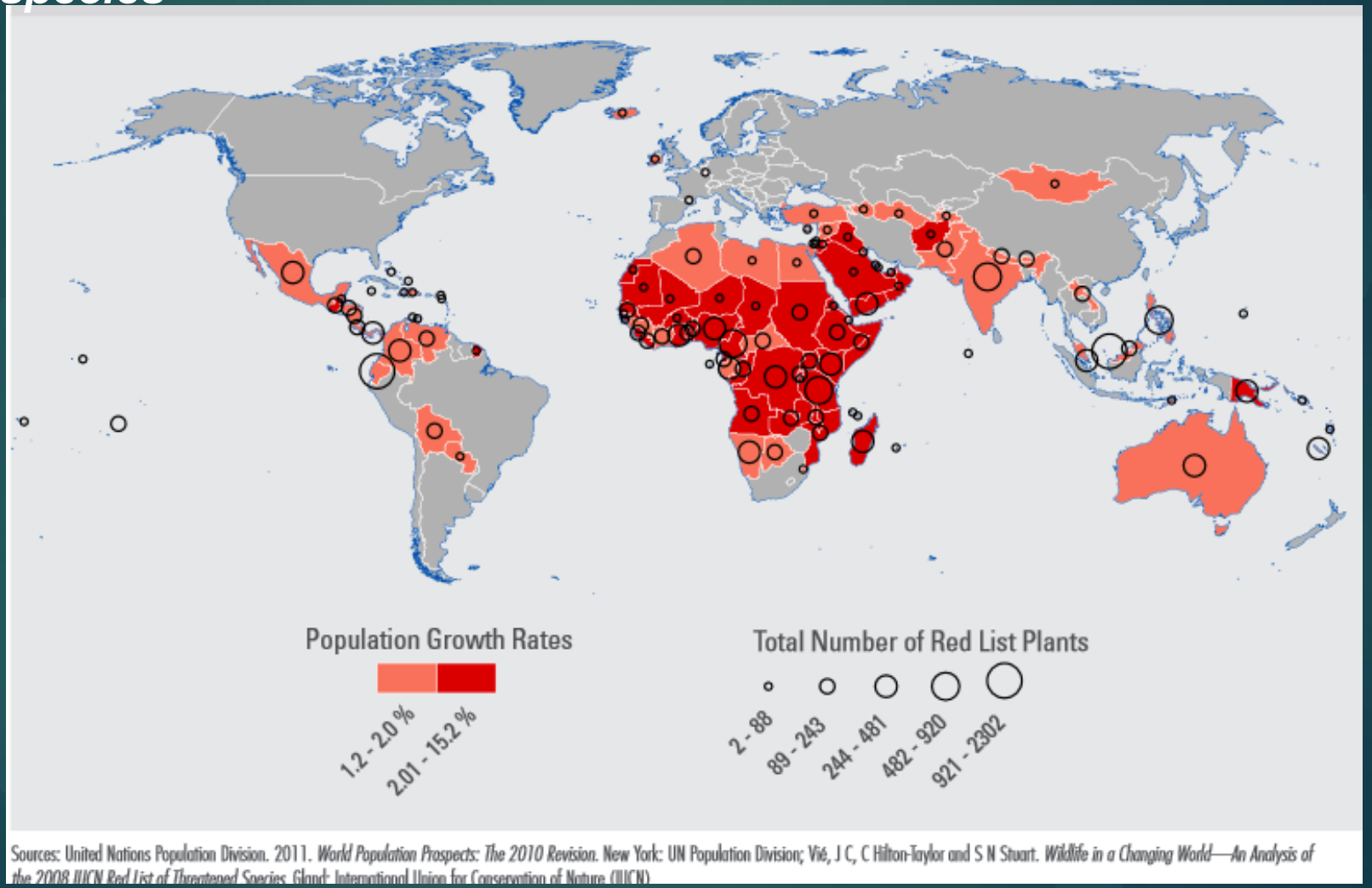
Impact – Forest Loss

The top 10 countries experiencing the ***greatest forest loss*** have ***large populations***, many of which continue to grow rapidly

Country	Annual Loss in Forest Area	Population (Million)		
	2000-2010	2010	2050	
	1,000 ha/Year		Projected	%
Brazil	**2,642**	**194.9**	**222.8**	**+14%**
Australia	**562**	**22.3**	**31.4**	**+41%**
Indonesia	**498**	**239.9**	**293.5**	**+22%**
Nigeria	410	158.4	389.6	+146%
Tanzania	**403**	**44.8**	**138.3**	**+209%**
Zimbabwe	327	12.6	20.6	+63%
Democratic Rep. of the Congo	**311**	**66.0**	**148.5**	**+125%**
Myanmar	310	47.9	55.3	+15%
Bolivia	**290**	**9.9**	**16.8**	**+70%**
Venezuela	288	28.9	41.8	+45%
Total	**6,041**	**825.6**	**1,358.6**	**+65%**

Impact – Biodiversity Loss

- ***High population*** growth often occurs in areas with many ***vulnerable species***



Sources: United Nations Population Division. 2011. *World Population Prospects: The 2010 Revision.* New York: UN Population Division; Vié, J C, C Hilton-Taylor and S N Stuart. *Wildlife in a Changing World—An Analysis of the 2008 IUCN Red List of Threatened Species.* Gland: International Union for Conservation of Nature (IUCN)

Impact of Population Growth

- Population growth will
  - ***Aggravate*** the above crises
  - ***Offset efforts*** to mitigate the above
  - ***Compromise positive changes*** in consumption /production patterns
    - E.g. family of 2 (a couple) reduced consumption by 50%. Later they have 2 children => Family size= 4 ;Total consumption = 50%*2 = 4 the same as before behavioural changes by the couple

- **Every baby born ➔ *more effort* required to change lifestyle**

The Global Challenge

- Today's trend: declining ***rate (speed)*** of population growth

- **BUT, actual population size is *STILL GROWING*.**

- We are ***ALREADY*** at an ***UNSUSTAINABLE*** level - can we afford to keep growing?

Family Planning

- Net population movement (= births-deaths) = Currently an increase of 80 million people /year

- ***20%-25% of all births*** (33 Million in 2008) ***= Are reported to be Unintended pregnancies.***
- ***This is 40%*** OF the NET POPULATION GROWTH EACH YEAR

- 2/3 of unintended pregnancies ***are a result of not using contraceptives***

- Providing education and ***access to contraceptives => reduce population*** growth rate

Family Planning

- Not population control but ***PLANNING*** – to ***EMPOWER*** women & families to make their own ***INFORMED*** choices about childbearing
  - information to include an **understanding** of global crises, their **relationships** with population growth and the future **outlook**
- ***3 billion*** **people under the age of 25 and entering their childbearing years - their childbearing choices, and the information (necessary for informed choices) and contraceptive services available to them, will determine population growth in the future**

The Payoff (CO_2)

- Investments in family planning would cost about ***$4.50*** per ton of CO_2 savings (CO_2 not emitted), ***vs. solar power*** ($30 per ton)

- Following a slower population growth path could reduce emissions from fossil fuel use by 1.4 to 2.5 billion tons of carbon per year by 2050.

- Actually the Earth needs a trend of population decrease if we are to avoid runaway climate change and mass extinction

The Payoff (CO_2)

- Eliminating unintended pregnancies ≈ ***16 to 29 %*** of the emissions reductions ***needed to stabilize*** greenhouse gas levels to prevent the most damaging climate change.

- Half of these reductions would:

  - come from fertility decline in the US and developing countries (not including China).

  - ≈ the reductions that would come from ***ENDING ALL TROPICAL DEFORESTATION***