Human Resources for Sustainable Development: Population, Education and Health

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IIASA Conference, 24 October 2012
World Population from the year 1000 to 2100
95 percent

Source: Lutz et al. (Nature 451:716-719, 2008)
Figure 2. Sub-Saharan Africa population, in millions.

Source: Lutz et al. (Nature 451:716-719, 2008)
Figure 3. Eastern European population, in millions.

Source: Lutz et al. (Nature 451:716-719, 2008)
Is there a Limit to Human Life Expectancy?

Oeppen und Vaupel 2002
Mental Capital and Wellbeing: Making the most of ourselves in the 21st century
Human Capital =

= The Human Resource Base for Sustainable Development
= Population x Education x Health

• Education:
  - formal
    - quantity
    - quality
    - content
  - informal

• Formal Education
  - Education Flows – Policy variable
  - Education Stocks – Change very slowly due to great momentum

• Mean years of schooling
• Distribution by highest educational attainment
Republic of Korea-1960

Total Population: 24,766,151

MALES

FEMALES

Population in thousands

No Education  Primary  Secondary  Tertiary
Republic of Korea-1965

Total Population: 28,653,294

Population in thousands

- No Education
- Primary
- Secondary
- Tertiary

MALES
FEMALES
Republic of Korea-1970

Total Population: 31,439,846

Population in Thousands

Future Education

No Education
Primary
Secondary
Tertiary

Males
Females
Republic of Korea-1975

Total Population: 34,721,379

- MALES
- FEMALES

Population in Thousands

- No Education
- Primary
- Secondary
- Tertiary
Republic of Korea-1980

Total Population: 37,459,355

MALES
FEMALES

Population in Thousands

- No Education
- Primary
- Secondary
- Tertiary
Republic of Korea-1995

Total Population: 44,651,208

Population in Thousands

No Education  Primary  Secondary  Tertiary
Republic of Korea-2000

Total Population: 46,429,319

MALES

FEMALES

Population in Thousands

No Education  Primary  Secondary  Tertiary
Republic of Korea-2010

Total Population: 48,492,348

MALES  FEMALES

Population in Thousands

- No Education
- Primary
- Secondary
- Tertiary
ECONOMICS

The Demography of Educational Attainment and Economic Growth

Complementing primary education with secondary education in broad segments of the population is likely to give a strong boost to economic growth.

Wolfgang Lutz,1 Jesus Crespo Cuaresma,2 Warren Sanderson3

China - Population Aged 15-64 by Level of Educational Attainment in 1970-2050 - Global Education Trend (GET) Scenario

World Population Program
UNSD 2009
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.
Education Reduces Vulnerability to Natural Disaster and Enhances Adaptive Capacity

In the Context of IPCC and IAMs the Research Community has Recently Agreed to the Definition of "Shared Socioeconomic Pathways" (SSP)

- **Low Challenges**
  - Sustainability
- **Intermediate Challenges**
  - Middle of the Road
- **High Challenges**
  - Inequality
  - Fragmentation

Socio-economic challenges for adaptation and mitigation
SSP Element Quantifications (e.g., India)

Population, Education vs. Urbanization vs. GDP

- Population (Millions)
  - Historical
  - SSP1
  - SSP2
  - SSP3
  - SSP4
  - SSP5

- Urbanization (%)
  - Historical
  - SSP1
  - SSP2
  - SSP3
  - SSP4
  - SSP5

- GDP (Billion US$)
  - Historical
  - SSP1
  - SSP2
  - SSP3
  - SSP4
  - SSP5

Year:
1950, 2000, 2050, 2100

Sources:
- (IIASA)
- (NCAR)
- (OECD, IIASA, PIK)
Remaining Life Expectancy at Age 60
Austria 1850-2010

Source: Winkler-Dworak, VID