



International Institute for
Applied Systems Analysis
www.iiasa.ac.at

science for global insight

Demographic and Human Capital Trends

Europe Current Evolution

24 June 2015

Prague Castle

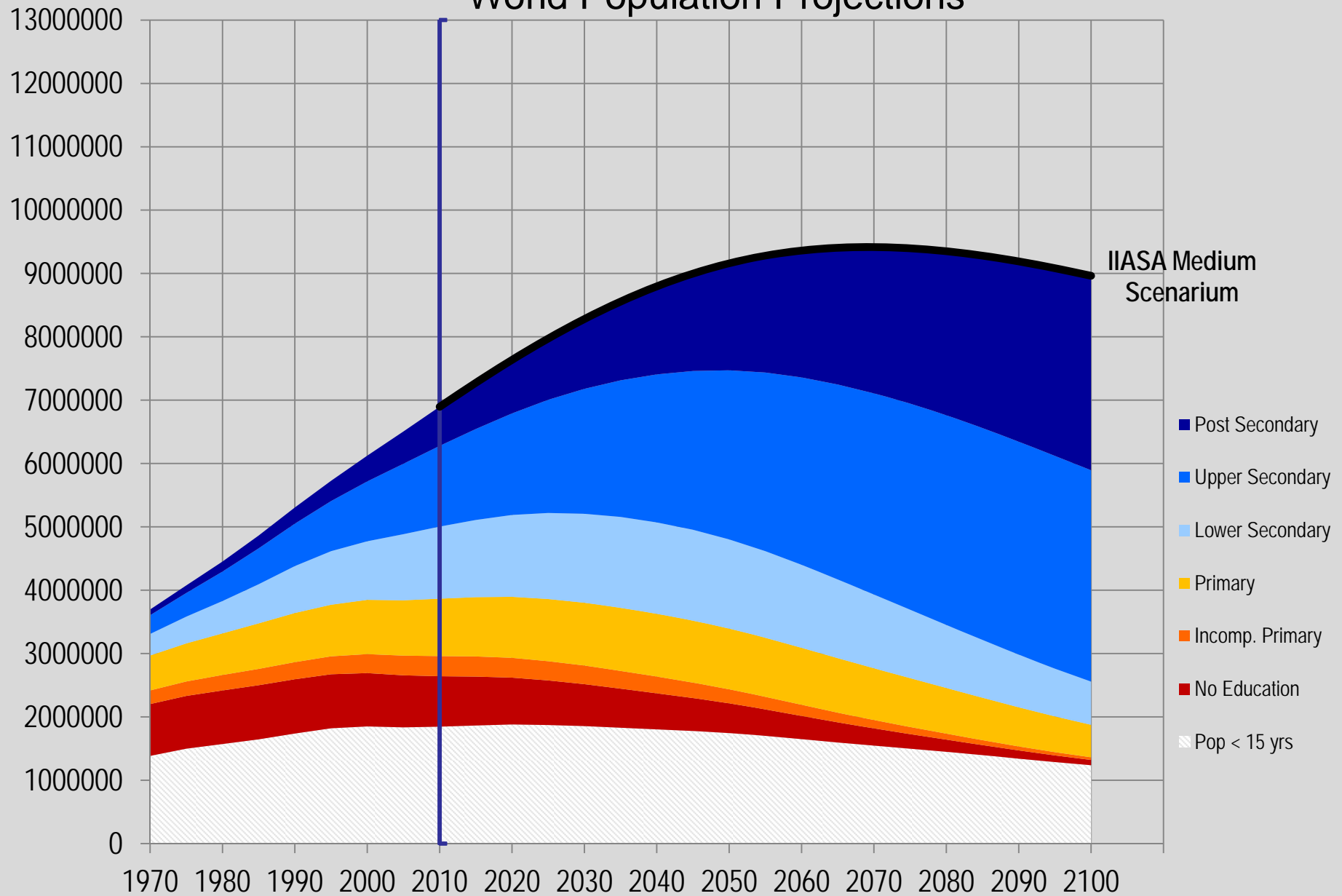
Wolfgang Lutz

Director, World Population Program



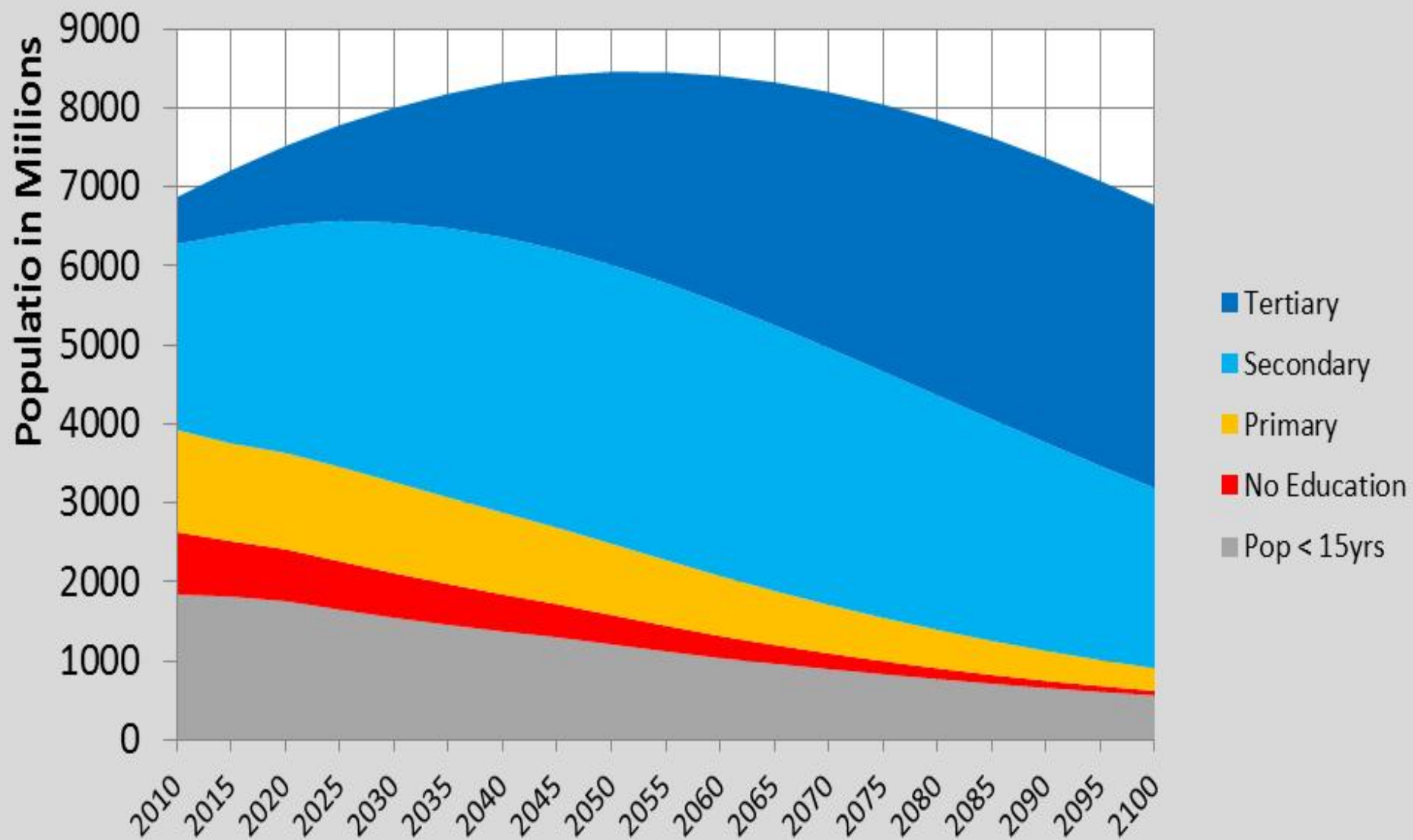
IIASA, International Institute for Applied Systems Analysis

World Population Projections



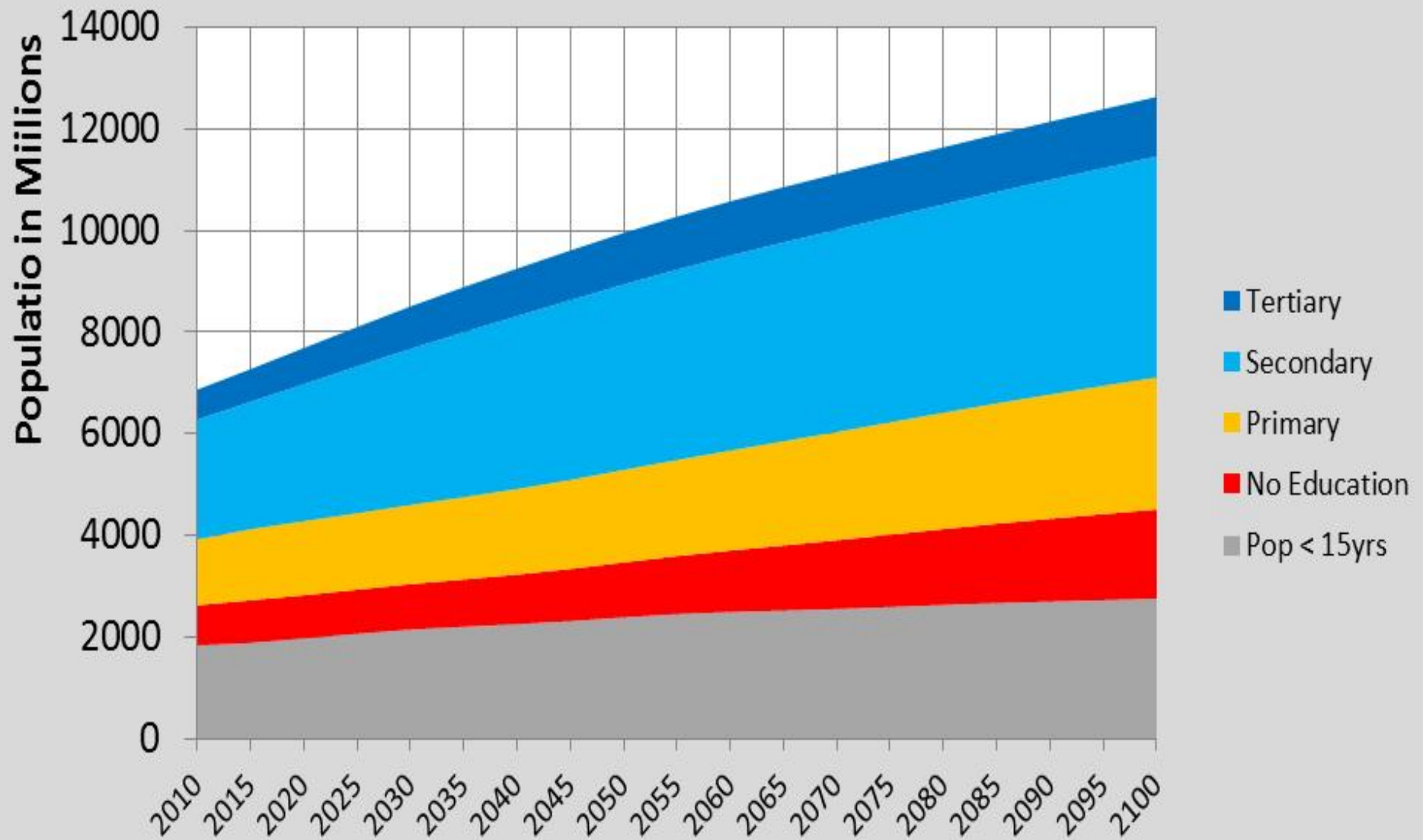
Rapid Development Scenario

World SSP1



Stalled Development Scenario

World SSP3



TFR by Level of Education

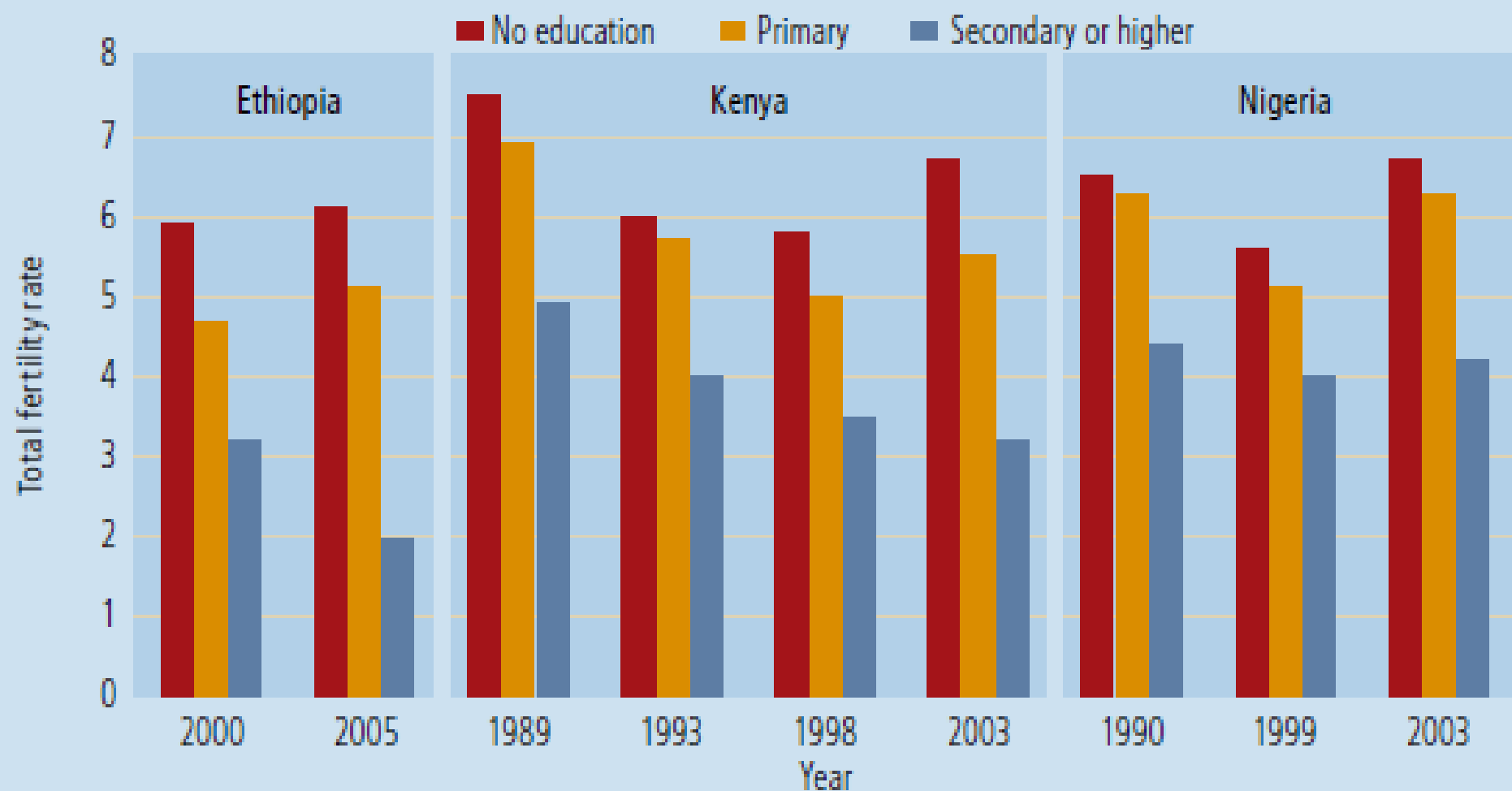


FIGURE 2 Total fertility rates by level of educational attainment. (Source: Several DHSs)



REVIEW

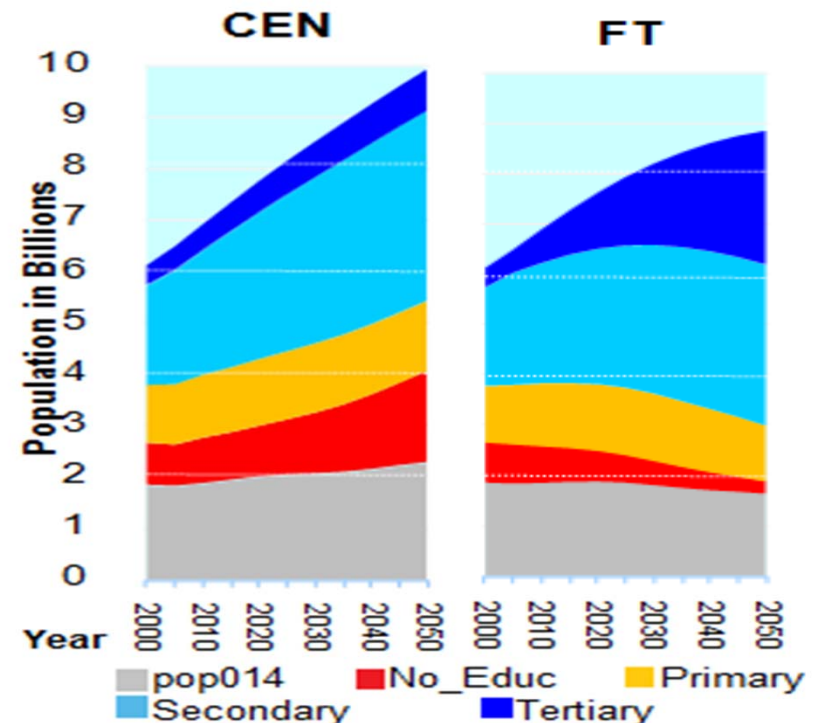
Global Human Capital: Integrating Education and Population

Wolfgang Lutz^{1,2,3,4*} and Samir KC^{1,2}

Almost universally, women with higher levels of education have fewer children. Better education is associated with lower mortality, better health, and different migration patterns. Hence, the global population outlook depends greatly on further progress in education, particularly of young women.

Assuming identical education-specific fertility trends different education scenarios make a difference of more than 1 billion people by 2050.

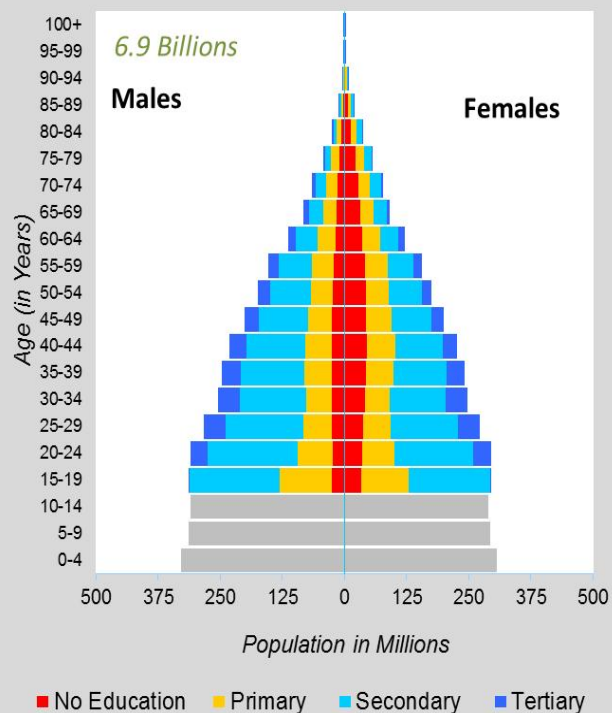
- CEN gives the world population trend according to the most pessimistic scenario assuming that no new schools will be built
- FT gives the most optimistic scenario assuming that countries can achieve the rapid education expansion that South Korea achieved



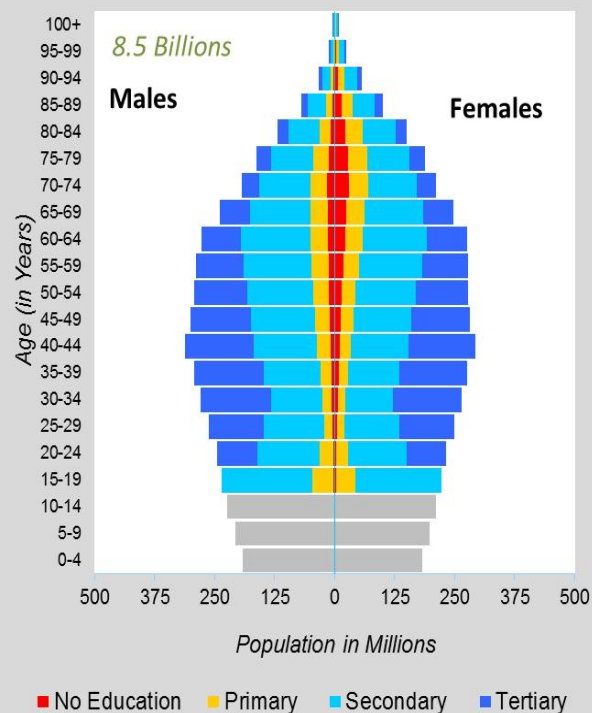
Rapid Development Scenario

Stalled Development Scenario

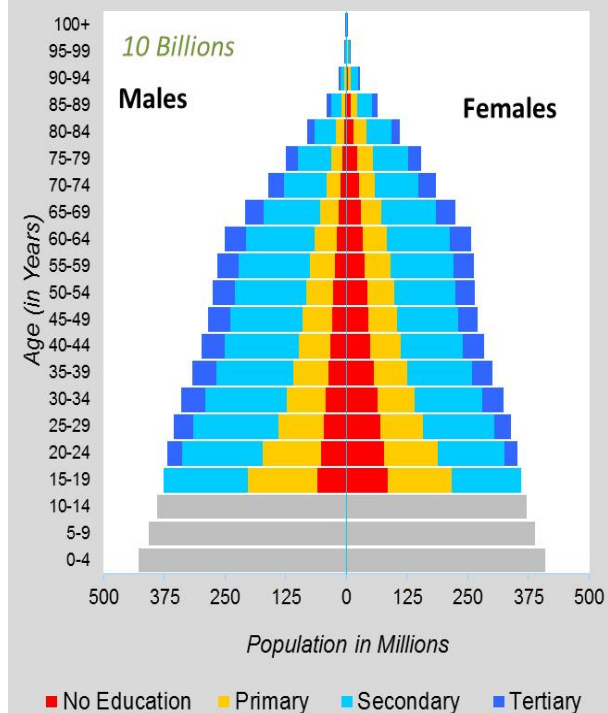
World - 2010



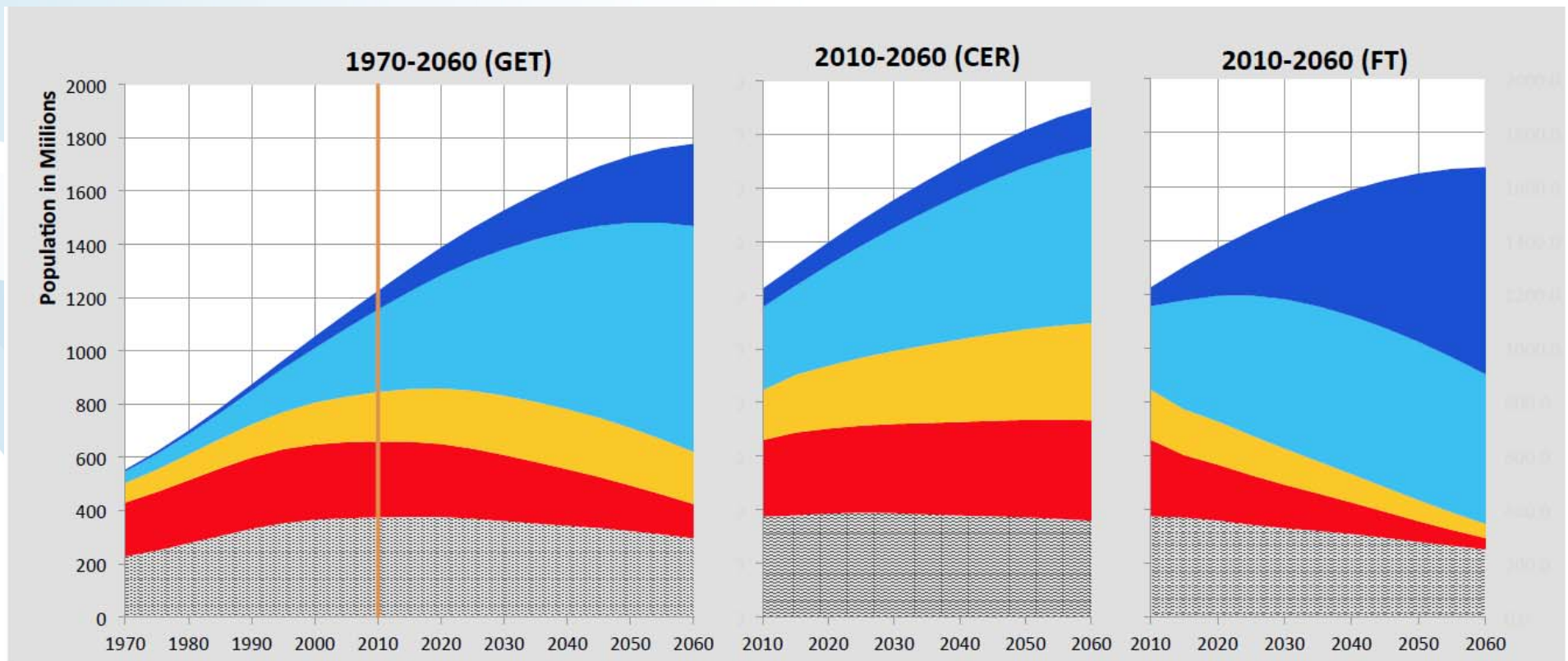
World - 2050 SSP1



World - 2050 SSP3



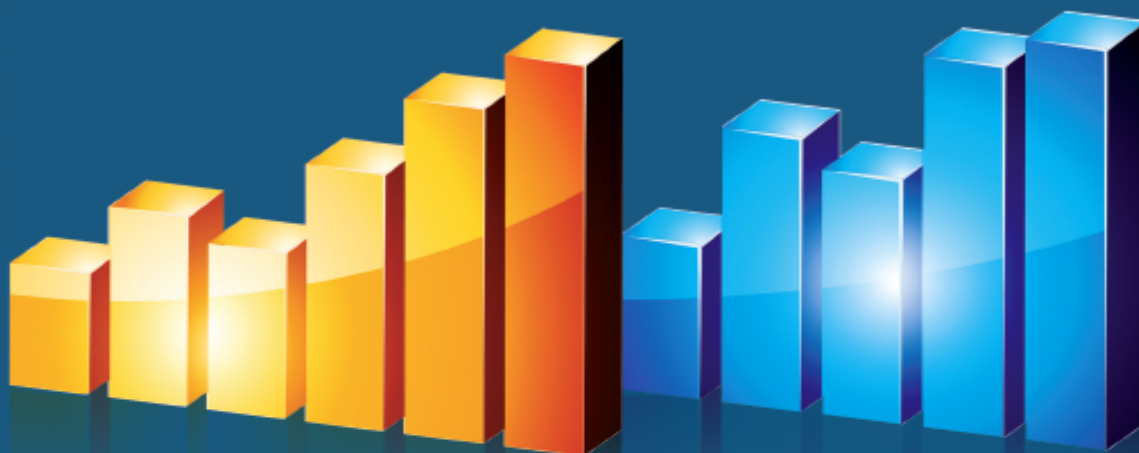
India: Alternative Population and Human Capital Scenarios



LUTZ,
BUTZ,
& KC

OXFORD

WORLD POPULATION & HUMAN CAPITAL
IN THE TWENTY-FIRST CENTURY



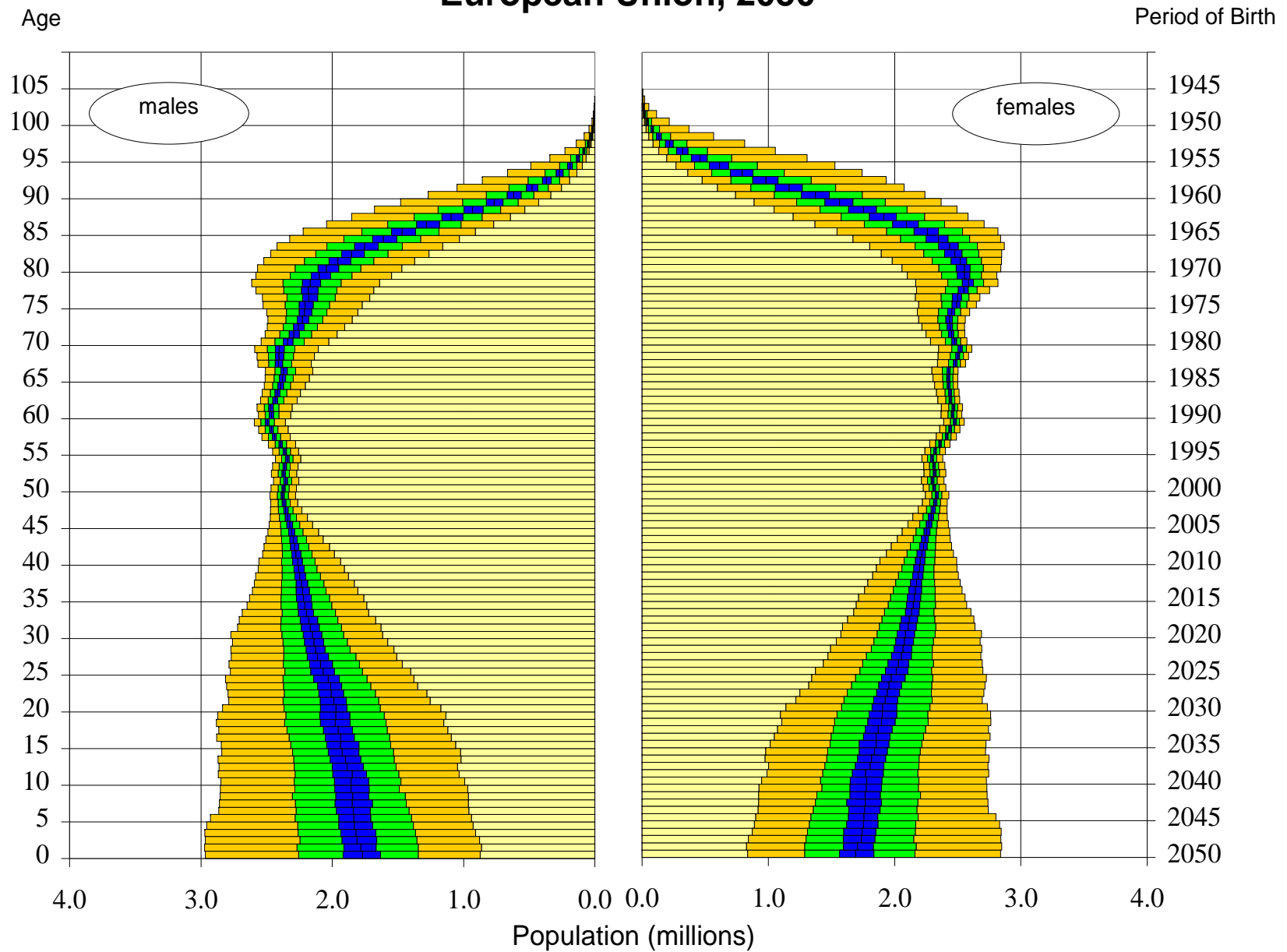
WORLD POPULATION & HUMAN CAPITAL IN THE TWENTY-FIRST CENTURY

EDITED BY
WOLFGANG LUTZ | WILLIAM P. BUTZ | SAMIR KC

This book addresses systematically and quantitatively the role of educational attainment in global population trends and models. Six background chapters summarize past trends in fertility, mortality, migration, and education; examine relevant theories and identify key determining factors; and set the assumptions that are subsequently translated into alternative scenario projections to 2100. These assumptions derive from a global survey of hundreds of experts and five expert meetings on as many continents. Another chapter details their translation into multi-dimensional projections by age, sex, and level of education. The book's final chapters analyse the results, emphasizing alternative trends in human capital, new ways of studying ageing and the quantification of alternative population, and education pathways in the context of global sustainable development. An appendix and associated web link present detailed results for all countries. The book shows that adding education to age and sex substantially alters the way we see the future.

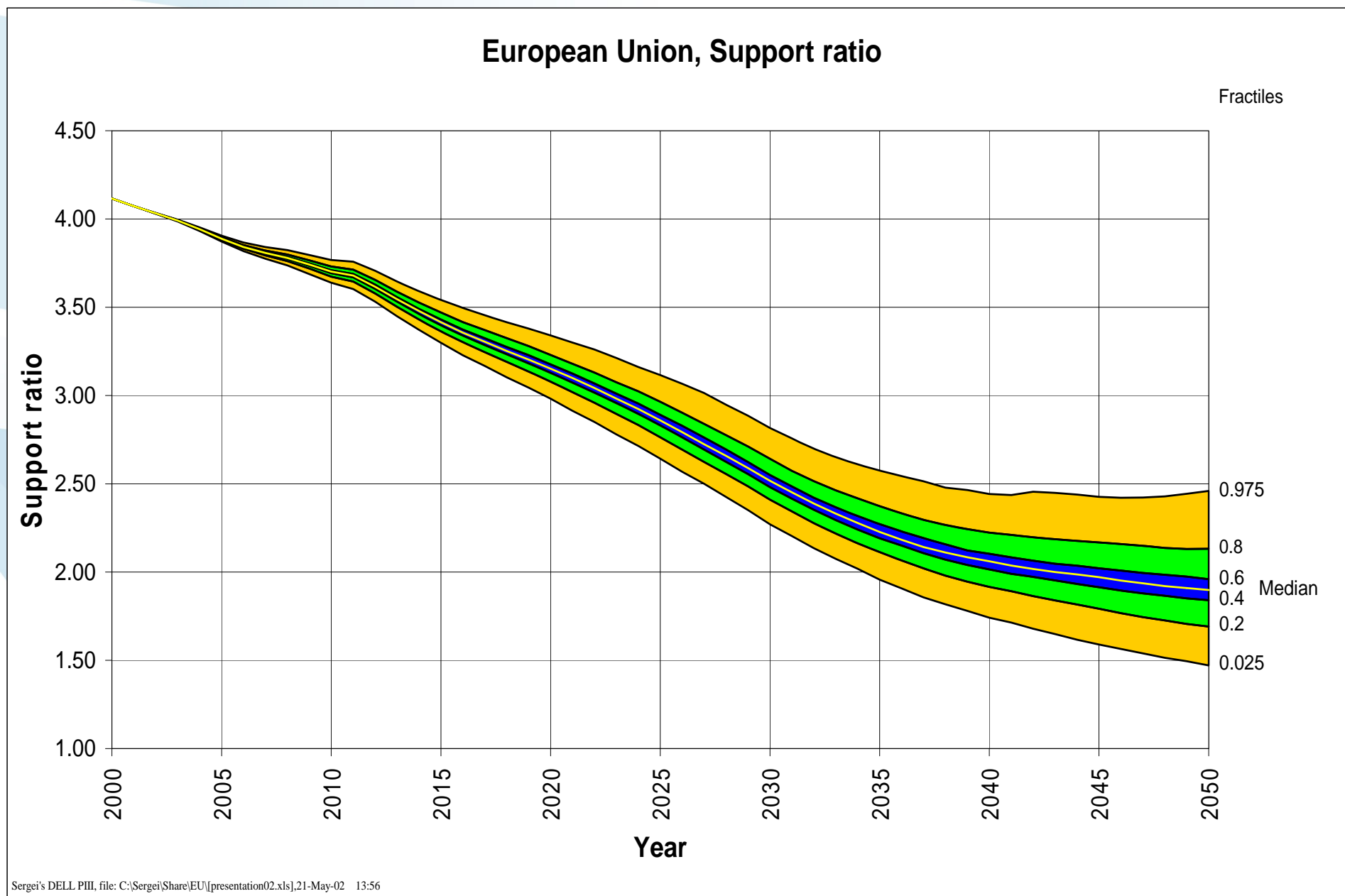
OXFORD

European Union, 2050



ELL PIH, file: C:\Sergei\Current\Run\2002\EU\make_pyramid_to_file2_EU2.xls, 21-May-02 14:36

Demographic Support Ratio: Population 15-64 / Population 65+



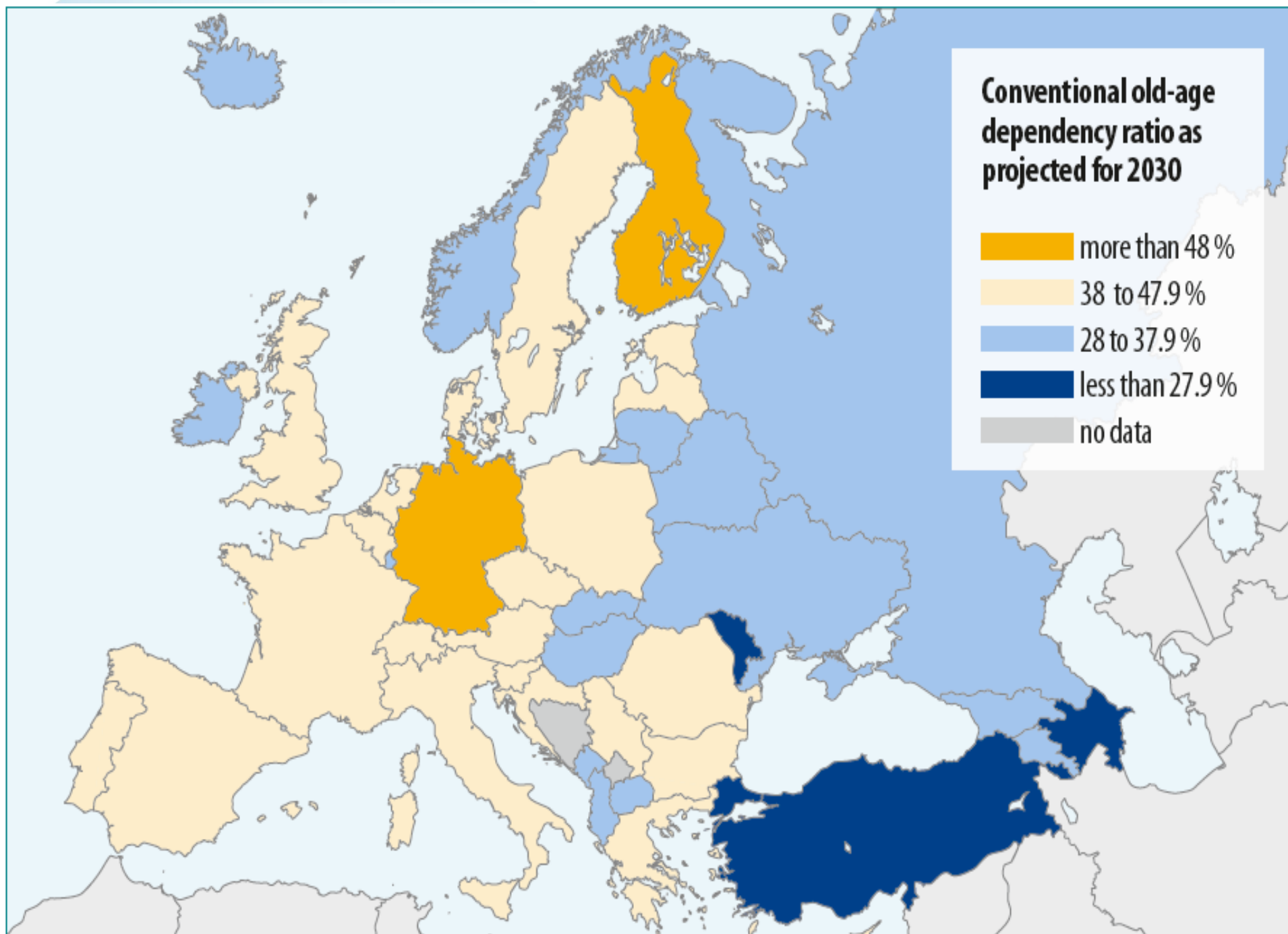
Redefining Age and Ageing

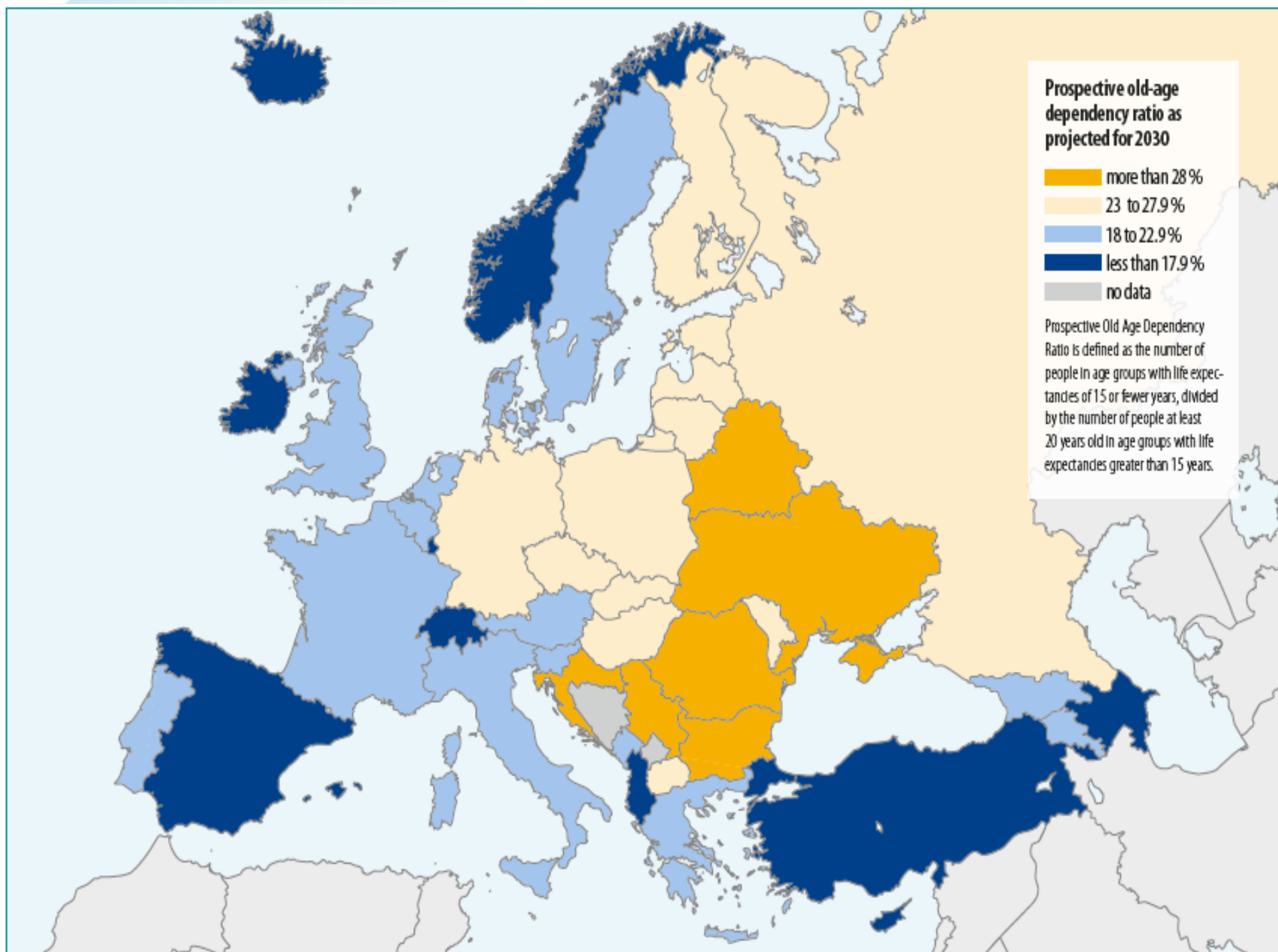
ERC Adv. Grant, Sergei Scherbov (IIASA)

$$\text{OADR} = \frac{\text{Number of people aged 65 years or older}}{\text{Number of people aged 20 to 64}}$$

the VID and IIASA: the prospective old-age dependency ratio. In the POADR, the threshold of being old is not fixed but linked to life expectancy. People are considered old when the average remaining life expectancy in their age group is less than 15 years.

$$\text{POADR} = \frac{\text{Number of people older than the old-age threshold}}{\text{Number of people aged 20 to the old-age threshold}}$$





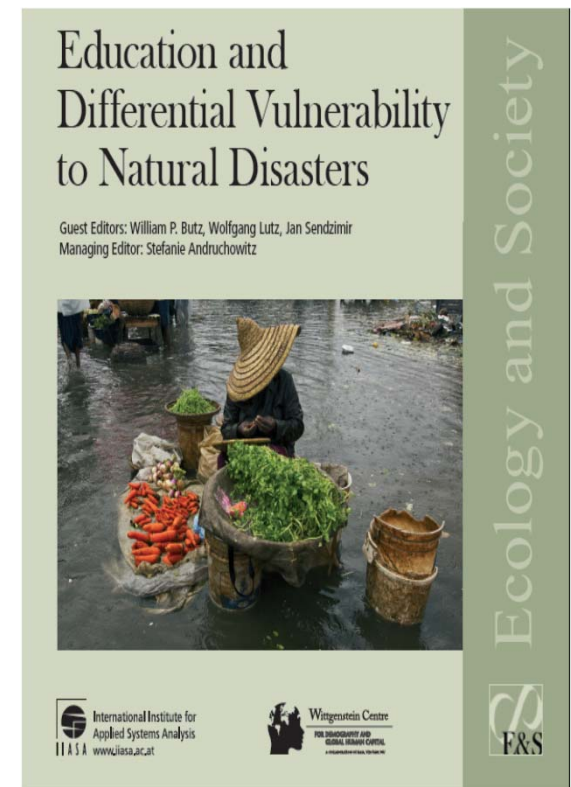
Focus on the Human Resource Base for Sustainable Development

- Human Resources refer to the ability of people to help themselves and help others.
- They crucially depend on age, health, education, motivation, social networks etc.
- Education is central: Learning from the first day to old age (skills and empowerment).
- Formal education (school) is only one aspect of this that is fairly easy to measure.

What is the education effect?

We have good reasons to assume “functional causality” from education to health and income. Education is not just a proxy for SES.

- Every learning experience builds new synaptic connections in our brains and makes us “physiologically different” (Eric Kandel)
- Enhancement of cognitive skills
 - change risky behavior
 - extend personal planning horizon
 - learn from past damage
- Better access to relevant information
- Improvement of health, physical well-being and higher income levels



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 (all IIASA)

Planned Sustainable Development Goal 2015:

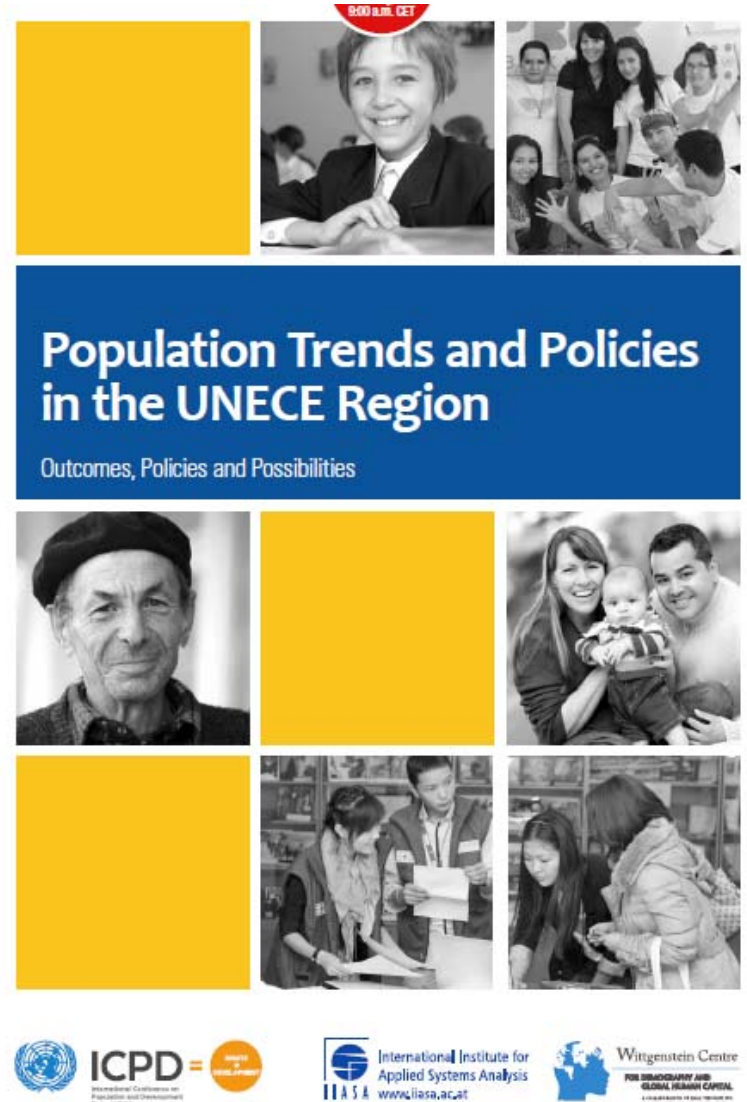
*“By 2030 ensure universal, free, equitable access to and completion of quality primary and secondary education for **all girls and boys** leading to effective learning outcomes”.*

Main Messages of IIASA Report to UNECE

Observation: The UNECE Region is in the late middle stages of a fundamental transformation from population growth to population ageing.

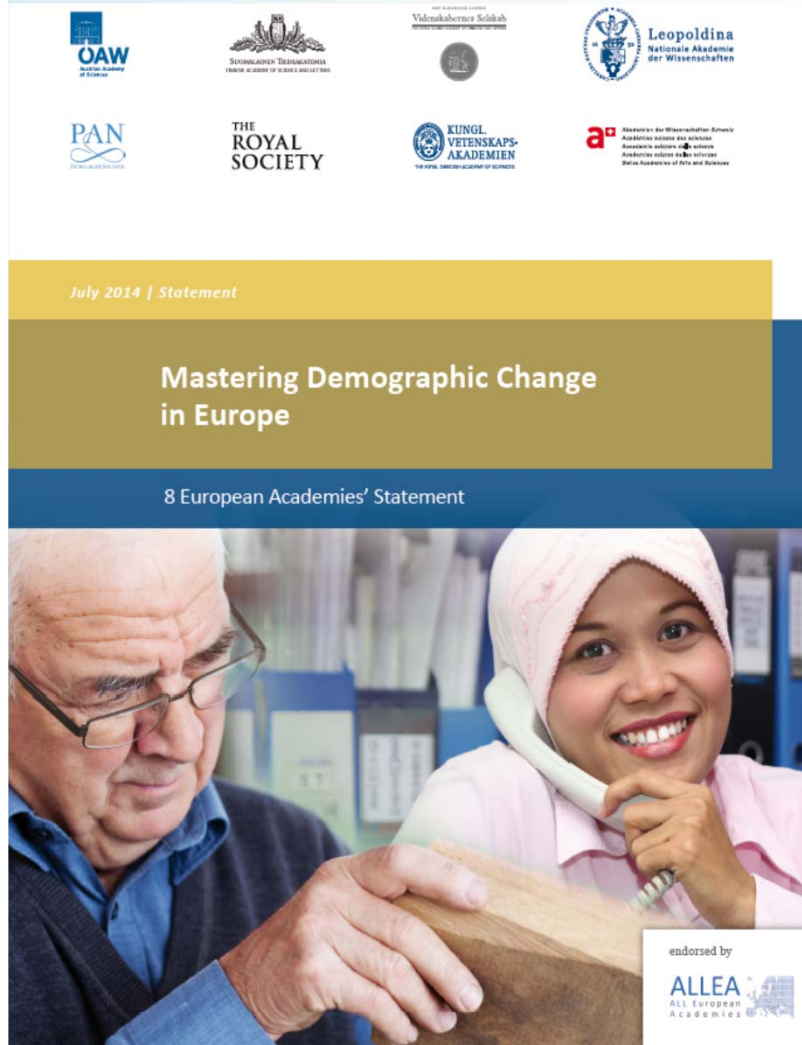
Analysis: New analytical tools and focus: From the importance of population numbers to population quality (education and health).

Policy: Human capital in the form of education and health is what governments can most readily influence.



Making the scientific findings policy relevant

19



Strengthening the Human Resource
Base for Sustainable Development

A Population Policy Rationale for the Twenty-First Century

WOLFGANG LUTZ

**POPULATION AND
DEVELOPMENT REVIEW**

IN THE TWENTY-FIRST century most countries will have ended the rapid population growth and will see their populations stabilize or decline. What, then, should be the role of population policy? Should there be long-term constancy of population size, probably calling for pro-immigration policies? Or should policies seek to influence the

Policy priorities in the context of population ageing

- **Higher education and skill levels** are important for maintaining economic growth in ageing societies – take account of the delay between investments and benefits. Life long learning.
- **Higher labor force participation** of women and men of all ages. – Possibly combined with less hours of work per week.

Conclusion: The negative effects of ageing have been exaggerated. They can be largely ameliorated by these two policies: Upgrading skill levels and increases in Labor Force Participation.

Forecasting Societies' Adaptive Capacities to Climate Change (ERC Adv. Grant to WL, IIASA)

