Global Population Trends consistent with the SDG Health and Education Goals

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World Population from the year 1000 to 2100

Source of historical data: UN 2001
World Population Growth

... is sometimes called the elephant in the room because it is not explicitly mentioned in the SDGs although it matter greatly ...

- ... through the number of consumers and their impact on the environment (at given levels of per capita consumption),
- ...through making it more difficult to expand education, improve health and reduce poverty,
- ... through more people with higher vulnerability being exposed to natural disasters and other environmental change,
- ... through possibly increasing the likelihood of conflict and uncontrolled mass migration...
Probabilistic world population projections:
Lutz, Sanderson & Scherbov (IIASA)

Chart 1. Historical trend and projections according to the medium scenario (SSP2) for the world population by six levels of educational attainment (see color coding). The additional lines superimposed
2015: Sustainable Development Goal 4:

..... quality **primary and secondary education**

_for all girls and boys_ .... .
Adding education to age and sex in population analysis

Education is the most important source of observable population heterogeneity after age and sex.

This matters because:

• Almost universally during demographic transition more educated women have fewer children, have lower child mortality, and more educated adults live longer. Changing education composition changes population forecasts.

• Education is a crucial determinant of individual empowerment and human capital, is a key driver of socio-economic development (public health, economic growth, quality of institutions and democracy, and adaptive capacity to climate change).
Fertility by Education in Kenya Empirical (2010) and Assumed
Assuming identical education-specific fertility trends, different education scenarios make a difference of more than 1 billion people by 2050.

- CEN gives the world population trend according to the most pessimistic scenario assuming that no new schools will be built.
- FT gives the most optimistic scenario assuming that countries can achieve the rapid education expansion that South Korea achieved.
Toward Constructing a SDG Population Scenario

Translating the health and education targets into fertility and mortality assumptions

- Child mortality, maternal and other adult mortality targets,
- Reproductive health targets,
- Indirect effect of education targets on mortality and fertility trajectories
Fig. 2. Education-specific fertility rates for Nigeria under the assumptions of the SSP2 scenario and the 20% lower SDG1 scenario.
Fig. 3. Nigeria: Resulting population size for the SDG1–3 and the SSP1–3 scenarios and UN ranges.
Meeting the Sustainable Development Goals leads to lower world population growth

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Global Population Projection - Various Scenarios

- UN-Range
  - 95\%CI
  - 80\%CI

Scenario
- UNproj
- SDG1
- SDG2
- SDG3
- SDG4
- SSP1
- SSP2
- SSP3

Population in Billions

Year

2010 2020 2030 2040 2050 2060 2070 2080 2090 2100
Global Climate Change

Regional effects on:
- temperature
- humidity
- extreme events (storms)
- sea-level rise

Differential vulnerability

GHG emissions

Consumption

Technology

Innovation

Livelihood

Health/Mortality

Migration

Human Population

By age, sex, level of education, place of residence, and household structure

Closing the full circle of population and climate change
Universal education is key to enhanced climate adaptation

Fund more educators rather than just engineers

By Wolfgang Lutz, Raya Muttarak, Erich Striessnig*

Over the coming years, enormous amounts of money will likely be spent on adaptation to climate change. The international community recently made pledges of up to $100 billion per year by 2020 for the Green Climate Fund. Judging from such climate finance to date, funding for large projects the best available information on the number of disasters and reported fatalities from around the world (5).

EDUCATE FEMALES, REDUCE FATALITIES. Because the literature on disaster vulnerability has conventionally emphasized economic growth while disregarding education, our statistical analysis focuses on the relative assessment of these two factors as measured by Gross Domestic Product (GDP)