

# 国総研セミナー 21世紀の人口動向と人口問題



平成13年2月

国際協力事業団  
国際協力総合研修所

総研

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本出版物は、講師の了解を得て講演の要約と演説を掲載したもので、編集の責任は国際協力総合研修所にあります。

表紙写真：タンザニア・タンガのヘルスセンターにて  
（中央は技術指導にあたるJICA 専門家）  
（写真：国際協力事業団）

国総研セミナー  
「21世紀の人口動向と人口問題」

1. 日時：平成13年2月20日(火)15:00～17:00
2. 場所：国際協力事業団本部 11EFGH会議室
3. 講師：Dr. John Bongaarts( Population Council, Vice President )
4. 議事
  - (1) 開会
  - (2) 講演者紹介 尾崎美千生 国際協力事業団 国際協力専門員
  - (3) 講演 ジョン・ボンガーツ Population Council 副代表
  - (4) 質疑応答
  - (5) 閉会

5. 経緯

JICAでは平成13年度より人口問題に係る調査研究を実施することから、Population Council副代表のジョン・ボンガーツ( Dr. John Bongaarts )氏を招聘し、「21世紀の人口動向と人口問題」と題して講義を願いました。

ボンガーツ氏は、1973年からPopulation Councilに勤務し、現在、副代表として、Policy Research Divisionに所属しています。同氏は、出生力の決定、人口と環境、人口とエイズ、開発途上国での人口政策等、人口問題の様々なテーマに深い造詣を有しています。

今回のセミナーでは、人口増加、都市化、避妊、エイズ、高齢化といった人口問題全般について、短時間にわかりやすく講演を実施していただきました。

6. 講師略歴：1973 Population Council 勤務  
1980 Research Career Development Award 受賞  
1986 Mindel Sheps Award 受賞  
1997 The Robert J. Lapham Award 受賞

7. 参考ウェブサイト

Population Council:

<http://www.popcouncil.org/>

講師の紹介：

<http://www.popcouncil.org/staff/cvs/jbongaarts.html>

国際協力事業団 国総研セミナー  
**ジョン・ボンガーツ Population Council 副代表講演会**  
**「21世紀の人口動向と人口問題」**

*The Lecture of the Vice President of Population Council*  
*“Future Population Trends and Problems”*

*IFIC Seminar, Japan International Cooperation Agency*

**<日時・開催場所>**

2001年2月20日(火)午後3:00～5:00  
国際協力事業団 本部  
11階 11EFGH会議室

**< Date・Venue >**

Tuesday, 20 February, 2001 PM3:00～5:00  
Room 11 EFGH, the 11<sup>th</sup> floor,  
JICA

**～プログラム・Program～**

3:00 **開会**

**Opening**

3:00-3:10 **講演者紹介**

**Introduction of the Lecturer**

尾崎美千生  
国際協力事業団  
国際協力総合研修所  
国際協力専門員

*Mr. Michio Ozaki*  
Senior Advisor,  
Institute for International Cooperation,  
Japan International Cooperation Agency

3:10-4:00 **講演**

**Lecture**

ジョン・ボンガーツ  
Population Council  
副代表

*Dr. John Bongaarts*  
Vice President,  
Population Council

4:00-5:00 **質疑応答**

**Questions and Answers**

5:00 **閉会**

**Closing**

**ジョン・ボンガーツ博士（Population Council副代表）講演の様子**



**講演中のボンガーツ博士**



**質疑応答中のボンガーツ博士  
（左は司会者の尾崎 JICA 国際協力専門員）**

# セミナー概要

## 講演内容

### 1) 人口増加

1804年に10億人であった世界人口は現在60億人に達しており、2100年には約100億人に達すると推定される。こうした人口増加はほとんど開発途上国で起きており、なおも増加の状態にある。少なくとも今後20年間は、毎年7,500万人ずつ人口が世界で増加していく。人口増加は、環境、経済、政治に悪影響をもたらす。環境では、森林減少、水不足、温室ガスの増加等、経済では低賃金、高失業率、それらによる貧困と低経済成長、政治では教育や保健医療制度等への投資の停滞が考えられる。

### 2) 都市化

都市化も大きな問題である。開発途上国では、都市居住者の割合が1970年の25%から現在の40%に増加し、更に今後30年間で60%になると予測される。今後増加すると思われる30億の人口は、開発途上国の都市部で増え、その大部分がスラムに居住することになると予測される。

### 3) 計画的な妊娠と計画的でない妊娠

1960年代には、開発途上国ではほとんど避妊が行われず、一人の女性が生む平均の子供の数は6、7人だった。今日では半数以上のカップルが避妊を実行し、一世帯あたりの子供の数は3人に減少した。しかし、アフリカではなおも出生率の低下が遅れており、特に西アフリカでは子供の数は7人近くになる。開発途上国でのカップル間での避妊実行率は増加しているものの、避妊需要と実行との間には乖離があり、これを「Unmet Needs」と呼ぶ。この「Unmet Needs」のため、開発途上国では女性の6人に1人は望まない出産をしている。また、開発途上国

の妊娠のうち40%が計画的なものではなく、その半数は中絶という結果になっている。この問題への対策として家族計画の実施が必要だが、資金や人材が常に十分であるとは限らない。

#### 4) 避妊法の選択

避妊方法には、女性や男性の不妊手術、子宮内避妊器具(Intrauterine Device : IUD)、ピル、コンドームの使用等がある。国によって選択される避妊方法に相違が見られ、インド、中国、アメリカでは不妊手術が、アルジェリア、ドイツ、ジンバブエではピルが、韓国、エジプト、ヴィエトナムではIUDが、日本ではコンドームが半数以上の割合を占めている。

#### 5) 妊産婦死亡

世界で毎年60万人の妊産婦が死亡している。地域別では、アフリカで16人に1人、アジアで65人に1人、ラテンアメリカで130人に1人、北アメリカで3,700人に1人の割合で妊産婦が死亡し、貧しい国ほど深刻な問題となっている。対策として、避妊、妊産婦のケア、安全な中絶、出産時の問題への早急な対応管理が挙げられる。

#### 6) エイズ感染

エイズは大きな問題であり、1999年には全世界で3,400万人がHIVに感染していると推定される。毎年500万人が新たにHIVに感染し、エイズによる死者は、毎年約300万人と推定されており、世界の死亡原因の5%がエイズによるものである。また、エイズによる孤児は1,300万人に上ると推定される。現在、世界での大人の平均感染率は1.1%であるが、南部アフリカでは8%になる。特に、感染率が15%以上を越す国は、ボツワナ、スワジランド、ジンバブエ、レソト、ザンビア、南アフリカ、ナミビア、マラウイである。また、エイズは寿命にも影響をもたらす。南部アフリカでは毎年人口の約1.3%が死亡しているが、



エイズが死亡数を増加させ、地域の人々の寿命を約 15 年短くした。

## 7) 高齢化

現在、開発途上国では人口の半数が 25 歳以下という若い年齢層だが、出生率の低下により将来は世界的に高齢化が起ころであろう。高齢人口依存比率\*も現在は 10%だが、特にラテンアメリカとアジアでの増加が顕著である。開発途上国の高齢化で問題となる点は、ほとんどの高齢者が家族へ依存して生活するものの家族の減少等により保護する家族が常にいるとは限らないこと、生活保護や国自体の体制が十分整っていないことが挙げられる。対策としては、出産の奨励、人口移動の増加という人口学的な選択肢と、年金制度、保健医療制度、定年年齢の調整や家族への支援、という調整の選択肢がある。

## まとめ

人口増加が停止しないのは、出生率が低下したとはいえ未だ出生率 2.1 人の置換水準以上であること、死亡率の低下、人口慣性が原因である。人口慣性とは、出生率が置換水準に下がった後も、これから出産する若年層の人口が多いために、すぐには人口増加が停止しないことである。

人口増加を抑制するためには、家族計画とリプロダクティブ・ヘルスを強化すること、教育と女性の地位を向上すること、出産を遅らせることである。大まかに言えば、世界の出生率が 10% 低下すると出生率が変わらない場合に比べ 10 億人の人口低下が起ころ。

## 質疑応答

Q. 将来はすべての国が出生率 2.1 人に収斂するという予測があるが、これに関してどう思われるか。

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\* 扶養すべき高齢人口(65 歳以上)の労働人口(15 歳から 65 歳)への依存率

- A. 50年後にすべての国の出生率が2.1人に収斂するとは思わない。どの地域で出生率が高く、または低く収斂するかというのは分からない。ただ、現在、出生力が高い地域で低下が起こるのは確かである。
- Q. アフリカでエイズが猛威を振るっている中、エイズを抑制するのに成功している国もあるとのこと。そのような国はいかにして成功したのか。
- A. タイとウガンダでエイズ対策が成功している。その理由を一言でいえば、政府の管理である。タイでは、感染が広がっていた売春宿でコンドームの使用を義務づけた。更に、エイズの原因について広く議論を行い、コンドームの使用を国民に奨励すると共に、夫婦間以外の性交渉を避ける広報を行った。ウガンダでもほぼ同様のことを実施し、何も対策を取らなければ国民の半数が死亡してしまうというエイズの怖さを教え、国民の行動を変えた。
- Q. 人口の高齢化に関し、その解決策として国際人口移動が考えられ、日本ではいわゆる3Kの職業を外国人労働者に依存している状況である。移民に関してどういうお考えか。
- A. 少子高齢化の国に対して、労働力を確保するために移民を受け入れればよいという考えは、個人的には少々単純すぎると思う。少子高齢化に対してはいろいろな選択肢があり、国毎に選択をするのがよい。日本が移民を受け入れなくても、定年を延長したり、女性の労働力を活用したり、女性がもっと出産を望む環境を整えたりということも考えられる。但し、一般的には、国際人口移動は双方に受益となる「Win-Win」の関係である。移住者にとっては良い給料を得られ、また受入国にとっても安く労働力を得られるので、国際人口移動は決して望ましくないものではない。

## Opening

### **Mr. Ozaki (Senior Advisor, Institute for International Cooperation, JICA):**

Sorry to have kept you waiting, we will now begin. This is a JICA's Institute for International Cooperation Seminar (IFIC Seminar) and I am a senior advisor to JICA. It is a great honor for me to introduce the lecturer and to be a moderator of this seminar. We are very grateful to have Dr. John Bongaarts, the Vice President of the Population Council from New York with us. Dr. Bongaarts has come all the way to Japan and has taken time out of his very busy schedule to attend this IFIC Seminar. I would like to extend my heartfelt gratitude to Dr. Bongaarts. As I believe that you have already known about Dr. Bongaarts and the Population Council, I do not really need to give you a lengthy introduction. The Population Council was established by John D. Rockefeller 3<sup>rd</sup> in 1952, and it is an institution with a long history and great achievements. Since the end of world war II, a large number of Japanese demographers have visited there. Dr. Bongaarts is the Vice President of the Policy Research Division and he is renowned for his many papers. He has contributed a great deal to the development of population studies through his numerous papers. He studies population issues from different points of views such as those of environment, food and development, which would give him objective and well-balanced understanding of the issues. So we are honored to have this opportunity to invite Dr. Bongaarts and hold a seminar on "Future Population Trends and Problems". He will be speaking for about 50 minutes and then we would like to take as much time as possible for questions and answers. I hope that all of you will avail yourselves of this opportunity. Handouts each of you have are what Dr. Bongaarts has prepared for this lecture; one is main points of the lecture and another is graphs, which he will be showing by slides during the lecture. I think these are very valuable and useful information and also that they will help you follow the lecture more easily.

Dr. Bongaarts, could you please start?

## Lecture

### **Dr. Bongaarts (Vice President, Population Council):**

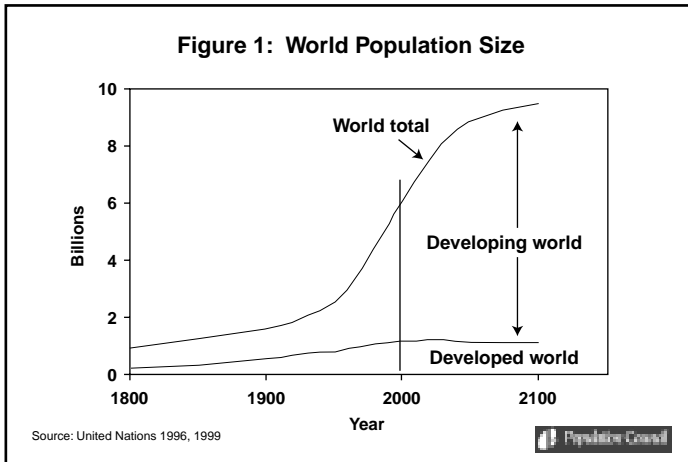
Thank you very much for the kind introduction. It is a real pleasure to be here and I'm very grateful for your invitation to come to Japan and to talk to you today. As you have just heard, my presentation will be about future population trends and problems. As you probably know, the world and most of its regions have experienced extremely rapid demographic change. In fact, this demographic change has happened more rapidly than in any previous period in human history. The most obvious example of change is of course, the increase in human numbers. The population of the world now stands at 6 billion; that is 3 billion more than in 1960, and population growth continues. But there are a number of other important trends. Women around the world are having fewer children and they are using more contraception, people are living longer and healthier lives, an increasing number of migrants move from rural to urban areas and from one country to another. And an important new population trend, particularly in the developed world, is aging.

When we look at population problems, we are not focusing just on population size alone, but on a wide variety of problems that are all labeled population in some way or other. In my presentation, I will touch on a number of these issues.

The topics that I will cover today are the following: 1) population growth, 2) urbanization, 3) planned and unplanned pregnancies, 4) contraceptive choice, 5) maternal mortality, 6) the AIDS epidemic and 7) population aging. It is a long list but I will try to cover in each case, very briefly, the main trends associated with the topic, the reason why this is an important issue or problem and what we can do about it: population policy options for addressing the problem.

## 1) Population Growth

Let me start with the first topic: population growth, which is perhaps the most familiar issue.



In figure 1, I summarize long-range trends in world population size from 1800 to 2000, and then the projection from 2000 to 2100. World population stood at 1 billion in 1800, it grew only slowly through the early part of this century, to 2.5 billion in 1950 and then accelerated. Today, we stand at 6 billion, and the United Nations, the World Bank and all other agencies making projections expect growth to continue until it eventually reaches about 10 billion. I would like to make two points about this. The first is that nearly all of this growth will occur in the developing areas of Africa, Asia and Latin America, and growth in the developed world will be essentially flat. As I will discuss in a moment, some parts of the developed world will even see decline. The second point is that we are still today on the steep part of this curve. Population growth has been rapid in recent decades and the projection is that this will continue for at least another two decades because we are adding about 75 million people every year. You probably have heard that the growth rate is declining and it is true that the annual growth rate is less now

than it used to be twenty or thirty years ago. That is because women are now having fewer children than in the past. But the growth rate is being applied to an ever expanding base so the absolute increase every year in population, is now almost as large as it has ever been. This is the picture for the world as a whole.

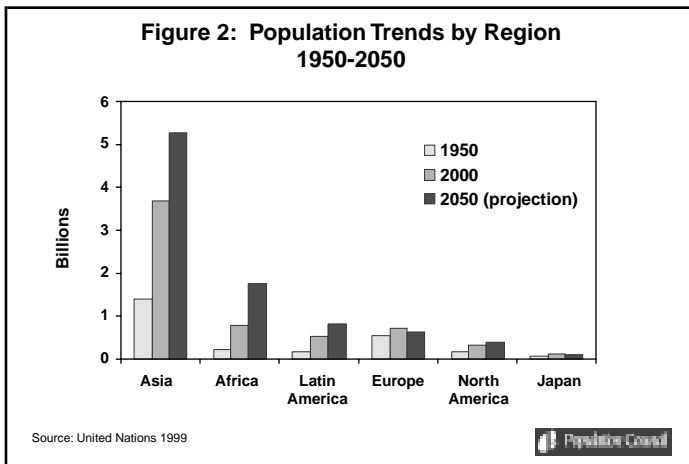


Figure 2 gives the same information, but now broken down by major regions. The major regions are put in the order of population size. Asia is by far the largest region. It includes at the moment about 3.7 billion people, which is more than the rest of the world together. These 3 bars here are for 1950, 2000 and 2050. Asia's population stood at 1.5 billion in 1950. It more than doubled to 3.7 billion today, and the United Nations projects another 1.6 billion by 2050. Africa is a much smaller region; it started at just .23 billion in 1950. But, it more than tripled in size over the past half century, and now stands at about 3 quarters of a billion. The expectation is that population will double again by the year 2050, and this doubling is expected despite the fact that this region is heavily affected by the AIDS epidemic. Latin America is still smaller and it is expected to grow by the lowest amount, about 50 percent. So the total growth in these developing regions is roughly 2 billion in Asia, 1 billion in Africa and relatively small amounts in the

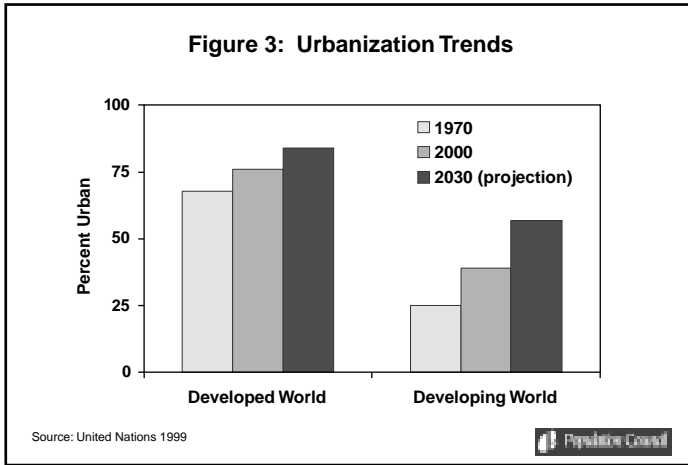
remaining regions.

The three major regions of the developed world, Europe, North America and Japan, all grew over the last 50 years, but grew rather modestly. Europe today stands at about 725 million and it is expected to see a decline of over 100 million. North America stands at about 280 million and it is expected to see an increase of about 100 million. Japan is about 127 million and it is expected to see a decrease of about 20 to 25 million. So in the developed world, we see a divergence: some regions will see a decline and some an increase, namely North America, Australia, New Zealand, and Canada. These increases are offset by declines in Europe and Japan. The overall pattern of the developed world is relatively flat therefore and most of the global growth will occur in the developing world.

This growth is problematic for a number of reasons. The most important and most familiar adverse effect of rapid population growth is its environmental effect: degradation of natural resources, by which I mean deforestation, reduction in biodiversity, water depletion and so on, and air, water and soil pollution, including the increase in greenhouse gases, which results in global warming. But these familiar environmental effects are complemented by economic effects. One effect of a large and growing population is that the competition for a limited number of jobs among the many unemployed keeps pressure on wages. Low wages and high unemployment in turn contribute to poverty and slow economic growth. The final important impact is on the governmental level; many governments are not able to cope with large additions of new people. Investments in education, schooling, health services, infrastructure, housing, roads and so on are not keeping up with the number of people and that in turn means an over-burdened infrastructure. It is these adverse effects that make it important to address rapid growth. At the end of my presentation, I will review population policy options.

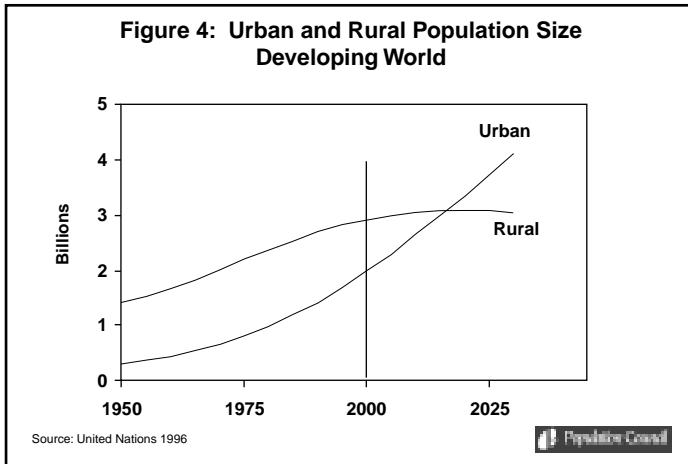
## 2) Urbanization

I would like to turn now to the second topic: urbanization. Urbanization is, of course, a natural result of development. People move from rural areas where agriculture is the dominant activity to the cities in search of new jobs and a better life. We have seen this process throughout the world.



As figure 3 shows, in the developed world, the level of urbanization in 1970 stood already at 70%. It is growing to 75% today and is expected to increase further. So we already have a high level of urbanization in the developed world. In the developing world, only a quarter of the population lived in urban areas in 1970, it has risen to about 40% today and is expected to reach close to 60% in the next 30 years. So urbanization is proceeding at a very rapid pace in the developing world. In fact, it is growing so rapidly that the population in the rural areas is now expected to stop growing.





Here (in figure 4) are the trends in the urban and the rural populations in the developing world. In the past, both of these populations were rising, but the United Nations now expects that in the future, rural population growth will be relatively flat, while at the same time urban growth expands substantially. This has an important implication which is this: in the past, population growth was absorbed in both the developed and developing world and both rural and urban populations grew. As I showed you, the population in the developed world has stopped growing. In addition, Figure 4 shows that the population of the rural areas in the developing world is expected to stop growing which means that the next 3 billion people are going to live in cities in the poor countries. Most of these countries and cities don't have the resources and ability to absorb this large influx of people. Many of these people will end up living in slum areas, in poor housing, with limited services, and limited infrastructure and that in turn has important implications for welfare, and for a range of health, social and economic issues. That is clearly a problem.

### 3) Planned and Unplanned Pregnancies

I turn now to the third topic, which is planned and unplanned childbearing. Over the past few decades, we have seen a revolution in reproductive behavior

throughout the world. In the 60s, in the developing world, few women used contraception and women on average had 6 or 7 children. Today, more than half of all couples practice contraception and the number of children per family is down to 3 rather than the traditional 6.

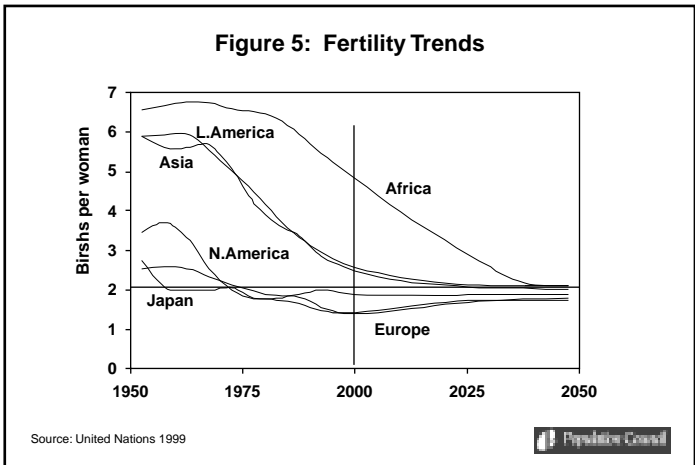
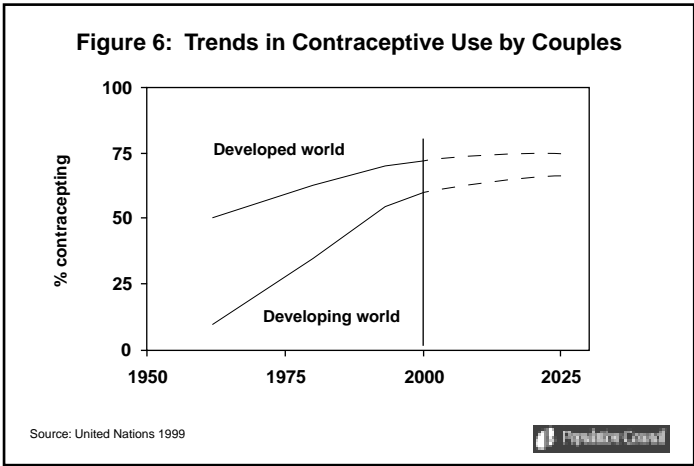


Figure 5 shows how these trends have evolved. I'm giving you the number of births per woman, in the past 50 years and then the projections to 2050 by the United Nations. In Asia and Latin America in the 50s, women gave birth to around 6 children. Around 1970 a very sharp decline began that continues today. Today these regions have a fertility level of about 2.5 births per woman and the UN expects this decline to continue until it eventually reaches about 2 births. In Africa, fertility was higher in the past, close to 7 births, and the delay in decline has been substantial, but it is now underway in East, North and South Africa. The United Nations expects this decline to continue rapidly and spread throughout the continent in the future. I have also included here the trends in fertility for North America, Europe and Japan. North America experienced a baby boom in the 1950s with fertility reaching nearly 4 births per woman, and then a very sharp decline, the baby bust of the 70s. Fertility has now moved back to about 2 births

per woman and the UN expects that it will stay roughly at this level. Finally, I will move on to Japan and Europe. Although both regions already had low fertility in the 50s and 60s, it has dropped further and today both Europe and Japan have, on average, about 1.5 births per woman. The United Nations expects that this fertility level will not drop further. They even expect a slight increase in fertility in Japan and Europe, which is a bit of a controversial issue but I think it is not an unreasonable expectation. The reason why I say that is that in most of these countries women in fact want more than one child on average. If you ask women in Europe or even in Japan, I think, even though I don't know the latest data for Japan, women typically want 2 children. So there is reason to believe that if women are able to implement their preferences, they will have more children than they have at the moment.



The reason why this fertility change has occurred is that there has been a very rapid adoption of contraception. Figure 6 shows trends for the developing and the developed world in the percent of couples using contraception. In the developing world this percentage was very low in the 1950s and 60s. It rose very sharply and today nearly 60% of all couples practice some form of contraception.

In the developed world contraception was already quite high in the 1950s, but it has risen further and now stands at about 75%. So the gap between the developing and the developed world is closing very substantially, but there are still some differences remaining. This is basically good news. Women are increasingly using contraception and getting more control over their fertility. But at the moment, we still are, unfortunately, a long way from fulfilling all the demand for contraception.

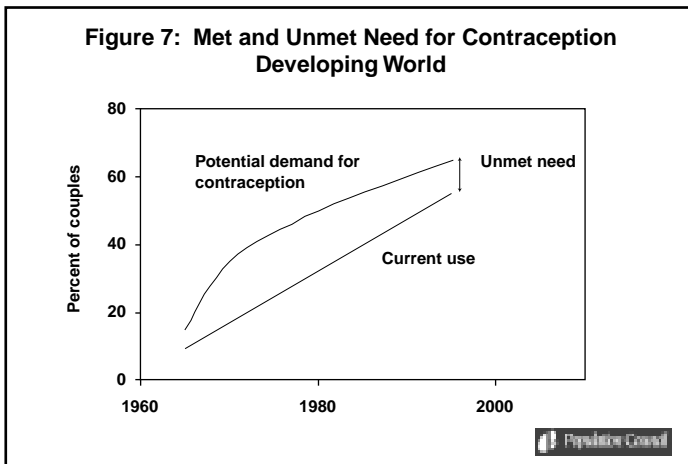


Figure 7 shows a critical issue. In every country there is more demand for contraception than actual use of it. In the 50s and 60s, the demand for contraception was low and so was the use of contraception. Over time, the demand for contraception has risen and current use has also risen but it hasn't risen as fast. So there remains a gap between these two factors which is referred to as an unmet need for contraception. This means that substantial numbers of women who do not want to get pregnant are not practicing contraception. That is about one in six women. Because of this unmet need, there are unplanned pregnancies; women who do not want to get pregnant but don't use contraception get pregnant and they have unplanned births.

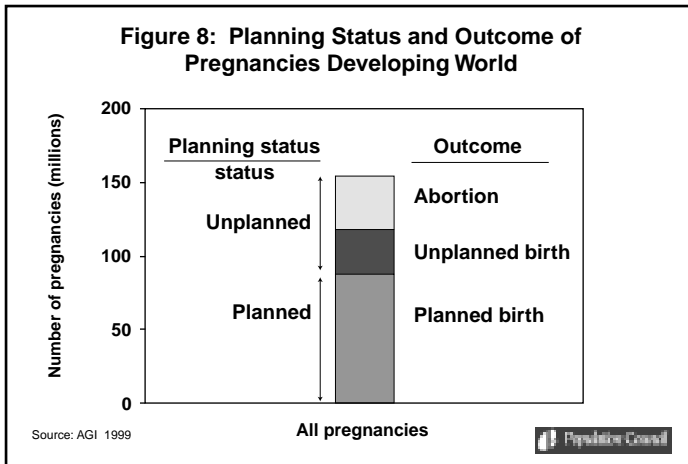


Figure 8 summarizes the dimensions of this particular problem. The overall size of this bar gives the total number of pregnancies in the developing world each year; that is a little bit over 150 million. On the left side, I have given the planning status of these births, as either unplanned or planned. The outcome of each of these pregnancies is abortion, or unplanned or planned birth. Now, of course, all planned pregnancies end in planned births. But unplanned pregnancies can either end up in abortion or in an unplanned birth. About 40% of all pregnancies in the developing world are not planned. About half of these unplanned pregnancies end up in abortion and the rest in unplanned birth. This is clearly a problem. The obvious way to reduce fertility further is to help these women avoid their unplanned pregnancies which can be done by providing more information about contraception and more access. There are many governments that are now trying to do this throughout the developing world. They have implemented so-called family planning programs, but of course, resources are not always sufficient.

#### 4) Contraceptive Choice

I turn now to the next topic: the choice of contraceptive methods. There are more than a dozen different means of contraception, but most societies have

selected just a few of these methods to use. We see a wide diversity of patterns of use in different regions in different countries.

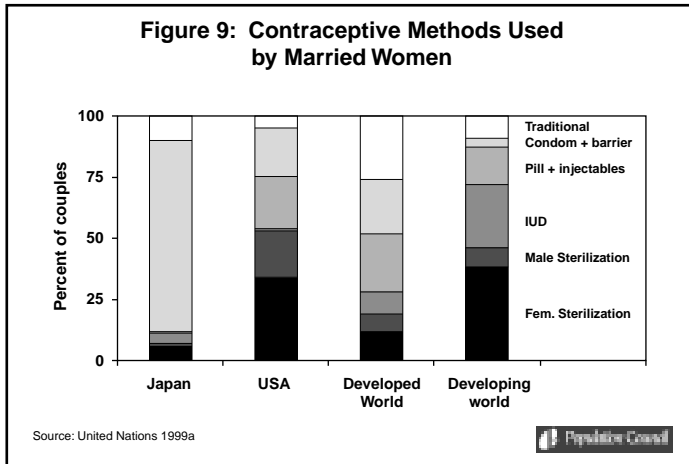
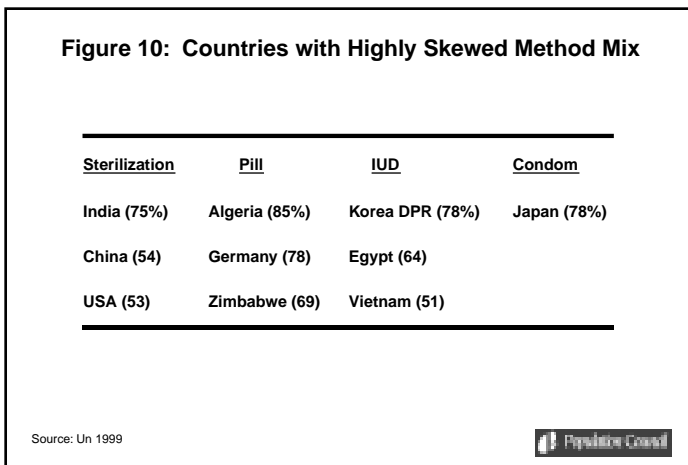


Figure 9 shows the different methods: female sterilization, male sterilization, IUD (Intrauterine Device), the pill, the condom and traditional methods. The right bar gives the results for the developing world in the mid-nineties. By far the most widely used method is female sterilization, about 40% of users. Male sterilization is under 10%. The IUD is the second most widely used method and the pill is the third. Interestingly, traditional methods are relatively rare in the developing world; fewer than 10% of couples use traditional ones. That's in the developing world. If you now look at the developed world, which is the next left bar, we see a completely different pattern. Sterilization is much less widely used than in the developing world. While the percentage use of male sterilization is about the same as that in the developing world, IUD use is much lower and the pill, the condom and traditional methods are much more common in the developed than in the developing world. If you look further, within the developed world, the US has a level of sterilization similar to that of the developing world. It also relies heavily on female sterilization, but there is almost no IUD use in the US

and a substantial level of pill and condom use with a little of traditional methods. Japan has a very different mix. By far the most widely used method is the condom, and all the other methods have relatively few users. I have examined similar data for different countries.



As figure 10 describes, in a number of countries, we see an extremely skewed method mix. More than half of all users rely on sterilization in India, China and the United States. More than half of all users rely on the pill in Algeria, Germany and Zimbabwe. More than half of all users rely on the IUD in Korea, Egypt and Vietnam. And more than half of all users rely on the condom in Japan.

This degree of skewed-ness of course, is not desirable but before we can do anything about it, we should understand why it is happening. A number of factors contribute to this very skewed method mix. The first and probably most important of these in most countries is simply the lack of availability of a range of methods. If women do not have access to methods they cannot use them. In most countries availability is determined by government programs, that provide contraceptive services. Governments typically choose just a few methods simply because it is

less expensive and they often use sterilization, the pill and/or the IUD. Regulations are also a problem in some countries where some methods are simply not accepted by governments. Providers' bias can be an issue, too. Doctors or providers may decide for one reason or another, only to make one method available, and to encourage women to use a single method. Sometimes that is done for financial reasons. Most methods have drawbacks that discourage some users from using them. In fact, we do not have a single method that is seen as desirable by all users. Every one of our current methods is problematic to some extent. In addition, it is often discouraging to find that a country, once it has begun using a particular method, will stick largely with this method. This is one reason why traditional methods are still so widely used in the developed world today. These countries all had already high levels of contraception before modern methods appeared and they continue to use these traditional methods today despite the fact that we now have better modern methods. As I showed you in the previous graph, modern methods are more widely used in the developing world than in the developed world, which is surprising. The last reason for the very skewed method mix is the user's characteristic. For example, in Africa today, many women want to space children rather than have fewer children. Of course, if you are interested in spacing, then you don't want sterilization. So sterilization in Africa is relatively little used because women want to space their children. These obstacles should be removed so that women can have more choices which in turn should help reduce the high level of unmet need and unplanned pregnancies.

## **5) Maternal Mortality**

The next topic I want to briefly touch on is maternal mortality. The death of a mother is, of course, a tragedy. It is not just the death itself which is tragic but also the woman's family, her children and those who depend on her who are often very badly affected. It is estimated that each year, 600 thousand women die from pregnancy related complications. This usually occurs during birth but also during abortion. The risk of death from pregnancy and delivery varies very widely among

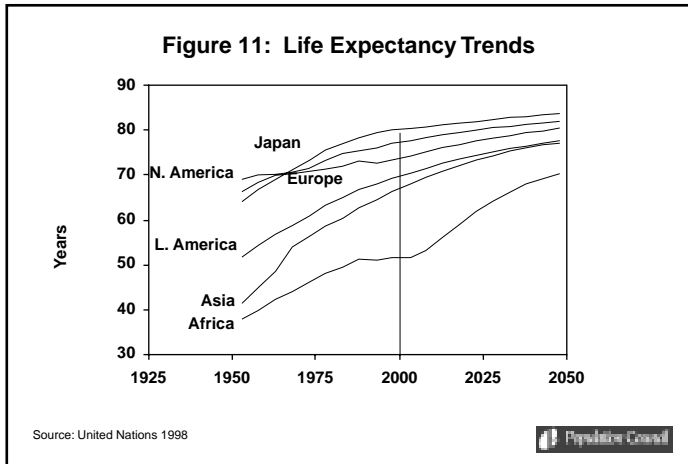


societies. A woman has a 1 in 6 risk of dying in pregnancy in Africa, 1 in 65 in Asia, 1 in 30 in Latin America and 1 in 3,700 in North America. So this is clearly a much more serious problem in the poorest countries.

What can be done about this? First of all, providing contraception helps avoid pregnancies that women do not want and that alone will directly affect the number of maternal deaths. Antenatal care is important because in poor countries most women don't see a doctor or have any contact with the health services, not even during a pregnancy when it is obviously desirable. Safe abortion services is something that clearly would reduce maternal deaths, because about 1 in 3 maternal deaths is associated with abortions that are often done in unsanitary conditions. Finally, perhaps most important, is the prompt management of obstetric problems. When a woman is in labor and has bleeding or other problems, she needs immediate attention. She needs to be transported to a hospital and under the care of a physician who can manage these problems. This is, of course, difficult in many rural areas where people live far away from services, and for that reason these mortality rates are quite high.

## **6) AIDS Epidemic**

I turn now to one more topic: the AIDS epidemic. Before going into the specifics of the AIDS epidemic, I would like to say a few words about broader trends in mortality because I think they are important. The standard way demographers measure health conditions is to measure life expectancies, which is the average number of years that a newborn person lives.



We have seen very dramatic improvements in health conditions over the last 50 years as shown in figure 11 for all regions of the world. In Africa, in the 1950s, the average person lived only about 35 years, a very short life. That has risen to about 50 years today. Asia has seen a more dramatic increase from about 40 years to 65 today, Latin America from 51 to about 70 years. In the industrialized world, Japan, North America and Europe already had relatively high levels of life expectancies in the 50s but they have risen further. Japan is now the world record holder with life expectancy of about 80 years. North America is not far behind. Europe is a little bit lower because it includes Eastern Europe and the ex-Soviet Union where there have been drastic declines in life expectancy in a number of places. All of these trends are expected to continue over time. All of this, of course, is good news and very much desirable, but there is one problem here. You can see in figure 11 that in Africa, the life expectancy trend has come to a halt as a result of the AIDS epidemic.

**Figure 12: Global Estimates of HIV/AIDS epidemic**

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	<u>1999</u>
<b>Number infected with HIV</b>	<b>34 million</b>
<b>New infections with HIV</b>	<b>5.4 million</b>
<b>New AIDS deaths</b>	<b>2.8 million</b>
<b>AIDS orphans (total)</b>	<b>13.2 million</b>

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Source: WHO 1991; UNAIDS 2000



The AIDS epidemic is being tracked carefully by the World Health Organization and other institutions. Figure 12 shows some basic statistics that many of you probably have seen in the newspaper. In 1999, it is estimated that there were 34 million people infected with the HIV virus. The number of new infections per year is 5 million, so the total is going up very rapidly. The number of new AIDS deaths each year is estimated at almost 3 million; that is about 5% of deaths worldwide. Because AIDS mortality often strikes adults in the central years of their lives, there are a large number of AIDS orphans, an estimated 13 million. These are global statistics but one feature of this epidemic is that it varies widely in size in different societies.

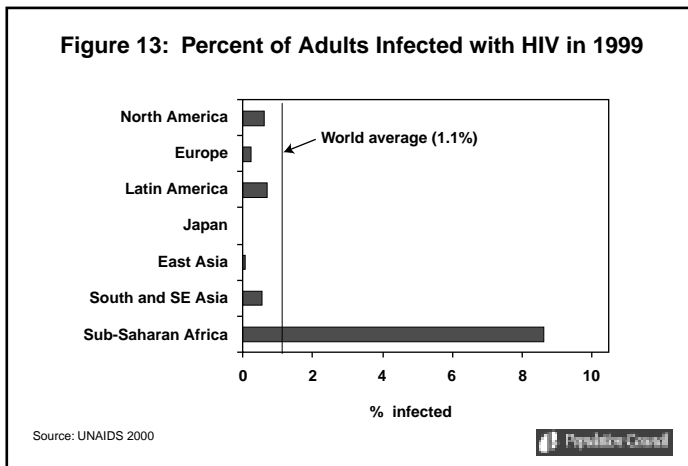
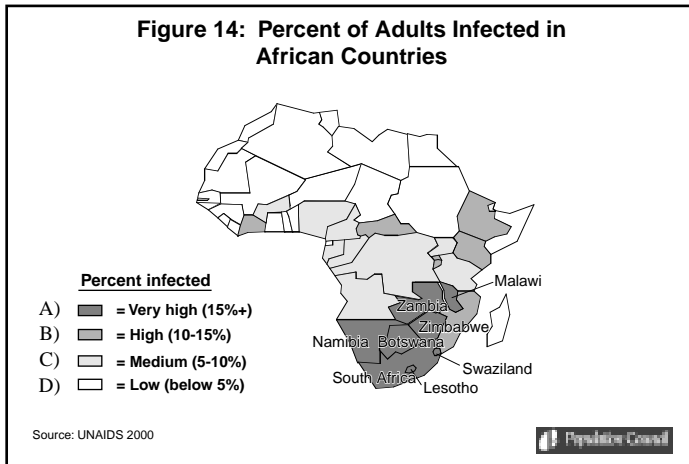


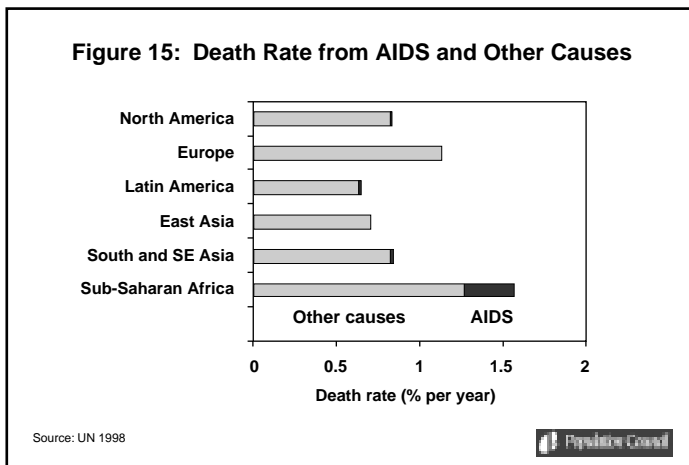
Figure 13 plots the percent infected among all adults in different regions of the world. The world average is about 1.1 percent, that is, 1.1 percent of adults are infected with the AIDS virus today. In North America, the average is about half a percent and it is more or less stable. In Europe, it is about a quarter percent and it is also fairly stable. Latin America is about seven tenths of a percent and relatively stable. Japan with its fraction of a percent has one of the lowest infection levels in the world. East Asia has about two tenth of a percent. In South and Southeast Asia, it is about six tenths of a percent but it is growing here. So in most of these regions, the virus is not spreading widely. In South and South East Asia, the epidemic is still at a relatively low level but it is growing, particularly in India, and the fear is that this virus will spread. Because India is such a large country, a further spread will, of course, infect many people. But compared to all of these regions, it is obvious that by far the largest epidemic is now found in sub-Saharan Africa. A little over 8% of adults are infected in this particular region. I want to focus now briefly on the African AIDS epidemic because it is so central to the global picture. Here is a map of Africa in figure 14.



It indicates the level of infection with the virus in each country in the region. The highest level of infection, over 15%, is in South Africa, Namibia, Zimbabwe, Zambia, Botswana, Swaziland, Lesotho and Malawi shown as region A). Region B, East Africa, has infection levels of 10 to 15%. C) indicates the medium level between 5 to 10%. Most of Northern and Western Africa (region D) still has a relatively low level of infection. What is clear from this map and similar world maps is that this virus is not randomly distributed. This virus is focused very heavily on one set of countries and affects other countries much less. The question is why this epidemic is so concentrated in a few countries and not in others.

There is a debate about this issue, but here are the main factors that I believe are responsible for this variation in the size of the epidemic. First of all, variation in the timing of the onset of the epidemic: a country in which the virus entered early tends to have a higher level of epidemic now than a country in which the virus entered later. This factor was important in the 80s and early 90s, but it is less important now because the virus has been around for 20 to 25 years. So the variation among countries is now less determined by the timing of this epidemic. A critical factor in the epidemic is sexual behavior. The more extramarital sexual

contact there is, the more rapidly the epidemic spreads. In countries where everyone lives in monogamous unions you don't get a large AIDS epidemic. The more condoms are used, the less the epidemic spreads. The prevalence of other sexually transmitted diseases (STDs) is an important factor that acts as a co-factor. If a country has a high level of STDs, it is also likely to have a large AIDS epidemic, because these other diseases facilitate the transmission of the HIV virus. And finally, male circumcision is probably a key factor. There is a very clear inverse correlation between the level of male circumcision and HIV infection. Countries that have a high level of circumcision have small epidemics. Countries that have a low level of male circumcision tend to have larger epidemics. It is very difficult to attribute the proportion of variation among countries to each of these factors. But I think all of these factors contribute and if we could measure each of them, we would almost certainly explain most of the variation. Of course, each of these factors can point us to a solution to this epidemic: less extramarital sexual behavior, more condom use, control of STDs and male circumcision. These measures can help stop the epidemic.



AIDS, as we know, is a fatal disease. We don't have a cure or a vaccine for it.

In figure 15, I show the effect of the AIDS epidemic on the death rate in a population. This is given for each of the regions. The death rate is measured as a percent of the population per year, so, in North America, Europe and Latin America, roughly 1 percent of the population dies each year. In Southern Africa about 1.3 percent of the population dies and that number has now risen by about 20% because of the AIDS epidemic. So mortality has clearly jumped as a result of the AIDS epidemic and it is rising over time.

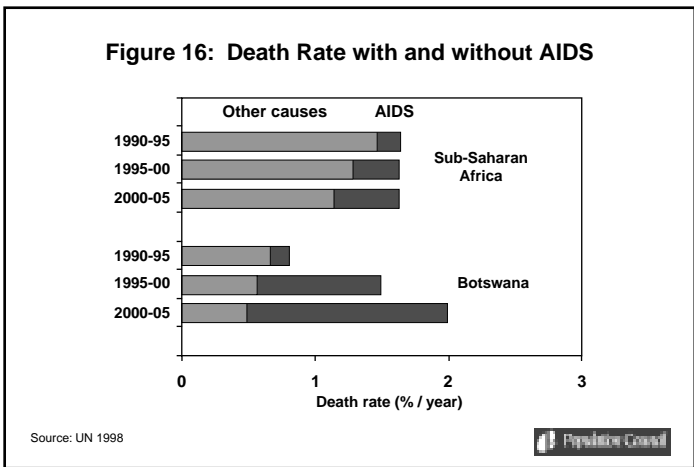
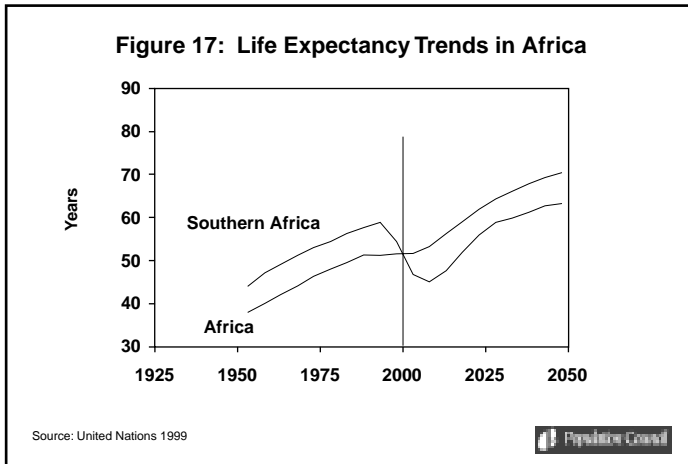


Figure 16 shows the trend from 1990 to 2005. In the early 90s, the death rate in Africa was about 2 percent and a small proportion was due to AIDS. By the late 90s, the impact of AIDS had doubled and mortality is still growing. As I showed you earlier, the epidemic varies widely in size among countries. I have picked one country to demonstrate: Botswana, which is particularly hard-hit. In that country, the death rate was less than 1% in the early 90s but you can see the dramatic impact of the AIDS epidemic in this country. In Botswana, the death rate is now 4 times as high as would be expected in the absence of the large AIDS epidemic. So there is a very dramatic impact on the death rate. When the death rate is affected, life expectancy is also reduced.



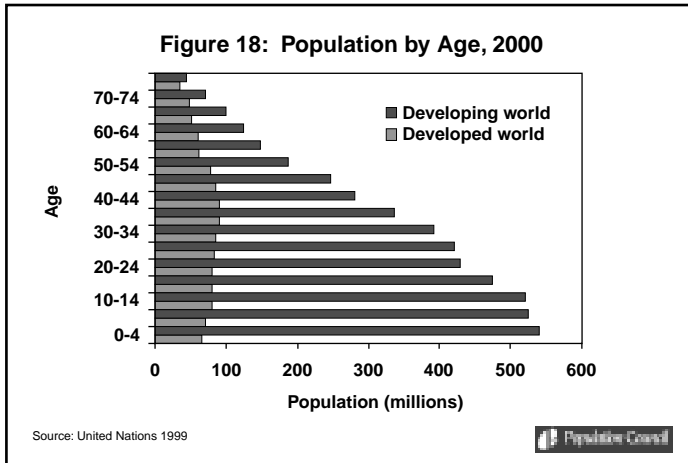
In figure 17, I show you that the trend in Africa for life expectancy has been rising and then stopped. Countries in Southern Africa, that is, South Africa, Namibia and neighboring countries, had a slightly higher level of life expectancy than average for Africa until the early 90s but it then rapidly declined: a decline of about 15 years in life expectancy. This level of impact is unprecedented. The UN expects this decline to end or stabilize by 2010 and then turn upward. This projection is, at the moment, I think, very speculative and while there is reason to believe that there will be improvement it will perhaps not be as much as the UN expects. In any case, these are the projections that the United Nations makes today.

## 7) Population Aging

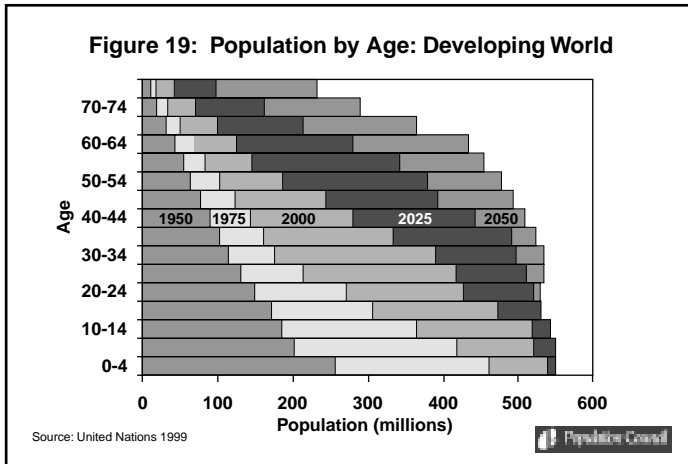
I now turn to the last topic: one that is particularly important for Japan and other developed countries. That is population aging. Population aging is an inevitable result of past increases in life expectancy. When people live longer, there are more older people. But the aging of the population is also very importantly driven by reductions in fertility. Because women are now having fewer children, there are fewer young people and therefore the ratio of old to young people rises.



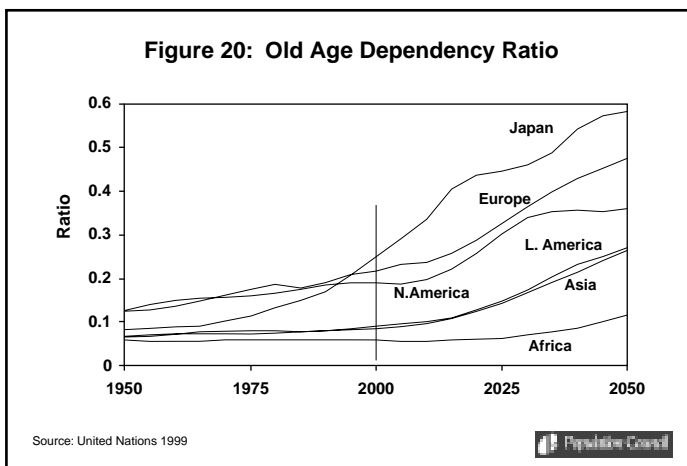
Let me start by showing you how different the age structures of population are.



In figure 18, the red bars represent the developing world. Each bar represents one age group from 0-4 to 70-74. You can see that the red bars are all larger than the green bars which is simply because there are many more people in the developing world than in the developed world. But it is also clear that the red bars are much longer for the younger than for the older population. In the developing world, half the population is under age 25, which is a very young population. The green bars here represent the developed world, which is a flat distribution, with pretty much the same number of people in every age group. There is a little bump in the middle, the result of the baby boom in the 1950, but pretty much, it is flat.



In figure 19 I plot the age structures of the developing world from 1950 to 2050, and you can see how the shape changes over time. In 1950, the population was very young, shaped as you saw before. The same thing is seen until 1975, that is, a very young age structure with a large number of additions to the youngest age group, as a result of high birth rate. Then by the year 2000, the shape begins to change with a smaller number of additions in the youngest ages because fertility is dropping. The larger increases occur in the older age groups and that is the case even more in 2025 and then in 2050. Over time we go from a young age structure to an older age structure. This is going to happen in every country in the world. The problem is that the older population, people over 65, need support when their health deteriorates and when they are no longer able to support themselves. Here is another way to measure the degree to which aging is occurring.



In Figure 20, I measure aging by the so-called old age dependency ratio. The old age dependency ratio is the number of people over age 65 compared with the population in the labor force ages. In Japan, today the old age dependency ratio is 0.25, which means that there is 1 person over 65 for every 4 people between the ages of 15 to 65. That number is rising very rapidly and by the year 2050 it will be more than 0.5; that means more than 1 person over 65 for every 2 people in the labor force ages. And that, of course, will impose a very important stress on the social security system. Japan is aging the most rapidly of all the nations, principally due to its low fertility and Japan is the world record holder in life expectancy which also contributes to aging. In the developing world, Latin America, Asia and Africa, today aging is not much of an issue. The old age dependency ratio is less than 10%. But in every one of these regions, particularly in Latin America and in Asia, the elderly population is increasing and that is becoming more of an issue for three reasons. The first is that the elderly in the poor countries almost entirely rely on their families. And these families are now getting smaller because fertility is dropping and because children often move away from home. They move to the cities and they are not necessarily available to assist the family. The second reason is that there is no public support in poor countries. There is neither

a social security system nor health care system in the way we know them here in Japan, in Europe and in the North America. And the third reason is that the poor elderly tend to have poor health, be illiterate, have few savings and generally, are much less able to take care of themselves, than is the case in the developed world. In any case, aging is the big problem in the advanced industrialized countries, which is why it is now an issue that policy makers are becoming concerned about it. What can be done about it? Here are sets of options that can be pursued. First, there is a set of so-called demographic options, which try to change the age structure itself. The first one of these is to encourage childbearing. Women are typically having around 1.5 children. If fertility were to go up a little higher to 2 or 2.5, that would in the long run certainly reduce the problem of aging. Increasing migration is another option. We can bring in younger families from other countries to strengthen the labor force and to provide services and taxes to support the elderly. These options I think by and large are difficult to pursue and they will not take care of the problem by themselves. This is why most countries are now looking at adjustment options. These operate in the pension system by increasing the contributions made by the labor force and reducing the support given directly to the elderly. Similarly, the health care system is put under stress because the elderly need a great deal of care and that needs revision. It is also important to make adjustments in the workplace where in many countries people have a fixed retirement age, at 60, 62 or 65. In some developed countries such as the US, the age limit has been removed so that people can work longer. The longer they work, the longer they contribute through taxes and the less they depend on the social security system. So, encouraging a later age at retirement is desirable. Finally, the family is still an important source of support in most areas, even in countries in the developed world. That is why providing the family with some support is an option that governments should pursue more. In some countries, tax benefits are already given to families that support their elderly.

## **Conclusion**

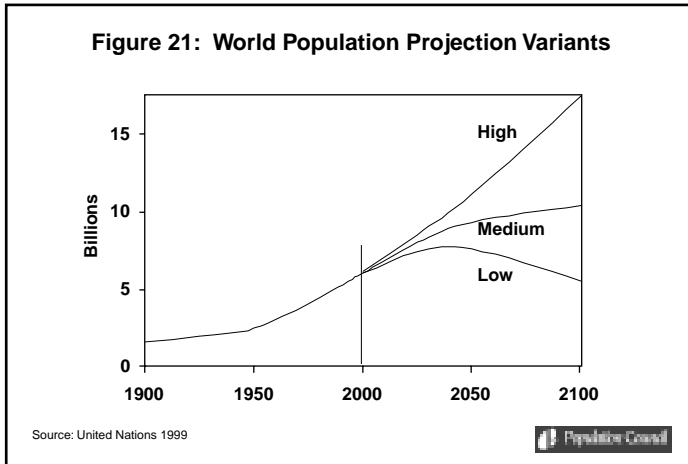
### ***Why Population Growth Continues in the Developing World***

In conclusion, I will now turn back to the issue with which I started, the issue of rapid population growth in the poor countries of the world. I am often asked the question, why is population growth still a problem if fertility has dropped so much. And if we have such a large AIDS epidemic, isn't this population problem taken care of? The answer is no. This problem has not gone away and there are three reasons why this is so. The first reason is that fertility remains above the so-called replacement level. Replacement level is 2 children per family, that is, the level consistent with long-range zero population growth. Every family replaces itself every generation. Now it is true that fertility in the developing world has dropped from about 6 children to about 3 children per family today. But 3 children is still 50% higher than 2 children and as long as women are having more than 2 children, population growth will continue. This is the first factor. The second factor is declining mortality. In most developing countries, mortality is improving and life expectancy is increasing. The exceptions are those countries that have been hit hard by the AIDS epidemic. But in virtually all countries, declining mortality is a factor that contributes to population growth. Finally, the third and now the most important reason why population growth continues is population momentum. Population momentum refers to a tendency of population to continue growing after women have achieved a two-child family. The reason why momentum exists is a young age structure. For example, in Africa, today half the population is under the age 18 and these boys and girls over the next few decades will all move through the reproductive years. If they only have two children each, there will be so many births that population growth will continue to be quite high. Population momentum now accounts for over half of future population growth in many of these countries, including India and Bangladesh.

### ***Population Policy Options for Addressing the Problem***

Now, what can be done about this? Here are the three options available to

address rapid population growth. The first of these options is to strengthen family planning and reproductive health programs. As I showed you earlier, there is still a high level of unmet need for contraception that results in a large number of unplanned and unwanted pregnancies. The key reason for this is that women don't have access to contraception or they have not enough information about it. And the solution is to provide services and information to let these women implement their preferences. Governments in many developing countries already have programs in place but in many countries these programs are inadequate and many women still do not have proper access to contraception. The second factor that would help address population growth is to invest in human capital, particularly in education, and to improve the status of women. In every country for which we have information, we find that the better educated and higher status women want small families and they are better able to control their fertility than poor women who are less educated. So this is a critical factor. And finally, there is the question of how to address population momentum. The age structure cannot be changed quickly, but by delaying childbearing, momentum can be reduced. This of course, raises the question how to delay childbearing. Well, that is not easy to do, but addressing the needs of adolescents is an important step. Many adolescents are now getting pregnant when they don't want to get pregnant. So we should provide contraception if it is wanted. If we keep girls in school longer they will have fewer children and they will have them later in life. And if we provide women with job opportunities, that also will help not only the women directly but society as well because of the larger demographic implications. If we implement these options vigorously, then I think we could make a large difference to future population growth.



In figure 21, I summarize for you the so-called population variants of the United Nations. Up to this point I have discussed the medium variant projection of the United Nations, which sees population growth going from 6 billion today to near 10 billion in 2100. But of course, we don't know what is going to happen, so the United Nations also has produced so-called high and low variants. The high variant sees a possibility of having 17 billion people in the year 2100. The low variant sees population growing to about 8 billion and then declining. So there is a wide range of possible trajectories for population. The important point to remember is that these differences between the high and the medium variants, and the medium and the low variants, can be achieved by very small changes in fertility. In the medium variant, the United Nations assumes that women on average have two children each in the long run. In the low variant, women have just half a birth fewer. And in the high variant, women have one-half birth more than the medium variant. So the future trajectory of population is very sensitive to small changes in fertility. Roughly speaking, every one tenth of a birth less per woman reduces the population of the world by one billion. We have a high degree of leverage by implementing the policy options that I mentioned to you. I think it is very desirable for us to pursue these options.

Let me just conclude now, by saying that we are obviously facing a large number of what are loosely called population problems. I have talked about rapid population growth, urbanization, unplanned pregnancy, unmet need for contraception, maternal mortality, the AIDS epidemic and population aging. All these trends have adverse effects on human welfare and on the environment. The good news is that in most cases we have interventions that can address these problems. We know in most cases what we can do to alleviate these problems. What is lacking at the moment is the political will and resources to implement these interventions. More collaboration between governments and non-governmental organizations in the developing world and the international community will also help alleviate these problems. Thank you very much.

**Mr. Ozaki:**

Thank you very much Dr. Bongaarts. He just arrived in Japan yesterday and we had a meeting this morning. I am sure he is very tired. So, Dr. Bongaarts, please do sit down if you wish and relax. Thank you for having your time to come to JICA.

Today we have a lot of audience. We have population experts from academics and also from the media. There are many people representing here. I'm sure that all the members here are very much interested in the population issues. Now we would like to start the question and answer session.

Now we would like to start the second round of this session here. In the first round Dr. Bongaarts has talked about future population trends and has focused on seven issues. His explanation of these issues was very extensive and easy to understand. He has also referred to a number of policy options that can be achieved. And at the very end, he mentioned that we have a wide diversity of population problem and yet the solutions are available. In other words, action is needed. And that is what is described in his conclusions. Based on what we have heard, we



would like to solicit questions, comments, anything related to any of the subjects of your interest. I have had talked with Dr. Bongaarts over the past two days and I found that he has very long experience and I'm very confident to say that he can response to any question and any issue that you may like to raise. So it could be very specific, very specialized or very simple question, anything will be welcomed, anyone?

## Questions and Answers

### **Q1:**

I would like to ask Dr. Bongaarts the following question. We see low fertility continuing in the industrialized countries. Japan has a combination of low fertility and aging of the nation. Japanese government made policies on low fertility and budgeted for it. Yet, it doesn't seem the policy has worked well. I think they have come to a dead-lock. Dr. Bongaarts, observing the low fertility in the industrialized countries, do you think that this phenomenon is inevitable in the historical process, or if fertility levels were under replacement level, would there be any specific policies that the government could take in order to increase the fertility?

### **A1: Dr. Bongaarts:**

You are quite correct in pointing out that fertility is now below two children in most industrialized countries. Actually an important exception is the United States where fertility is about two. But in Japan and a number of European countries, fertility is very low, on average about 1.5 births per woman. The question is what we can do. The first thing I should note is that the numbers that you read about in the newspapers are not actually quite correct. When the so-called total fertility rate is published by statistical agencies, they are of course, accurately reported, but the numbers have to be interpreted carefully. There is a distortion effect of delayed childbearing that depresses the fertility rate observed in a particular year. So the actual number of children that women are bearing is a bit higher than the number that is normally published. This is true in most developed countries. Let me say a few more words about this. When you say women are having so many children, what you normally mean is that the government has estimated that number for a particular year, 1998 for example. Unfortunately, you cannot measure the number of children women have over their lifetime in one year. It is not possible. You can measure the number of children for women who are born, say, in 1950 and when they are 50 years old you can find out how many children they have. The problem is that fertility estimates for these women who did most of

their childbearing in the 70s and 80s is not very useful right now. So what demographers and government officials do is look at the rate of childbearing in a particular year and assume that women have this current rate of childbearing at every age. This results in a hypothetical number that is implied by current fertility. That hypothetical number has an error in it when the mean age of childbearing is rising. This error is of the order of two, three, four tenths of a birth in most countries in the developed world. I think the total fertility rate in Japan is now about 1.3. But the cohort fertility is about 1.6 or 1.7. So the average woman has more children than it appears. The number is less than two to be sure but it is not 1.3. The same is true in most European countries. So that is the first point I would like to make. The situation is not as grim as it looks.

The question then is: what will happen next. Here I should point to statistics on preferences. In every survey done in a developed country that I'm aware of women say they want about two children. I don't know what the desired family size in Japan is. Maybe Dr. Kono can tell us; ... 2.1, exactly the same. So Japanese women want 2.1 children but they are having only about 1.6 or 1.7. So what we need to do is make it possible for these women to have the number of children they want. The reason why they don't have 2.1 children is that they may not find a husband or they marry and then end up with a divorce. Or they may have a career they won't want to give up. So women have to make choices between a career and childbearing. That is the dilemma that women in every country face where labor force participation is high. In countries where these two aspects of women's life are made easy, for example in Scandinavian countries, that is where fertility is highest. Where women are permitted to combine a career with being a mother, where women can work part-time, where there are child care facilities at work, that is where fertility is closer to two births per woman. In other societies, in Germany and Italy for example, there are institutional factors that make it difficult for women to have two children. For example in Germany, schools close early in the afternoon, so a woman who works cannot easily take care of her children,

bringing them to and from school. All of these issues can be addressed and there are examples of societies which, in fact, give incentives. For example, in Sweden, the fertility rate was 1.5 or 1.6 in the 1980s. In the late 1980s, the government provided incentives and fertility went back up to 2 births per woman. This policy turned out to be expensive and the government decided to remove the incentives and then fertility dropped back to 1.5. So, it can be done. The question is how much resources you want to devote to this which is a question of priorities. Women are willing to have more children than they have at the moment.

**Mr. Ozaki:**

Thank you very much. We will move on to the next question. You can ask your questions in either English or in Japanese, but please tell us your affiliation before asking a question.

**Q2:**

I have a few questions. I have been working in the field of ODA, Official Development Assistance, in developing countries. So I always wonder what would be appropriate population level, which can be supported of the earth. I think the present population, I mean world population, somewhere around 6 billion, would probably be hitting the ceiling that the earth can support. If this being the case, as you just told us the future sort of projections definite for sometime to come, population increases. And then in some cases I mean one of the three cases, increases exponentially and then mid course and then some will go down a bit. But anyhow, for sometime to come, I should think that the population increases, which means that we would be having a very serious problem on the earth, food wise, environment wise, what else, I mean even all the environments and living conditions and standards and everything. Now this being the case, I really wonder how we should control the population on the earth. I have experiences living in some developing countries. According to this, it is almost impossible to control population even if the government tries very hard, for instance if they try to

decrease fertility. China may be is an exceptional case. But India failed. I have lived in Indonesia for three years, in Cairo, Egypt. In those two countries, the governments actually are not paying so much attention to population control. And there are no possibilities to my mind that they would control the population. At least, I mean stabilized level of population. Definitely, the population grows. But this being the case, I mean we would be expecting some catastrophe in the very near future. I mean we want to live a decent life on the earth. We have to share everything. But even if we share all the wealth on the earth and yet we would be facing a very serious problem. We would be probably destroying ourselves. So how do you think about that?

Another question is somehow down to the micro level. JICA is trying very hard to give technical assistance in the field of population control. Our institution is not doing very much. Yet this is a very sensitive issue, so in terms of the projects and programs, what the developed countries can do is a really big question. It is not that easy. We have to work very hard in order to stabilize population at the present level. If you have any comment on that, I would be very glad to hear that.

**A2: Dr. Bongaarts:**

You have raised several big issues. Let me start by talking about this view that we are going to run into trouble. We are already in trouble. In 1960 we had 3 billion people and we have added 3 billion more. Many people are now living poorly. Environmental problems are everywhere, we are running out of water, poverty and malnutrition are widespread, and there is no question that these things are happening in part because population growth is so rapid. As I showed, we are going to have more people in the future which means that these problems will become more serious. There is the biological concept of carrying capacity. I have a slightly different view of this notion of carrying capacity. I don't believe that it is true that we will run into a ceiling and then suddenly we will crash. That perhaps applies to certain biological species. But humans are adaptable agents

and can make life work even if countries are very crowded. We are supporting 6 billion right now. We can even support 10 and possibly even 15 billion people. But the world with 15 billion people would be a less desirable world than one with 10 or with 6 billion. So, the sooner we can stabilize, the better, particularly in the developing countries. The food situation is already serious and malnutrition is widespread. In India, more than half the children are, by international standards, malnourished. These are problems that are likely to get worse. The question is what we do about this. Many governments have already tried. But the priority and the resources given to the population problem are miniscule in most cases. Out of overall development assistance I think only 1 or 2% goes to population. If you look at government budgets, the proportion that is actually provided for population, is also only 1 or 2%. A few countries do a little bit more. It is often not a high priority and this is in part because it is a controversial issue in many countries. What can be done are some of the things I have mentioned. The international community and the richer countries can provide resources. Just the purchase of contraceptives is something that is helpful. Many countries are trying to implement family planning programs. They don't have enough resources to build the clinics, to provide personnel and transportation and so on. The other thing I think important is to persuade the governments of poor countries that population is an important issue. In many countries, not much happens because the government doesn't care. Much depends on the extent to which we can convince governments to pay more attention to this.

**Mr. Ozaki:**

I'm sure that this discussion will continue, but we would like to give others a chance to ask questions.

**Q3:**

Well, having heard the two questions, what happens now is that in Parliament, they are debating the budget for the next fiscal year. I did follow up with what the

gentleman asking the first question has said already but when it comes to low fertility, the Health and Welfare Ministry has set up some 14 policies, strategies to increase the population here in Japan. And we are opposed to that. It is not a minority opinion. I think that there are a number of people in Japan sharing the same opinion in the newspapers when they report on low fertility. There are quite a few people who say that we can leave everything unattended. Now the reason why low fertility is a problem is because we, the Japanese people, the ministry and the government, are fear that they will not be able to keep pace with the industrialized nations, the other nations. But I don't think that is a problem. We don't have to keep pace with other industrialized nations. As you mentioned earlier the case of Sweden, in Sweden the population is 8 million, it is less than one tenth of Japan and yet it is a marvelous country. The land area is several times larger, 1.3 times larger it is. In any case, the land area is larger than Japan. I think that in the future, rather than trying to increase the fertility rate will lead mass production, mass consumption and mass discharge. Now this mass production, mass consumption and mass discharge, rather than saying that it is mass production and yet mass non-consumption. Whether it will be food or electrical appliances, we don't use it. We throw away these things despite the fact that we can still use them. So there are a lot of things that we discharge though there are still usable. And I think this related to the population increase.

Now Japan is experiencing the aging of society, Japan is the number one aging society and we are experiencing low fertility. But I would like to appeal to the Japanese government that low fertility is sustainable, I mean we can do with it and face up to this low fertility. I don't think that productivity will increase in the future. And even if this society ages, well you are talking about the dependent population increasing. Well that is only natural that this happens if the aging of society takes place but there are robots and others to compensate for that. So we can produce enough. So we could say that the population could drop to 60 million or something and it could be that, well you said that in 2100 there will be a drop,

but I think that even if the population drop to half, we can still survive here in Japan. And I think the biggest evil on the earth is population. This is the cause of many problems. So we have to try to set an example that we can do with this low fertility.

Well another reason why the population is increasing is because there is the ES cell transplantation. In other words, we see that there is a very rapid advancement in medical technology. And this is contributing to the increase in population. I personally think that if we were to further advance in medical technology, this will only lead to the increase in population. What is your opinion about this?

### **A3: Dr. Bongaarts:**

It is difficult for me to comment on the specifics of Japanese policies because I'm not very familiar with them. Let me just make a general comment about what industrialized countries can do. I think they have more options than they often realize. There are three trends that will become more widely discussed I believe. In most industrialized countries, fertility has been low for 25 years now. This hasn't created a huge public discussion and not many governments in Europe or in the US have taken specific actions to change that. One reason why this issue hasn't raised much of a debate is that population growth still continues in nearly all of these countries which is due to the population momentum I discussed earlier. But momentum is now dissipating and population decline will begin in most industrialized countries in the next decades. That I think will get the attention of many people. The reason why the government might consider addressing low fertility is not, to my mind, primarily population size but rather the population aging that results from low fertility and the fact that low fertility is not consistent with what women want. My preference would be to give women more options to implement their preferences. That would be an improvement in human welfare and would have the beneficial effect of reducing the speed of aging. Population decline will lessen. The level of population itself is, I think, unlikely to become a



target of population policy in most developed countries. But on a global scale, there is no reason we need more people who are very rich because they consume an extraordinary amount of natural resources. So if I had a magic wand and could lower population size, I would probably wave that wand. I think that would be to everyone's benefit. I think Dr. Kono has a question. Dr. Kono, please.

#### **Q4:**

I would like to add a couple of things to the very good introduction that Mr. Ozaki made. In demography, we have "proximate determinants". The term, "proximate determinants", is very important and on every textbook. I have written about it myself. But he has made that contribution to demography. So we look at all the biological factors and these I have divided into four, and this is a wonderful theory and a major contribution. Secondly, family demography may not be the right term. But family demography is a special field of demography and Dr. Bongaarts is one of the founders. I believe it was in 1983 that we had a seminar in New York on family demography and Dr. Bongaarts at that time spoke about the very complex factors of family using a macro simulation and I think this was really the first simulation, a breakthrough theory in demography. Thirdly, he spoke earlier about unmet needs. Unmet needs are a term that we seem to know but which we really do not know very clearly. It is a rather vague concept and I think Dr. Bongaarts was the first person to give us a definitive description and definition of what really unmet needs is. So academically, he has made major contributions to the field of demography. And in PAA, he has received an award. I believe the award he received was the Mindel Sheps Award from the Population Association of America, which in the field of demography is a very important award.

Well I think I'm speaking longer than everyone else. I would like to thank Dr. Bongaarts for covering so much ground in only 50 minute-lecture. I think it would have taken me more than 2 hours to be able to explain or try to explain these. And he was able to explain all of these very concisely and precisely with very beautiful

slides.

My question concerns fertility trends in figure 5. Here, in fertility trends, you said that in the developed world, there is a convergence to 2.0, the net replacement level that they will always turn and converge to the replacement level. But I do believe you said that this is controversial. What do you think? This is the UN projection. Is it going to continue at about 1.7 and stabilize? Is it not going to return to 2.0 ever? And the UN is carrying out this projection but this seems to be rather formalistic. According to some people, in Africa and other nations, it seems very strange that there will be a convergence, and that this is just fiction. Because we can't imagine that all of the nations converging at a single point like this. That is my first question. Where do you think it will level off? And I think in 1994, in Cairo, the ICPD, the International Conference on Population and Development, which is held in Cairo in 1994. At that time, reproductive health and reproductive rights were stressed about women rights and women empowerment, which was the slogan, the keyword for that conference. So the women empowerment is the best contraceptive I think that was with this slogan. Is that true however? Because I have some doubts about whether the programs that were established in Cairo, the Cairo Document, the Program of Actions, etc. are they really being taking place, are they really being effective? Has Cairo had any major effect on trends worldwide? And I'm sure that there is the question of resources that we don't have enough funds being collected for this.

Secondly, with unmet needs, the Cairo Declaration did not really address this issue of unmet needs of women. They were not really talking about the needs of women but they are trying to address unmet needs. But then what are those needs? We really perhaps need to elaborate, need to really analyze what the needs are. And we seem to refrain from this without really delving into the issue. There are many more things I would like to say.

**Mr. Ozaki:**

Thank you for giving us a further introduction of Dr. Bongaarts. And we look forward to an answer from Dr. Bongaarts.

**A4: Dr. Bongaarts:**

Thank you Dr. Kono, you raised several excellent questions. Let me begin by addressing the first question you raised, about the convergence of fertility trends worldwide. This is a topic about which I could talk for a long time. But let me just give you a few main comments. I think that it is very unlikely that every country will end up with a fertility rate of 2.1 fifty years from now. I can assure you that is not going to happen. The problem is that it is very hard to predict where fertility will be a little higher and where fertility will be a little lower. The assumptions made by the United Nations, by and large, I think are reasonable. If I had to redo them, I would probably not do anything very different. I am also speaking here for a Panel of the National Academic of Sciences that recently reviewed these projections. The panel in which I was involved basically said that the projections are more or less right. That doesn't mean they are going to be right. They could very well be wrong but it is not clear now where they will be different. There are two separate questions. The first one is whether the developing world will continue its fertility decline and will end up around 2.1 births per woman. There is no doubt in my mind that fertility will drop further. But the United Nations projection that every country will go straight down to 2.1 births per woman is probably unrealistic. Maybe it will stop for a little while for a few countries. But in the long run, it will drift down to 2.1. Now if you are talking about the developing world, you are basically talking about the very large countries. India and China account for something like half of the developing world. So what happens in these countries is really the critical issue for the developing world as a whole. In India, I have difficulty seeing fertility dropping below two. And I even have difficulty believing that it will be 2.1 ten years from now. But I can imagine it happening 25 years from now. Some states of India already have low fertility.

But there are poor parts of India, which will take much longer to reduce fertility. China is a very different story. You all know that China has a one-child policy which has brought about a two-child family. Few people realize that the one-child policy is not rigorously enforced and that on average, women in China have close to 2 children, maybe 1.8 or 1.9. There are many exceptions to the one-child policy and some people break the one-child policy and have to pay a modest penalty. There is no doubt in my mind that if the Chinese government were to remove the one-child policy, fertility would go up. If fertility is 1.8 or 1.9 today, then without the one-child policy, it would be clearly something like 2.5. So I think fertility would not be above replacement in China today if it were not for the one-child policy. The question really is whether the one-child policy will be continued. I think it will be but it will be watered down further. The one-child policy has become much less strict over the last ten years. Over time, people will either break rules or the government will relax or not enforce the rules. So over time, China will be drifting away from a rigorously enforced one-child policy to a loosely enforced one-child policy to a one-child policy that doesn't really exist anymore. And that puts upward pressure on fertility. I wouldn't be surprised if China ends up near 2 in the next ten years or so. I don't see China going much lower and it could go up. That is the developing world story. Then the question is what will happen in Europe, Japan and North America. The United Nations expects a small increase and they have gotten a lot of criticism for assuming that. But I think there are good reasons for believing that we are now close to the minimum in fertility. Japan may well stay at this low level but it also could go up a little bit. It depends on what happens next in a number of areas. Two factors are important, the first is the extent to which it will become easier for women to combine childbearing and work. That requires reforms in the workplace, government incentives. I think that will happen at least to some extent in most of these countries and fertility will then rise because women want two children. They are not having two children but they want them. But they can't manage right now. And if governments or companies make it easier, I think people will have more children,

a little bit more. The other reason why I believe fertility will go up a little is that this distortion of the fertility rate I mentioned earlier is maybe two or three tenths of a birth. That distortion will eventually go away. The reason is that this distortion is the result of delayed childbearing and delaying cannot go on forever. The mean age of childbearing has risen from 25 to 30 years but it cannot go to 50. It may go to 33. But eventually it will stop going up, and then this distortion will disappear, and fertility will go up a little bit. So these are the reasons why I think fertility might go up. On the other hand, if a country stays in recession or if we have a worldwide recession, then of course, there may be further declines in fertility. The United Nations projections in my view, are reasonable. Not necessarily right, but reasonable. Now you have another question about the Cairo Conference. I think the Cairo Conference was a landmark in the population field in the sense that it raised a wide range of issues. The emphasis was less on population concerns, population growth, and population size and more on a wider range of issues: such as reproductive health, women's empowerment and so on. The Conference has invigorated a variety of organizations: women's groups and nongovernmental organizations (NGOs). There are now a lot of activities in countries by these NGOs and that is very desirable. Microcredit for example, is an intervention that helps reduce poverty. And we see a variety of these types of interventions. What I think not a desirable outcome of the Cairo Conference is that governments now pay less attention to rapid population growth. So, family planning programs are not being strengthened. They are actually losing priority at the highest policy making level making in some governments, and in some international organizations. Because Cairo didn't emphasize these issues, they are becoming less and less visible. So, there are pluses and minuses to this process.

**Mr. Ozaki:**

Well we are running out of time here but we didn't have any questions from the ladies here. Could we give a chance to the lady over there to ask a question, please?

**Q5:**

I would like to thank you for your wonderful lecture here today. Last year at the Kyushu-Okinawa Summit, there was discussion about the GM technology, Genetic Modification. What sort of implications will this technology have on population issue? Whether this is allowable or not, this technology is going to advance and eventually there will be cloning of human, at least there is the possibility. There is a possibility of cloning of human. And such technology has already been developed. Children born this year, in their lifetime might experience such things. There are many researchers who predict such things. But one thing that we could consider is that amidst the low fertility rate, supposing that a couple loses their child in a traffic accident and because the mother is so depressed someone might suggest to clone a child who looks like hers, this might advance this cloning technology further. Then eventually we will see gene-rich technology. In other words, gene-rich humans versus the natural humans, and there might be a differentiation between the two groups. If that happens then the population issues that we understand will totally change and something that we can't imagine whatsoever might happen. So do you have any observations of this issue?

**A5: Dr. Bongaarts:**

You are right. There are now a number of very important trends in biology that have a potential impact in population. My assumption is that human cloning will eventually happen but I have my doubts that it will have any large impact on any of the trends that I have talked about. It is simply going to be much too expensive. The other reason is that there will be moral and other objections to this. There will be an extensive ethical debate about human cloning but for simple practical reasons, it is not going to have much of a direct impact. There are some other trends in biology that I think will have an impact. I'm referring to technology that will help infertile women have a child. About 5 to 10% of couples cannot have children or have difficulty conceiving after they have had one child. So new biological technology could make it possible in the future for infertile women to

have a child or for their ovum to be implanted or for sperm of her husband to be used. So a variety of technologies, which are already feasible right now will help infertile couples achieve their fertility goals. To the extent that the technology becomes widely used it will have a positive impact on fertility. Yet another biological trend is that every year we discover new ways to reduce mortality, to make people live longer. We have discovered genes in insects and mice that are associated with aging. It is quite possible that 10 to 30 years from now, we will find biological ways to slow the aging process substantially. And that could have a radical impact on population in the long run. So there are likely to be biological surprises in the future that I think we may not be totally prepared for. Thank you.

**Mr. Ozaki:**

Would you like to ask a question? Could you do so briefly, please?

**Q6:**

I would like to ask about AIDS epidemic. You mentioned that in Africa, AIDS is very prevalent. But looking at figure 11, it really struck me as to the rate at which the epidemic is spreading and yet there are countries which are successful in controlling AIDS. So what sort of control methods do they have? Could you explain about why they are so successful?

**A6: Dr. Bongaarts:**

The two countries where successful efforts have been made to slow the epidemic are Uganda and Thailand. If I had to summarize in one word the reason why these countries were successful it is because these governments care. The governments understood that AIDS was a serious problem and decided to do something about it. This is very different from many governments, particularly in Africa, which ignore the problem. They don't talk about it, and they don't raise the attention of the public to it, which is a mistake because the epidemic is spreading rapidly. The precise measures taken by each country differ, of course. In Thailand much of the

spread of the epidemic was concentrated in brothels where prostitutes were infected by customers who in turn spread the virus. The government simply required that every prostitute use condoms. Any brothel that didn't accept this was closed down. The government rigorously implemented this policy and it was very successful. In addition, the government had very open discussion of the causes of this epidemic and encouraged everyone to use condoms and avoid sexual contacts outside marriage. These measures apparently have been accepted by the public and that reduced the infection rate. The Ugandan government did something similar. Basically what you have to do is to scare the population into taking action. You have to tell them that if you don't take these actions, half the population is going to die. That gets people's attention and they change their behavior. They go to prostitutes less frequently. They use condoms. These actions together have been effective in these two countries. There is no doubt in my mind that if governments elsewhere in Africa did the same thing, the result would be the same. Because the actions needed to halt the spread of the epidemic are controversial, it is not easy for some governments to take action, but it is obviously in the interest of the population. Thank you.

**Mr. Ozaki:**

Thank you very much everyone. We have to end pretty soon. We would like to have comments from a few more people and we will end there.

**Q7:**

Since there is not much time, I would like to give you some brief comments. Demography, the study of population is very important because the nation and religion and many other parties are involved. I believe that the government has a major role to play and it is really up to the government. This question is whether the government is really interested in this issue or not. We have many people who are representing. The people may be local politicians, they maybe national parliamentarians. But I think that once these parliamentarians and representatives



of the people wake up to the issue then they can make a difference. I think if they are not doing their work then we have to beat them into working harder. So I would like to say that my organization is trying to get the parliamentarians and the politicians to act and we are trying to persuade them in carrying out activities. I would hope that Dr. Bongaarts, if he has opportunity, would tell our politicians to be a little more alert to the issue.

Secondly, I think that the actual executions of the services whether it is family planning or whatever, I think that we should make it available and understandable to the general public. So all population issues come down to contraception, these should be more understandable to the general public.

**A7: Dr. Bongaarts:**

I agree with you. The politicians in many countries, the representatives of the people, should raise these issues at a higher level. Unfortunately, there are not many interested governments and some are not very aware of, or don't always care about the issues as much as they should. It is difficult for demographers to get involved with that. I'm a researcher at heart of course, so it is difficult to communicate with politicians directly. I try to do this through a variety of means, publications etc. On the issue of contraception, I would like to just remind you that we have come a very long way in the last 20 to 30 years. In the 1960s, most people thought it was impossible to even mention the word contraception in a polite debate. And now, in most countries, it is no longer a taboo subject, there are family planning programs, and a large number of people are using contraception. This is a very salutary development. Lack of access to family planning is still a problem in many developing countries, in Africa in particular. But all of these things are changing and we should try to encourage these changes as quickly as possible. But we have already made a lot progress with the efforts we made so far. The international efforts have been very important in making that happen and I hope that will continue. Thank you.

**Q8:**

I would like to ask you a question about policy options in aging society. Increasing migration was one of the issues. This choice is not very popular in Japan. People are trying to carry out adjustment like raising the retirement age, encouraging women participation in work places. So mainly, the immigrants are working in what are called the 3K jobs, and also it is the illegal immigrants who are doing these works. And also international pressure is maybe asserting for Japan to increase immigration but Japan is carrying out rebuttal. But now I think that Japan will have to bend to international pressure. What is your comment about replacement migration, which is proposed by the United Nations? What is your comment? What will be your comment about this report from the UN? I think this report may be worrying about countries like Japan. What is your personal opinion about the UN report?

**A8: Dr. Bongaarts:**

The United Nations Population Division recently published a report, which calculated the number of immigrants that would be needed to keep the labor force stabilized. Basically the notion was that for countries that have low fertility and a rapidly aging population and population decline, immigration is an option. This was examined in some detail in this report. My comment on the report is that there is nothing wrong with the calculations of course, and it certainly drew the attention of many people in the developed world to the issue of migration. But it is a bit simplistic to say that migration is a solution to the aging problem. There are many options that each country can pursue in response to low fertility and rapid aging. And different societies will select different sets of options. I listed six different possible answers in my lecture. There is nothing in principle wrong with Japan saying we do not want to increase immigration. Instead, it may raise the age of retirement or make it easier for women to work in the labor force, or give women incentives to have more children. You don't have to accept immigration as one of the solutions as far as I'm concerned. Different countries

will come up with different answers. The United States, for example, has a policy to accept much more migration. Millions of people every year are added to the US population which helps keep the population younger. That is one reason why the aging trend for the United States is not as steep as it is in Japan and Europe. The US made a decision to accept immigrants. Japan may or may not. Europe has different policies in different countries. There is growing resistance to increased immigration in Europe. Many European governments are now putting restrictions on migration. So my guess is that legal migration will probably decrease even though illegal migration may well increase. Each country should choose its own options. Let me add one final observation. In general, migration improves human welfare. That is, it improves the welfare of the countries and of the people who are migrating. Migrants move to a place where they have better jobs. It is also, in general, in the interest of the wealthy country that receives these migrants. These people do jobs that many Europeans or many Americans or Japanese don't want to do. They often work at low wages and strengthen the economy of the receiving country. So it is a win-win situation. There are reasons why a country might not want too much migration and you are aware of those. But generally speaking, from a purely economic point of view, migration is something that is not undesirable. Thank you.

**Mr. Ozaki:**

Thank you very much indeed. We have run overtime by some ten minutes but I do think that we have had a very meaningful discussion here. Once again we would like to express our thanks with applause to Dr. Bongaarts. And also, we would like to express our thanks to the interpreters, thank you from your interpreting. JICA would like to hold the series of meetings on this issue of population. So we encourage you to continue to participate. And once again, thank you very much.

