

# Higher Education and Scientific Research in the Islamic World

**Dr. Savaş Alpay**  
Director General  
SESRIC

# Importance of Higher Education and Scientific Research

**A modern and high quality education system is a fundamental element in the socio-economic development and prosperity of any society**

**Constitutes the core of human capital formation**

**Facilitates economic development and growth**

**Research in science and technology is key towards a knowledge-based and innovation-driven economy**

**Promotes better understanding on different aspects of life**

**Helps to improve the standard of living by creating new knowledge and technological innovation**

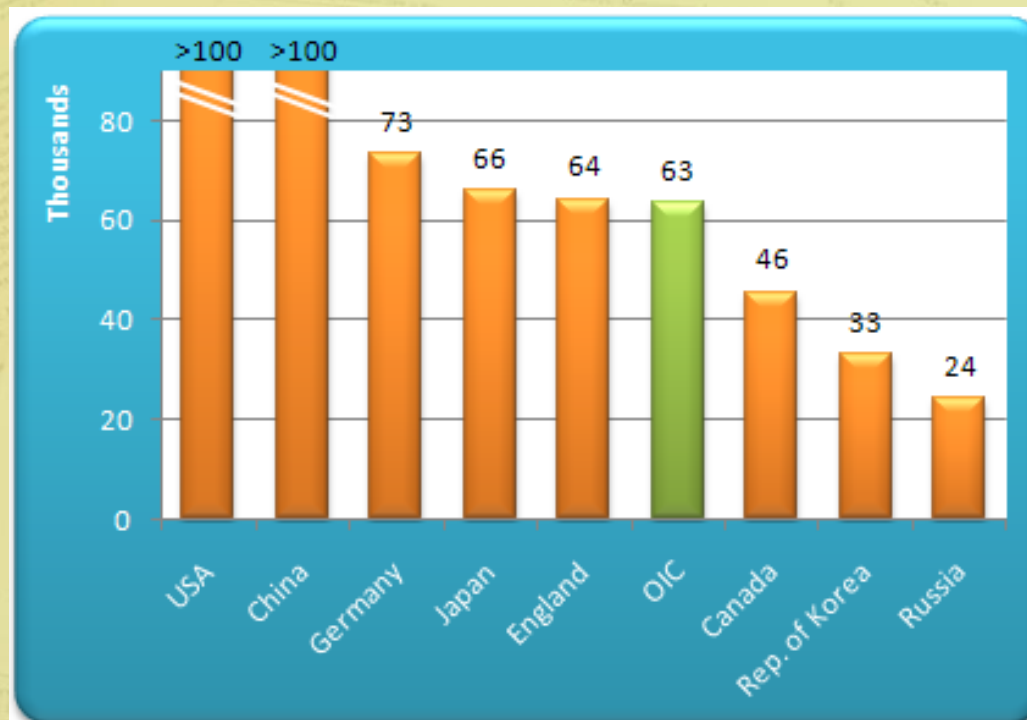
# **Major indicators of performance at higher education and scientific research**

# Scientific Publications

OIC member countries published 63,342 articles in 2009 (compared to 18,391 in 2000) in journals that are covered by

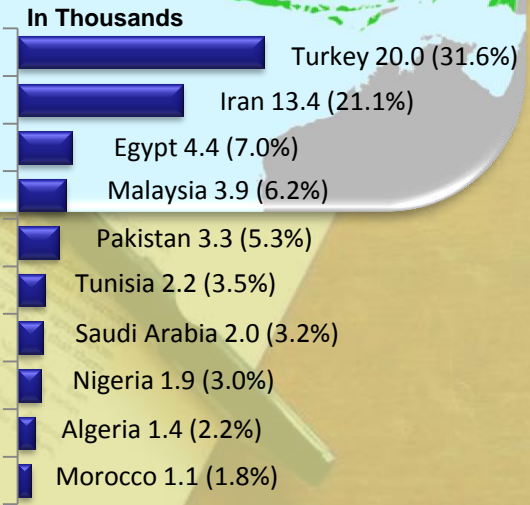
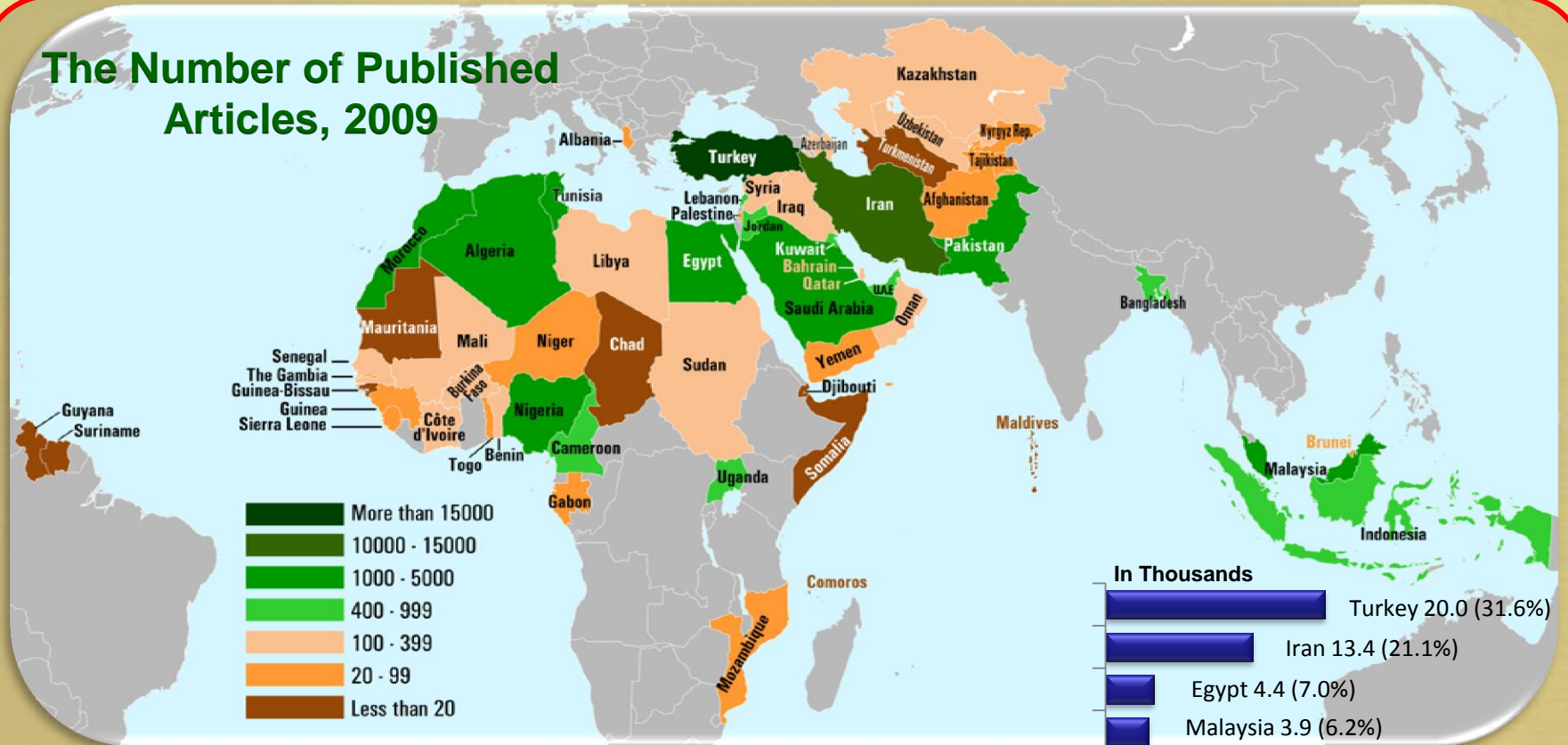
**Science Citation Index Expanded**  
**Social Science Citation Index**  
**Arts & Humanities Citation Index**

**The Number of Published Articles, 2009**



# Scientific Publications

## The Number of Published Articles, 2009

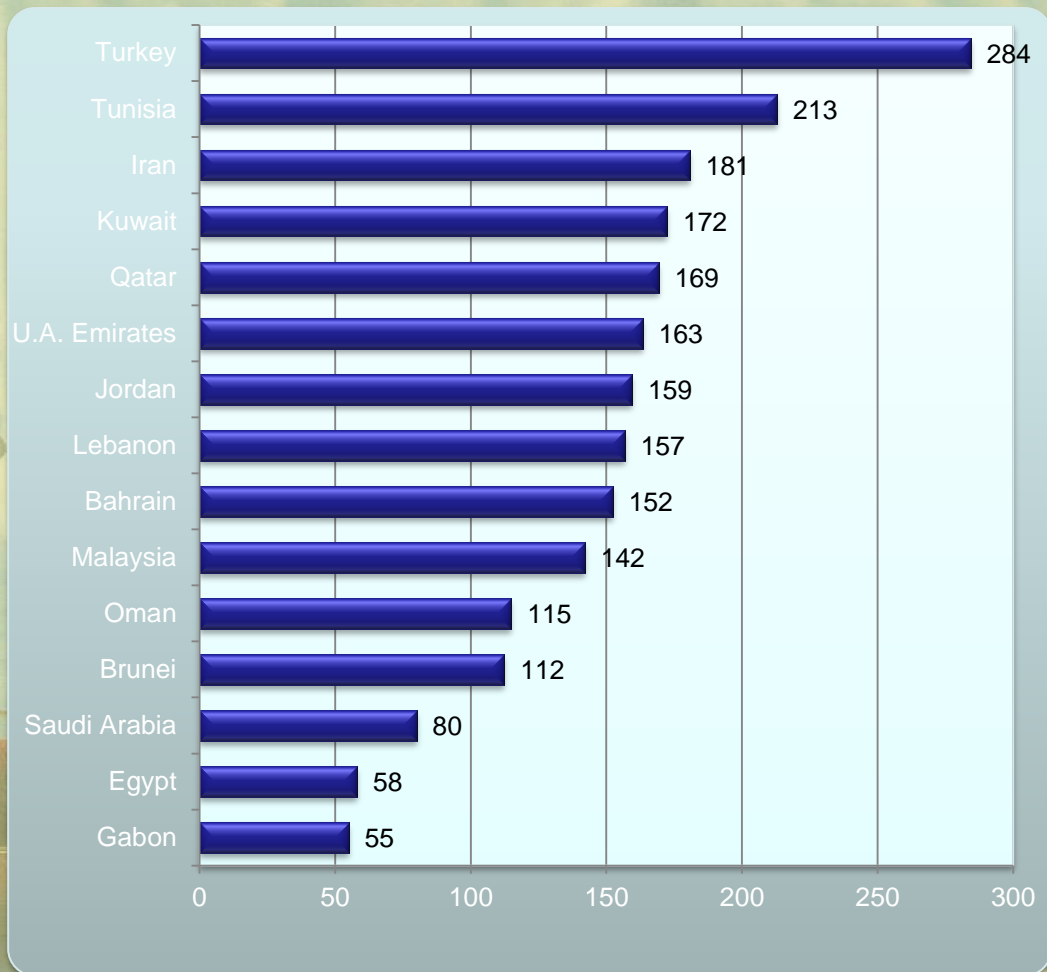


**Turkey and Iran together produce more than half of published articles**

**Together with Egypt, Malaysia and Pakistan, these countries account for 71.2% of all published articles**

# Scientific Publications

## Articles per million people (in 2009)

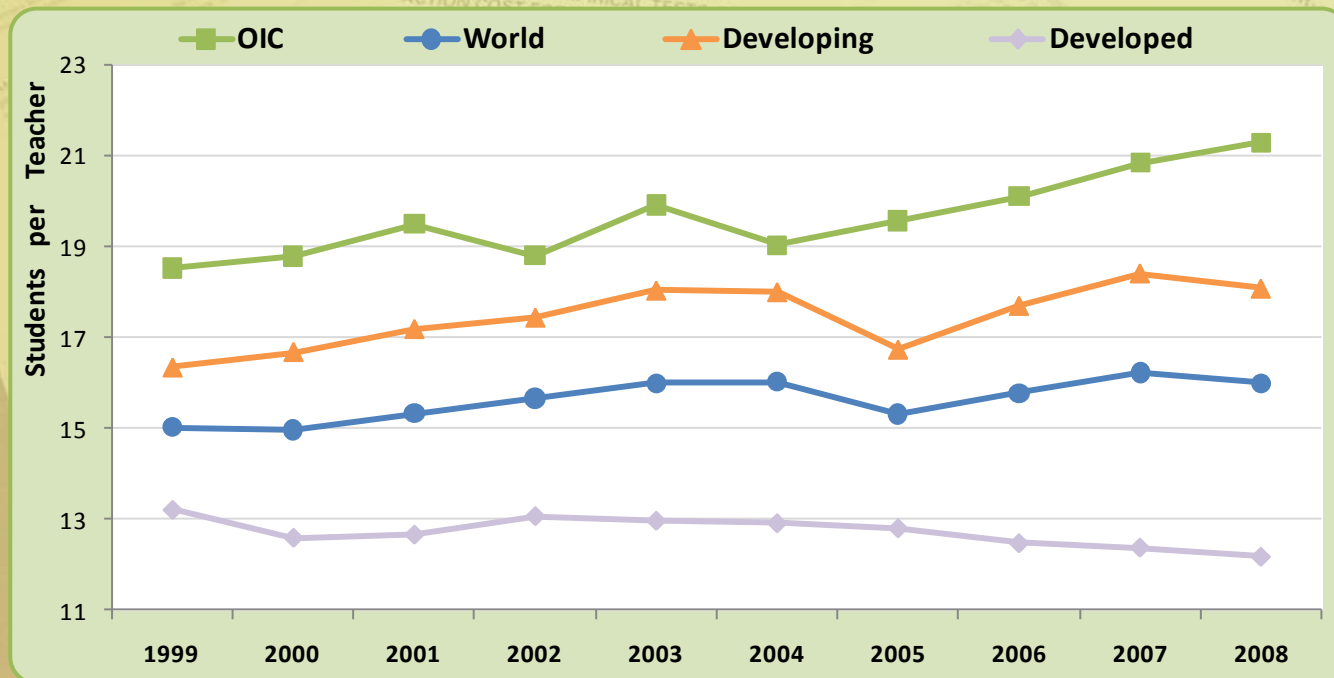


# Student Teacher Ratio at Tertiary Schools

Lower student-teacher ratios are generally considered to indicate higher quality education

There is a positive trend for student-instructor ratios at tertiary level schools globally, the only exception being developed countries

OIC countries perform poorly when compared to the rest of the world in terms of student teacher ratio at tertiary schools

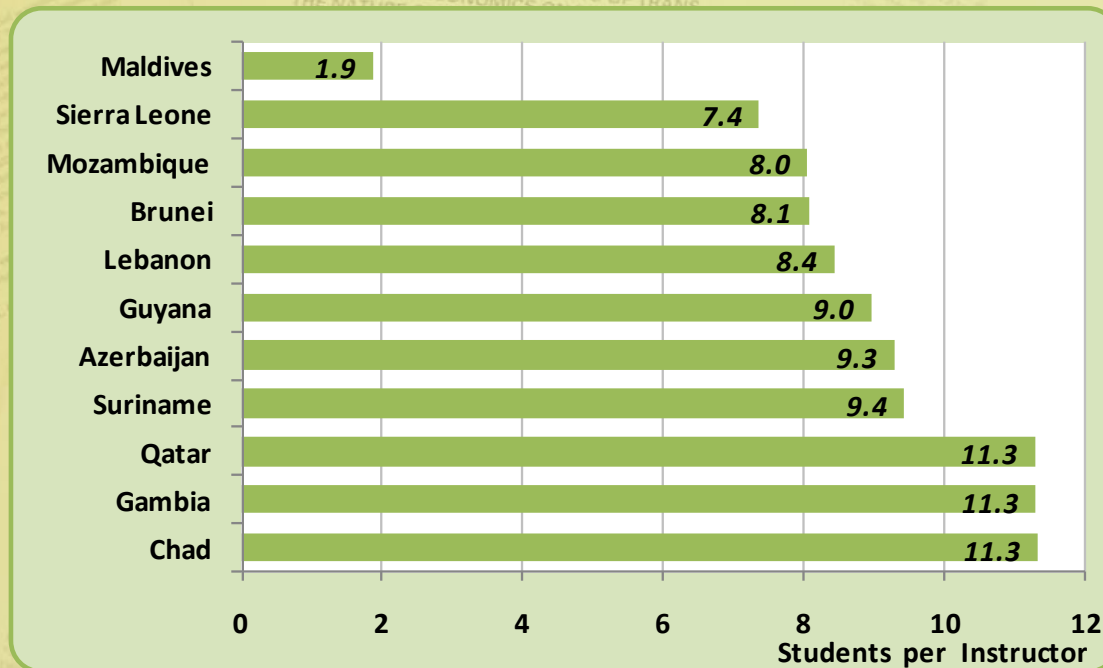


# Student Teacher Ratio at Tertiary Schools

There is a great variation among OIC member countries in terms of student teacher ratio

There are only two tertiary level students per teacher in Maldives whereas the ratio is more than 60 in Mali and Togo

**Top OIC Member Countries with Lowest Student – Teacher Ratios in Tertiary Schools (2008)**



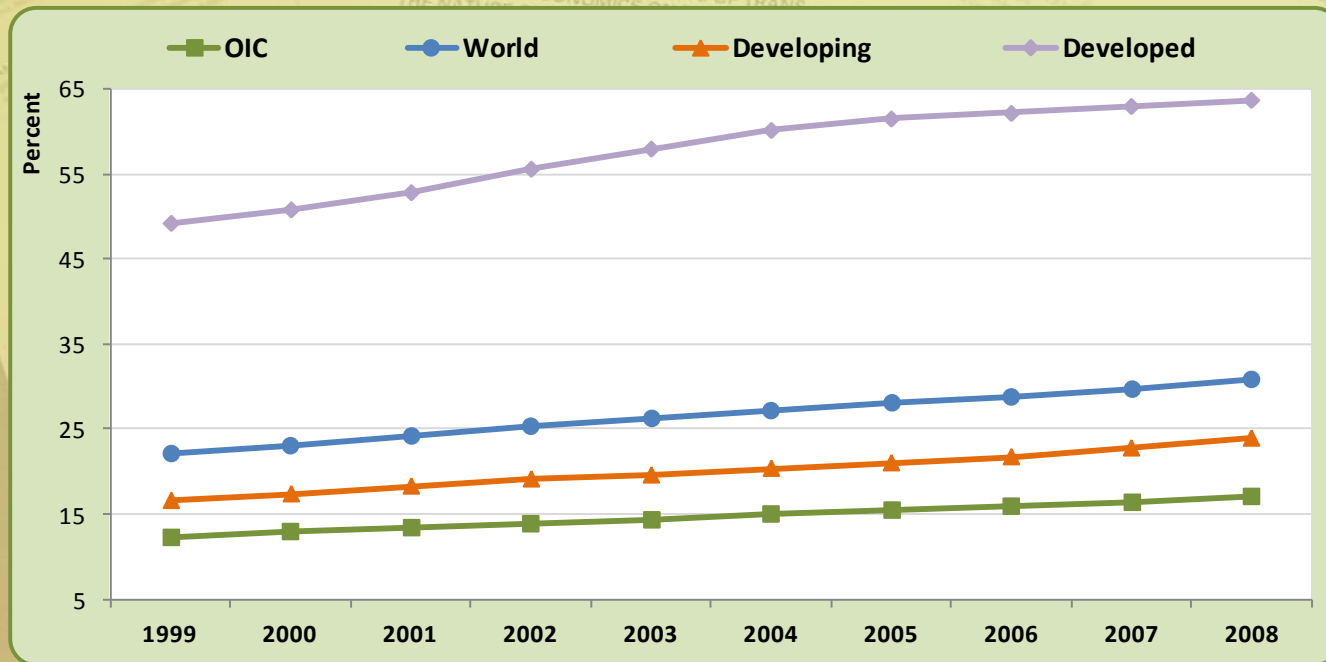


# Enrolment Rate at Tertiary Schools

Higher enrolment rates are generally considered to indicate higher quality education

OIC member countries as a group experienced lower growth trend than those of developed, developing, and all countries

In 2008, OIC average (17%) was below that of developing countries (24%) and nearly half of the world (31%)

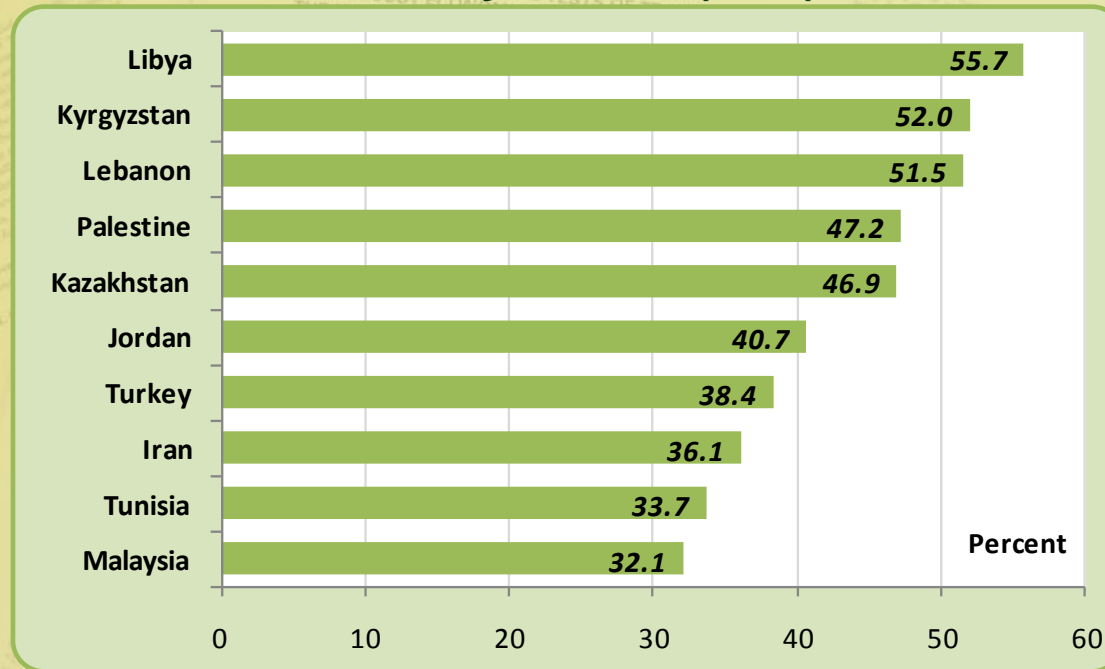


# Enrolment Rate at Tertiary Schools

In 2008, ten OIC member countries achieved higher Enrolment Rate in tertiary schools than the World average of 31%

Libya, Kyrgyzstan, and Lebanon were top three as more than half of the tertiary school age students were enrolled in tertiary schools in these countries

**Top 10 OIC Member Countries by Enrolment Rate in Tertiary Schools (2008)**

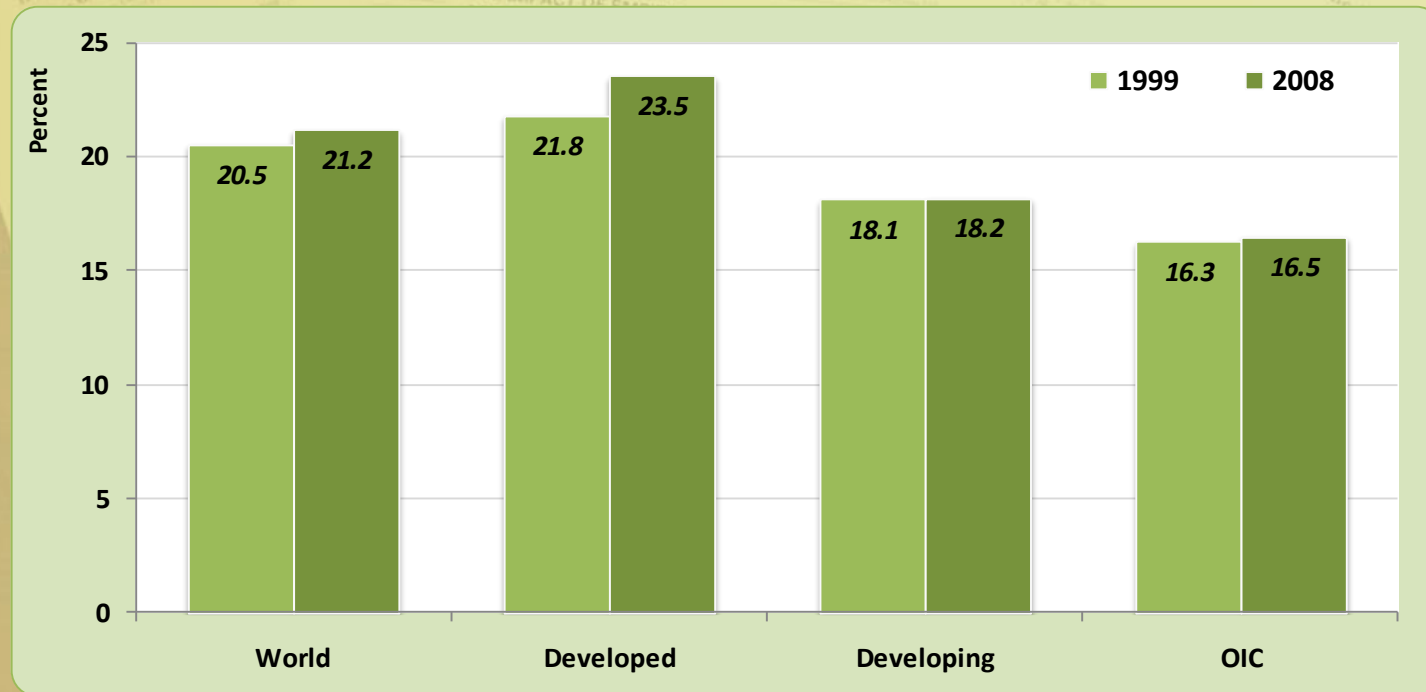


# Public Expenditure for Education

The percentage of government expenditures on education per pupil in GDP per capita is a good measure of public investment on education

The percentage for OIC countries is lower than that for developing countries as well as that for the whole world

The percentage increased by 0.7 percentage point from 1999 to 2008 for the world whereas this increase was only 0.2 percentage point for OIC member countries

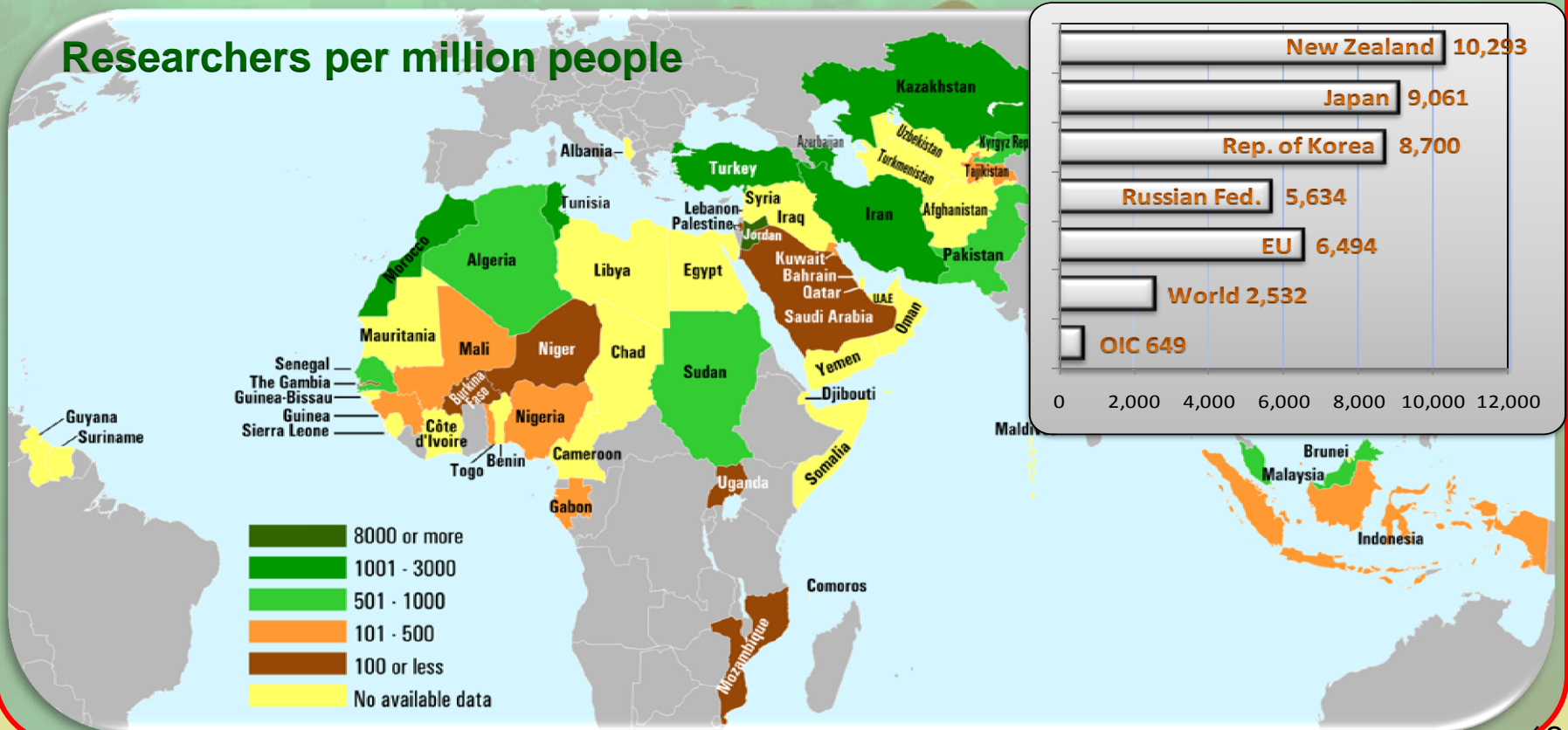


# Human Resources in R&D

The availability of highly qualified researchers is essential to foster innovation and promote scientific and technological development

OIC countries fall well behind world average in terms of researchers per million people: 649 vs. 2,532

## Researchers per million people

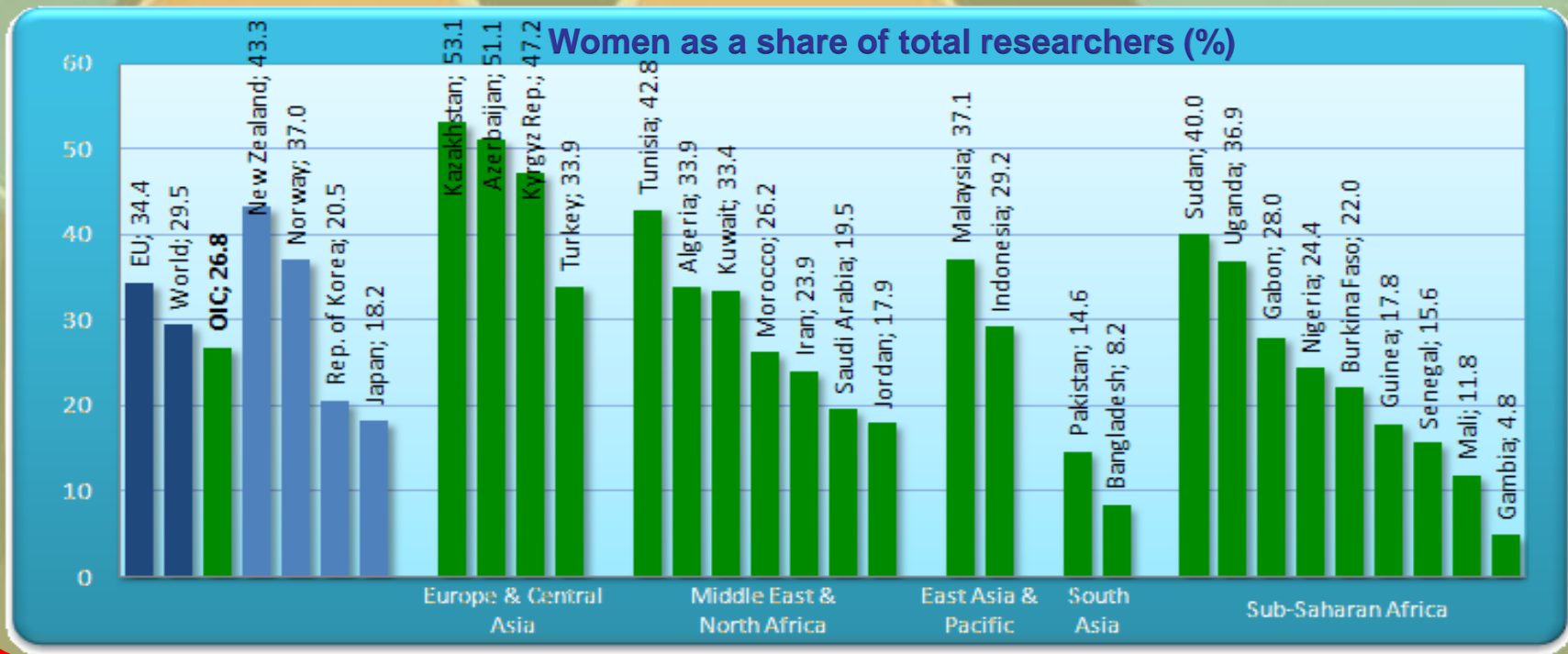


# Women in Research Activities

Women have become more qualified and motivated to participate in labor force

Progress achieved in the field of R&D seems to be unsatisfactory neither globally nor at the OIC level

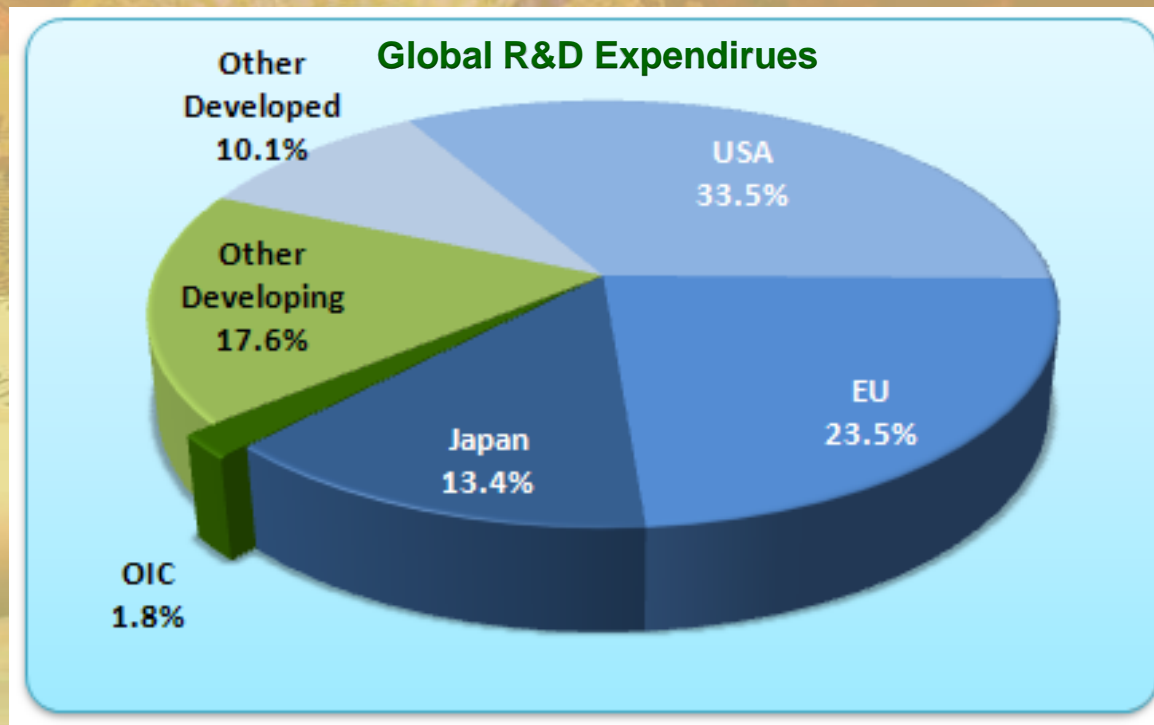
Women represent 26.8% of total researchers in OIC, slightly lower than world average of 29.5%



# Expenditures on R&D

80% of global R&D expenditures is spent by developed countries

OIC countries' share of Gross Domestic Expenditures on R&D (GERD) is  
1.8% in the world  
9.5% among developing countries



# R&D Intensity

R&D intensity (R&D Expenditures as percentage of GDP) is a widely used indicator

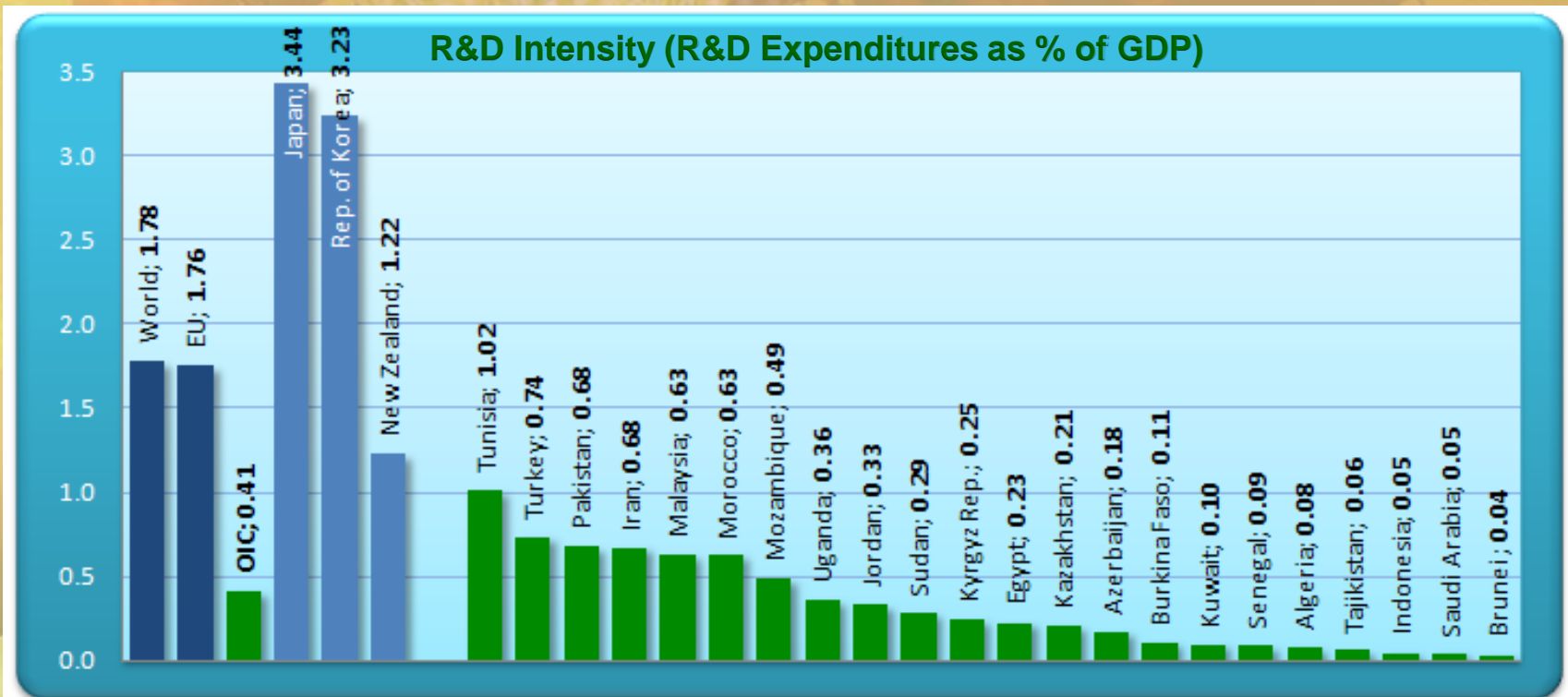
A higher R&D intensity indicates that relatively more resources are devoted to development of new products

The OIC Ten-Year Programme of Action calls upon OIC countries to *“encourage research and development programmes, taking into account that the global percentage of this activity is 2% of the Gross Domestic Product (GDP), and request Member States to ensure that their individual contribution is not inferior to half of this percentage”*

# R&D Intensity

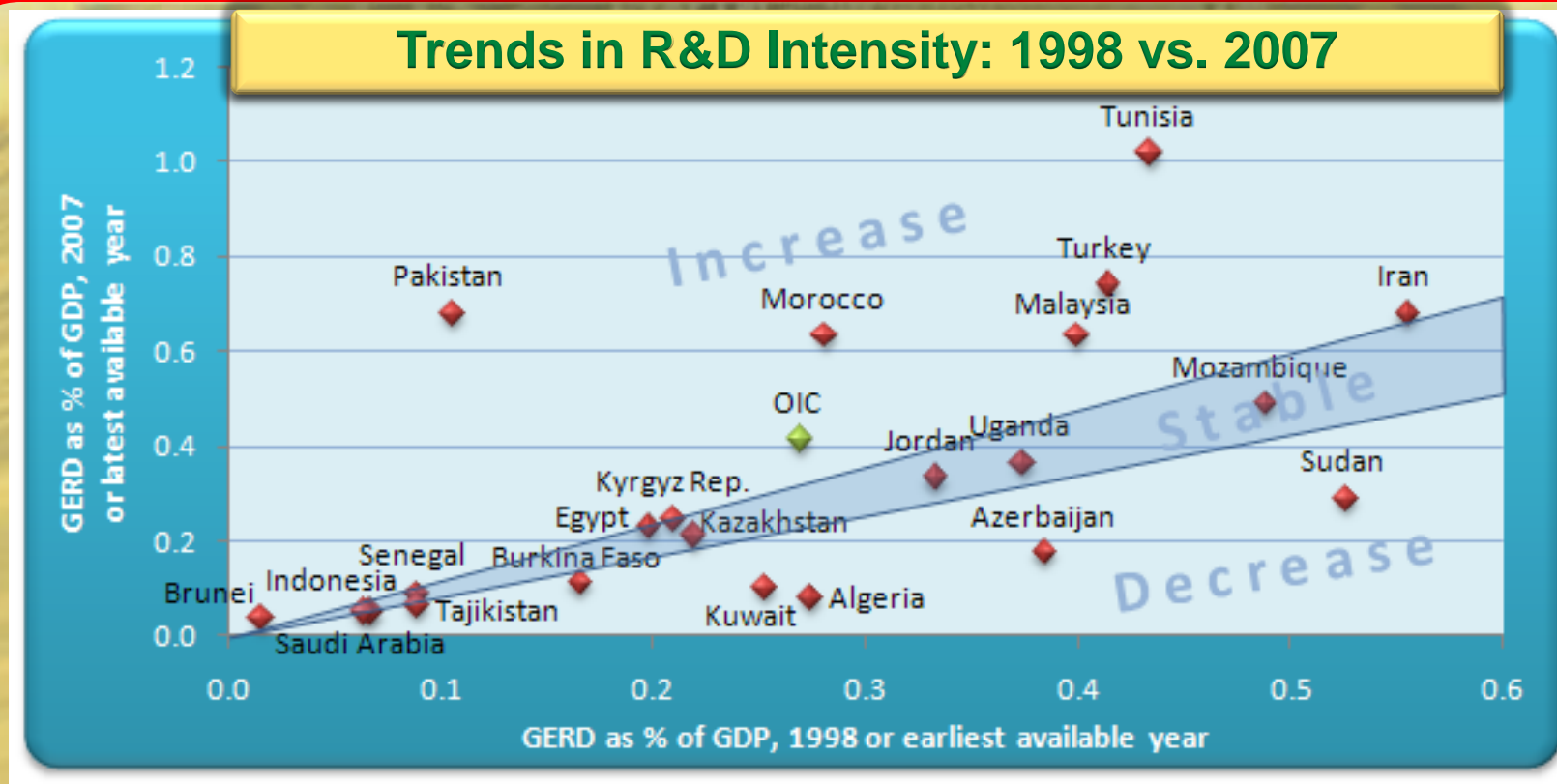
R&D intensity for OIC countries is quite lower than world average as well as targeted rate of 1%

Tunisia, the only country to have met the target so far, reports the highest level of R&D intensity, followed by Turkey and Pakistan





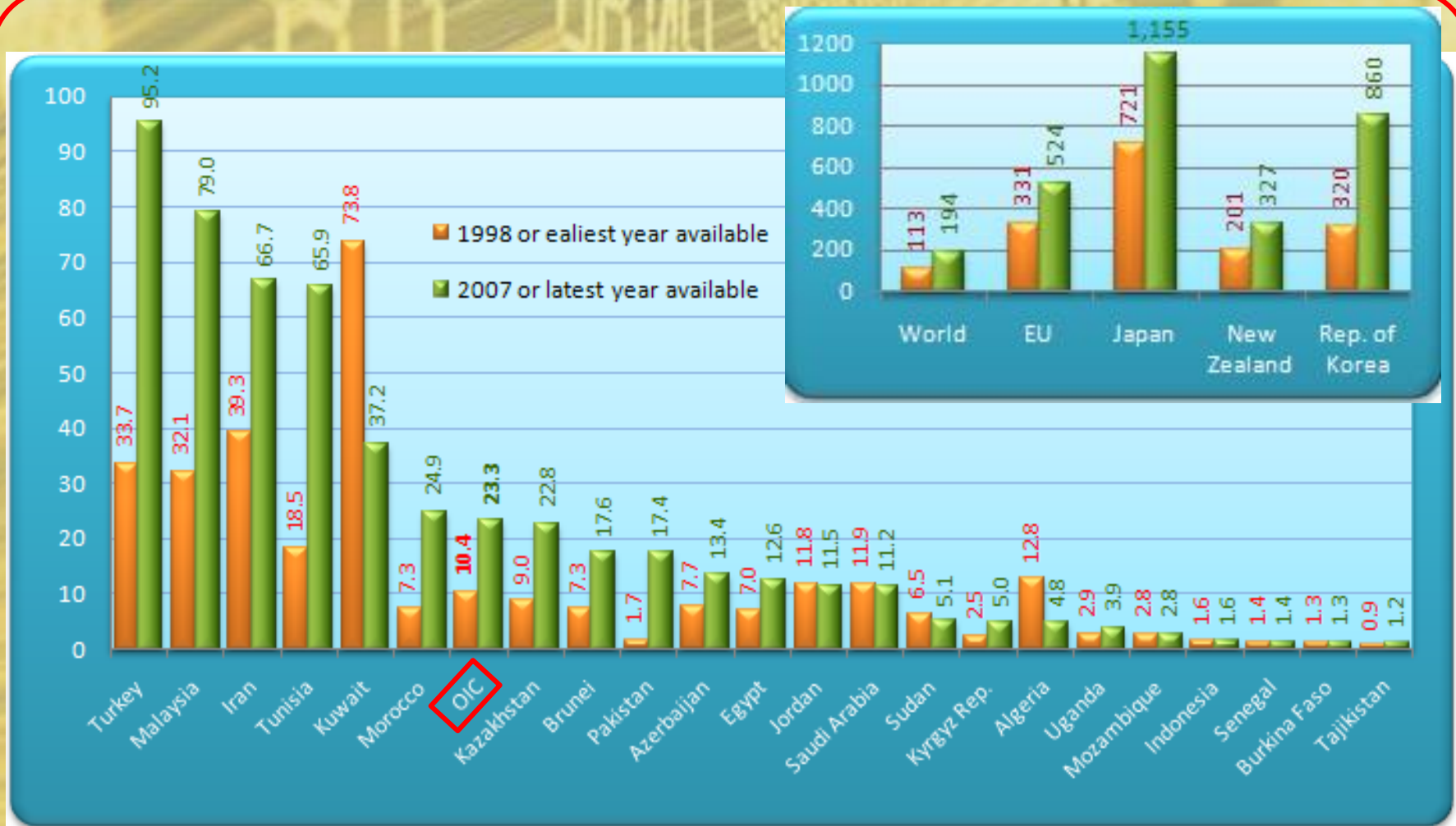
# Evolution of R&D Expenditures



Tunisia, Turkey, Pakistan, Morocco, and Malaysia significantly increased their R&D intensity

Average for OIC increased by 0.14 percentage point

# R&D Expenditures per Capita (US \$)



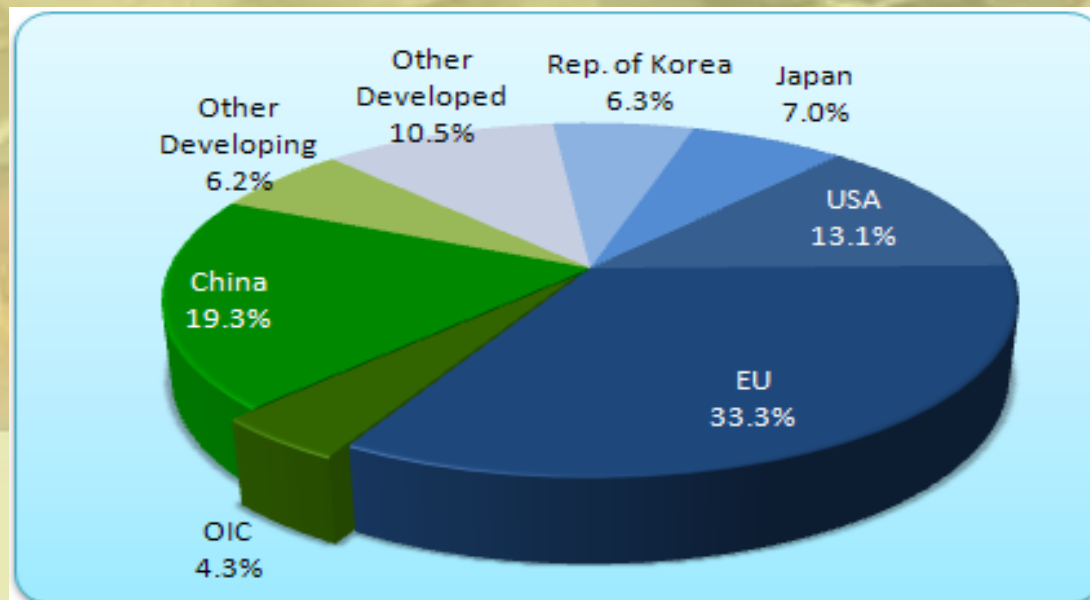
# High Technology Exports

High tech exports include products with high R&D intensity

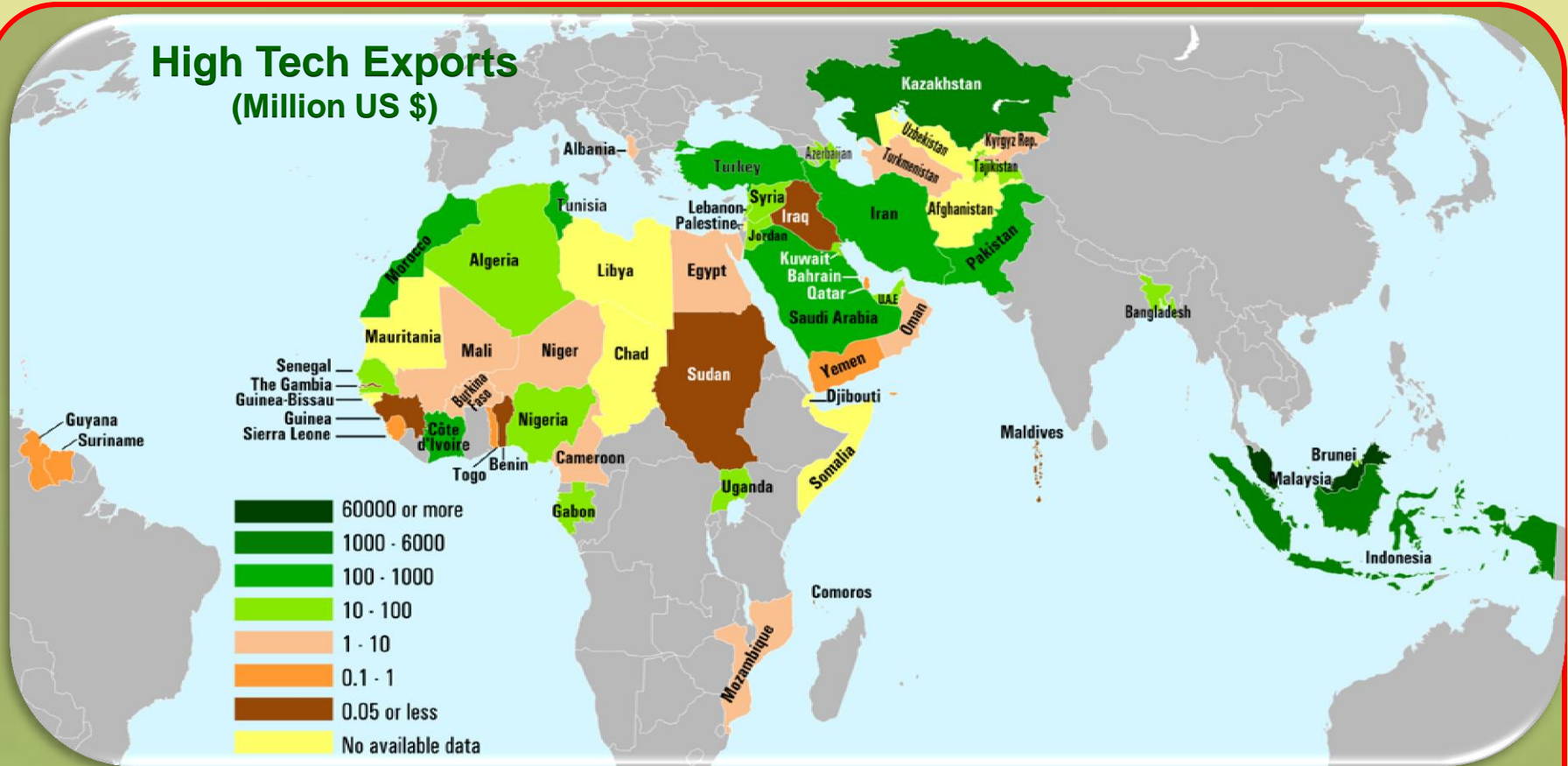
World high tech exports reached over \$1.7 trillion in 2007

Around 70% originated from developed countries

48 of the 57 member countries accounted for only 4.3% of the world high technology exports



# High Technology Exports in OIC Countries



Malaysia and Indonesia together represent 93.5% of total high tech exports of OIC

Malaysia, on its own, accounts for 86.5% of total high tech exports of OIC  
It is the 9<sup>th</sup> largest exporter of high-tech products in the world with a share of 3.7%

# World Bank's Knowledge Economy Index

This index measures to what extent the environment is conducive for knowledge to be used effectively for economic development

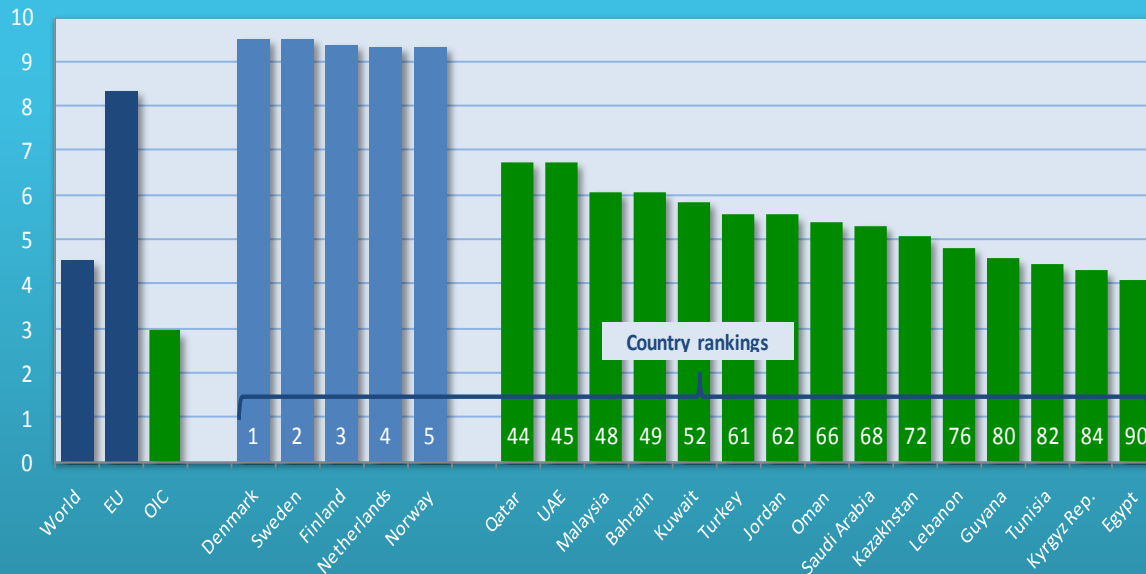
Calculated as average of normalized scores of

- Education
- Innovation
- Information & Communication Technology
- Economic Incentive & Institutional Regime

KEI is above world average in 12 out of 40 OIC countries for which index was calculated

Qatar and UAE are top two OIC countries standing only 44<sup>th</sup> and 45<sup>th</sup> in the world

Half of the bottom 50 countries for which the KEI was calculated are OIC members



# Policy recommendations

## Two Major Findings

### Two primary findings on the current stance of S&T in OIC Member Countries:

\* First, major indicators on research and scientific development display a large disparity within the OIC Member Countries.

\* Second, the OIC Member Countries, individually or as a group, lag far behind the rest of the world, particularly the developed countries, with a few exceptions.

## **Higher education and academic research should be supported**

**Allocate more resources for tertiary education (increase public expenditure)**

**Hire more instructors for public tertiary schools (improve student teacher ratio)**

**Ensure higher enrolment at tertiary education**

**Encourage establishment of private colleges, universities, and research centres through funds and financial incentives**

**Improve living standards for scientists and promote academic research through research grants and lesser teaching loads**

**Encourage women to attend colleges/universities and remove obstacles that prevent them from higher education**



## **R&D should be stimulated**

**Plan on reaching in foreseeable future the 1% target of R&D share in GDP**

**Facilitate network opportunities among OIC countries through projects similar to Framework Programmes of EU**

**Encourage research joint ventures among companies in OIC countries**

**Take advantage of R&D spillovers by**

- **Learning about new technologies developed in other countries**
- **Importing technological goods and services from high-tech trade partners**

**Encourage private sector to increase R&D expenditures through tax concessions or R&D subsidies**

# Infrastructure for ICT should be improved

**Communication sectors should be liberalized for better products and services**

**Promote internet usage through**

- **Tax reductions for internet services**
- **Transfer of internet subscription charges from consumers to telecom sector and internet service providers**

**Teach English to students from early grades to improve internet literacy and effective use of internet**

**Encourage technology related majors in higher education to meet human resource needs in information and technology related sectors**

**Improve infrastructure for wireless network technologies for faster diffusion of knowledge**

# THANK YOU



© 2010 SESRIC. All rights reserved.