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# **GENDER EQUALITY IN SCIENCE – ARAB REGION**

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# GENDER IN SCIENCE

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- ✘ Gender dimension of science has become one of the most important and debated issues worldwide
- ✘ The theoretical and empirical literature identifies the important role S&T plays in promoting economic growth
- ✘ Need to compile data in key set of indicators
- ✘ Indicators on women and men in science are key to mainstreaming approach to equal opportunities.

# INPUT – OUTPUT INDICATORS

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## × Input

### + Financial resources

- × %GDP on R&D
- × %GDP on EDU

### + Human resources

- × HC in R&D and Sc
- × Education graduates

## × Output

### × Economic indicators

- × Growth in productivity
- × % high-tech exports

### × Technological indicators

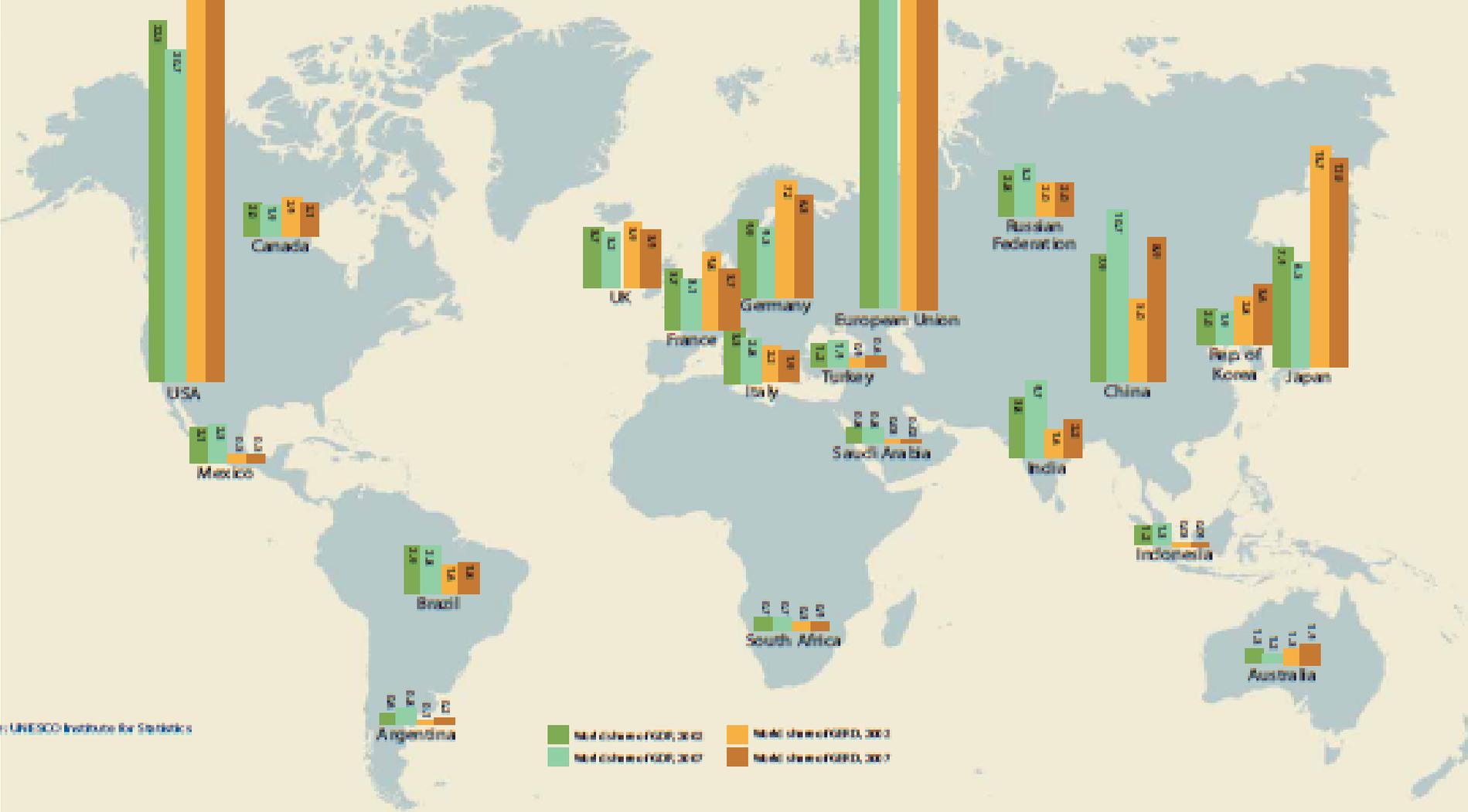
- × No of patents

### × Scientific performance

- × No of publications

# Gross expenditure on research and development

Figure 1: World share of GDP and GERD for the G20, 2002 and 2007 (%)



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# ENLARGING PEOPLE'S CHOICES TO ACQUIRE KNOWLEDGE

Country	Public Expenditure on education % GDP	Public expenditure on education % total expend	Public expenditure on education, primary	Public expenditure on education, secondary	Public expenditure on education, tertiary
Algeria	4.3	20.3	..	..	..
Bahrain	2.9	11.7	30.8	46.4	22.8
Comoros	3.8	24.1	42.4	28.2	17.3
Djibouti	8.4	22.8	59.5	22.2	11.8
Egypt	3.8	11.9		62.9	36.0
Jordan	4.9	20.6		62.7	35.3
Iraq	..	..	53.2	23.6	20.6
Kuwait	4.7	12.7	21.3	37.8	29.7
Lebanon	1.8	7.2	33.3	29.8	29.5
Mauritania	2.3	8.3	45.8	24.4	18.7
Morocco	5.6	27.8	40.5	44.5	16.2
Oman	4.4	24.2	32.7	39.9	27.1
Qatar	2.4	8.2	..	..	..
Saudi Arabia	5.6	19.3	..	..	17.8
Syria	5.3	18.4	54.3	42.5	25.9
Tunisia	6.9	22.7	35.1	42.6	22.9
UAE	1.3	28.3	47.5	45.2	
Yemen	5.2	16.0	..	..	..

# DEGREES OF TERTIARY EDUCATION

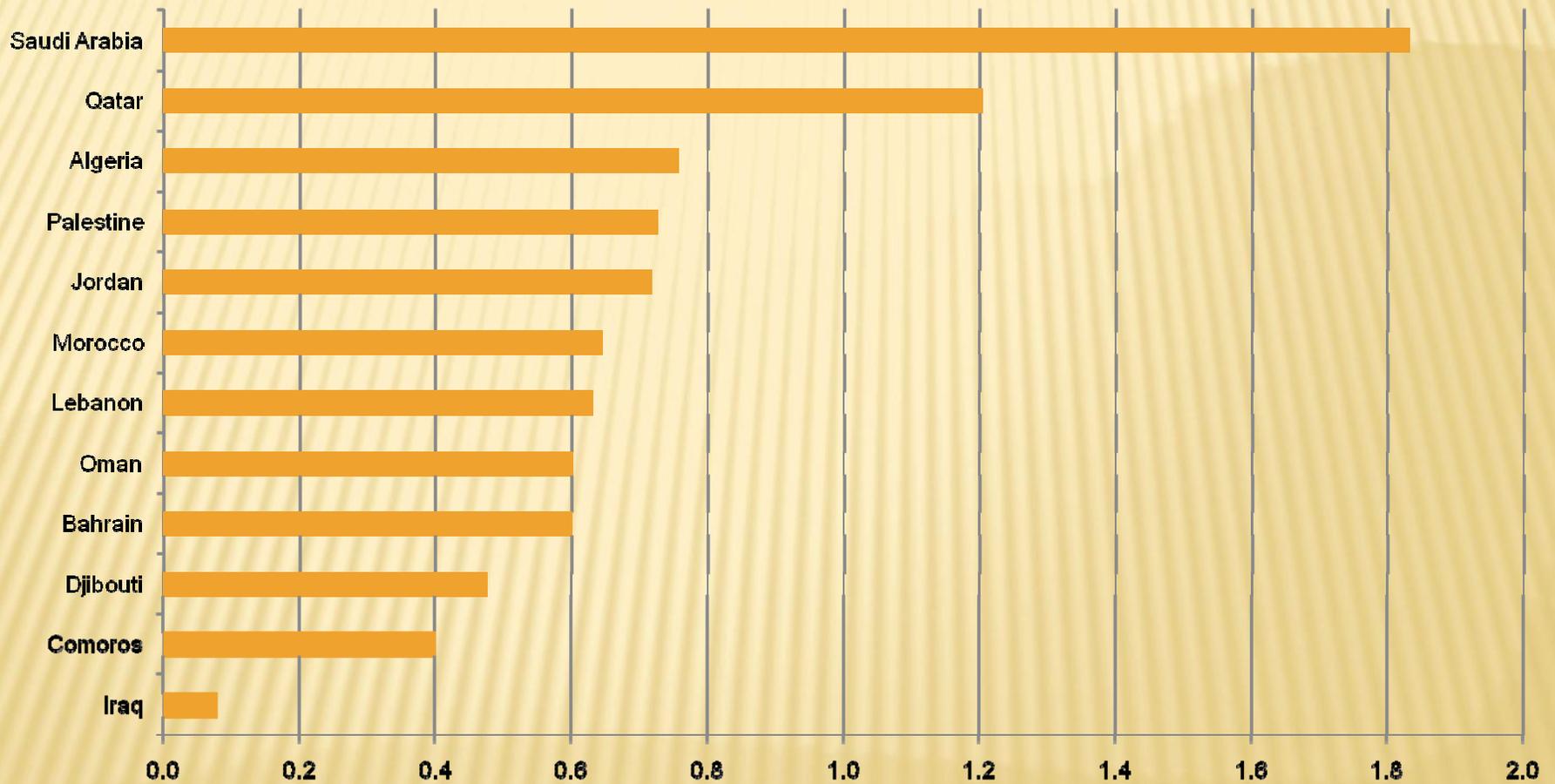
Country	GPI					
	Early 2000			Latest 2000		
	Less than first degree	First degree	Post graduate degrees	Less than first degree	First degree	Post graduate degrees
Algeria	1.4	0.6	0.8	1.5	1.0	0.9
Comoros <sup>(2)</sup>	0.5	1.3	..	0.7	0.7	..
Iraq	0.7	0.3	0.5	..	..	..
Jordan	0.9	2.1	0.3	1.0	1.4	0.5
Kuwait <sup>(1)(2)</sup>	1.8	..	0.6	..	..	..
Lebanon	1.1	0.6	0.5	1.1	1.4	0.6
Libya	1.0	0.8	0.7	..	..	..
Mauritania <sup>(1)</sup>	0.2	0.3	..	0.4	0.1	..
Morocco	0.8	0.5	0.5	0.9	1.0	0.6
Palestine	0.9	1.2	..	1.4	0.8	..
Oman	1.1	0.8	..	0.9	1.4	1.2
Qatar	2.1	6.5	..	2.6	0.4	..
Saudi Arabia	..	0.7	..	..	0.3	..
Tunisia <sup>(1)</sup>	1.0	0.7	1.0	..	..	..
United Arab Emirates	0.3	..	..	1.7	..	..
Yemen	0.3	0.2	0.1	..	..	..

# LESS GIRLS IN S&T EDUCATION

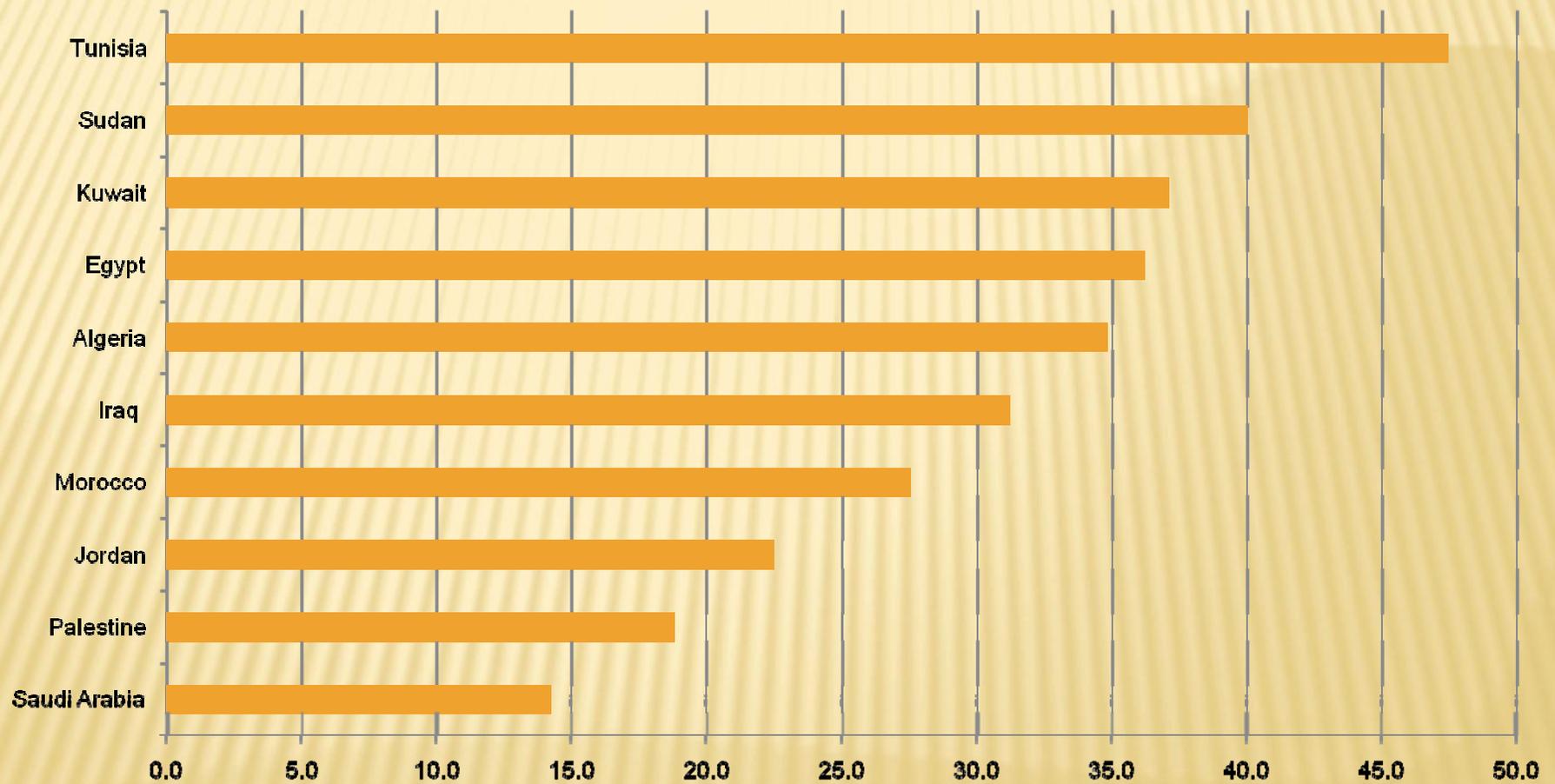
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- ✘ Perceptions of teachers and parents that girls are unsuited intellectually for S&T subjects;
- ✘ Tendency of teachers to pay more attention to boys in mathematics and science classes;
- ✘ Intimidation of girls in S&T classes;
- ✘ Masculine image of S&T in curricula and media;
- ✘ "Narrow" focus of technology courses which often may not connect to life outside the classroom ;
- ✘ Social class – girls who do have access to S&T education at higher levels tend to be from higher-income families.

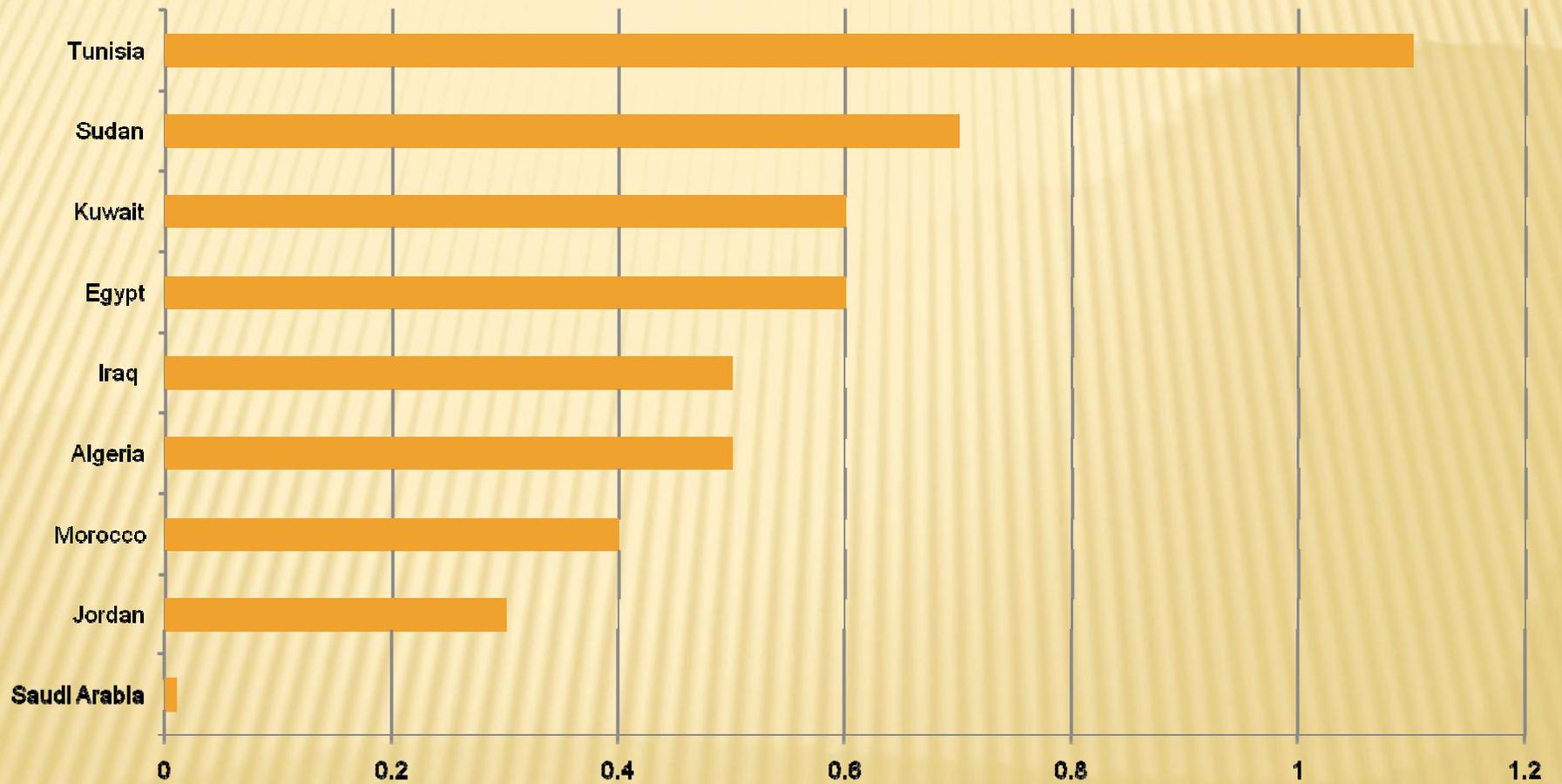
# EQUALITY IN HUMAN CAPITAL IN S&T



# LESS WOMEN RESEARCHERS THAN MEN



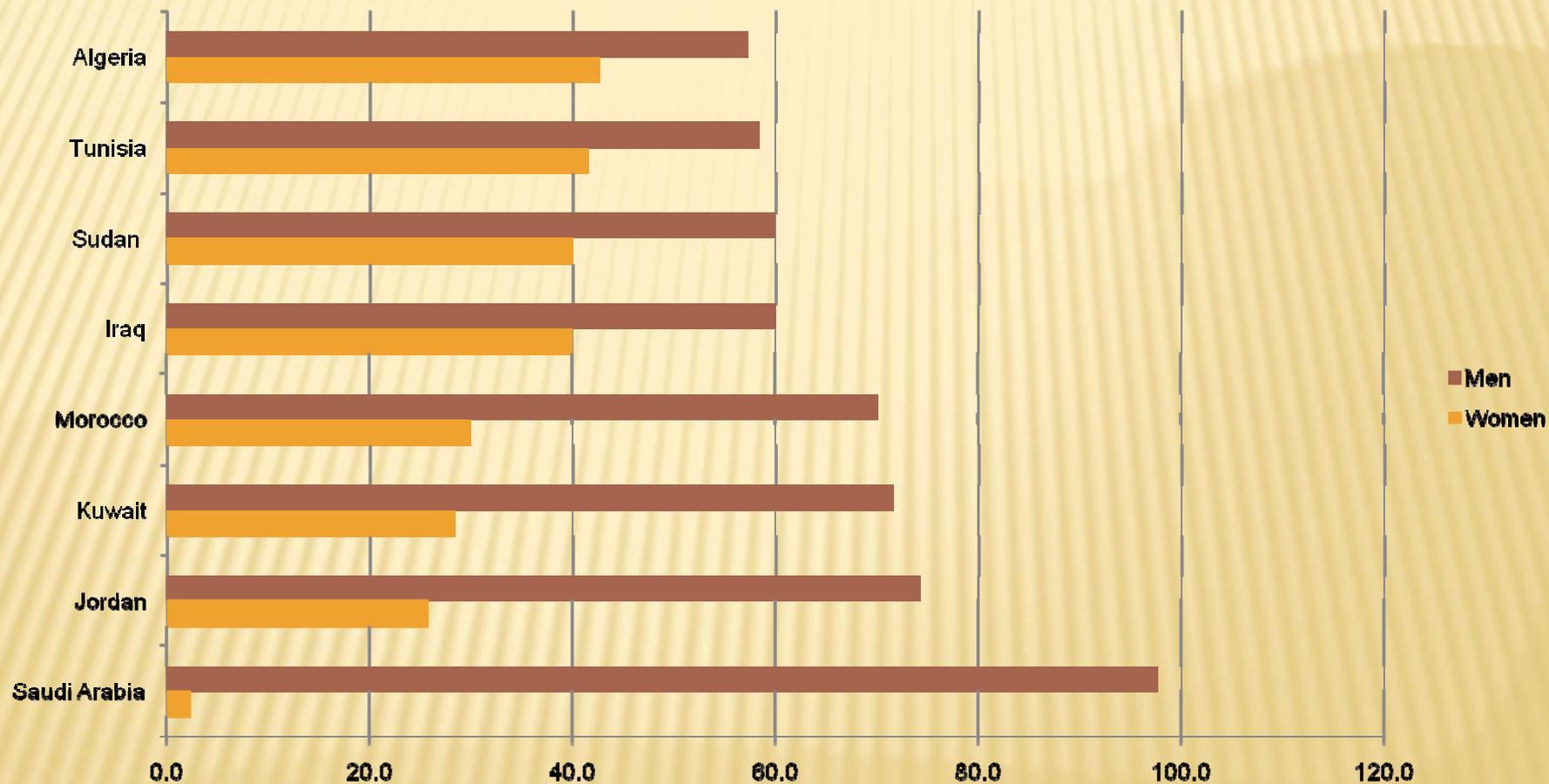
# EQUALITY IN GOVERNMENT EMPLOYMENT



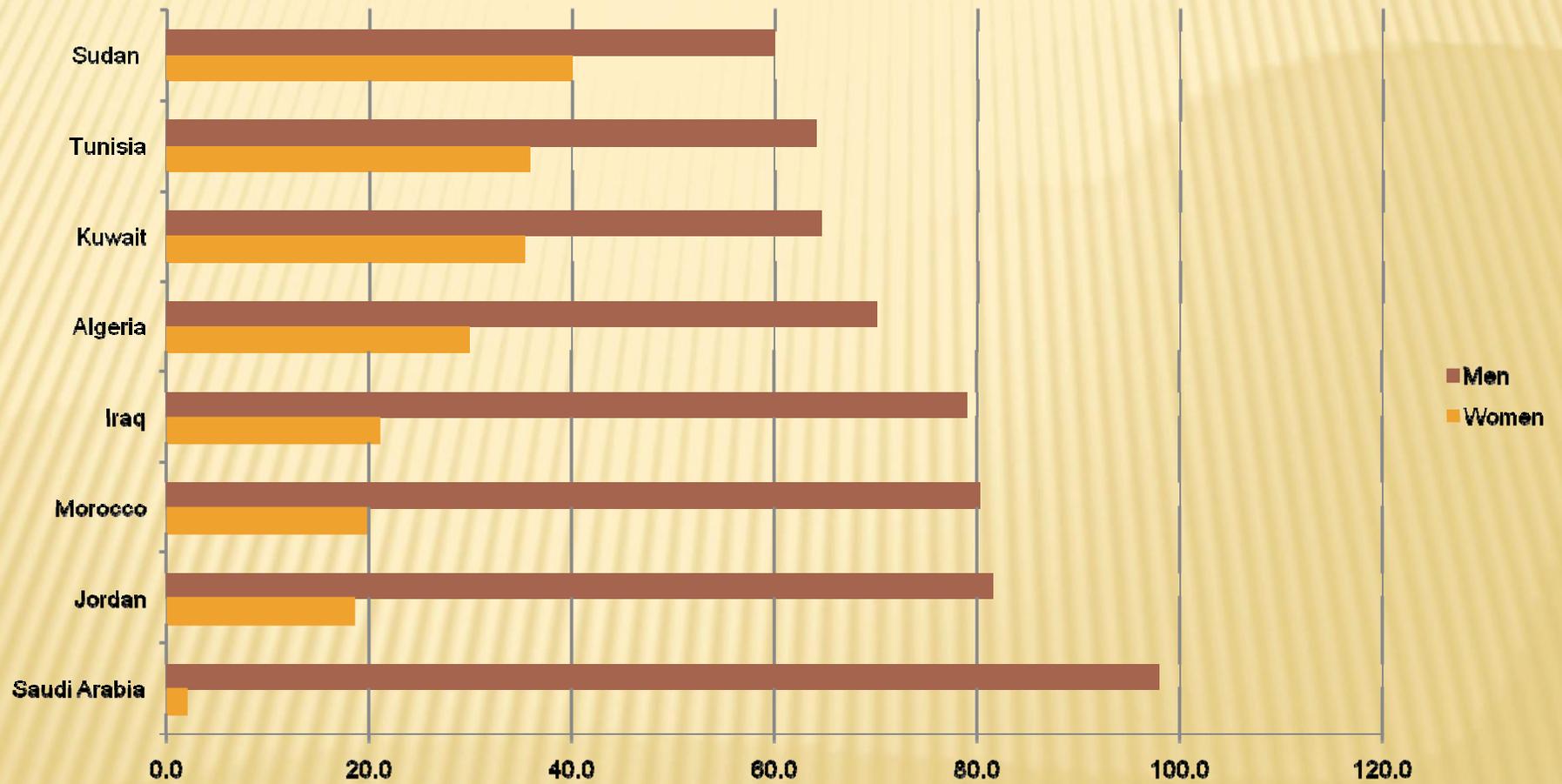
## RESEARCHERS BY FIELD OF SCIENCE

- ✘ Women tend to avoid venturing into “male” dominated science fields
- ✘ Proportions of female researchers start increasing when moving from scientific fields to social and humanities fields
- ✘ More women researchers tend to specialize in “feminine” science fields

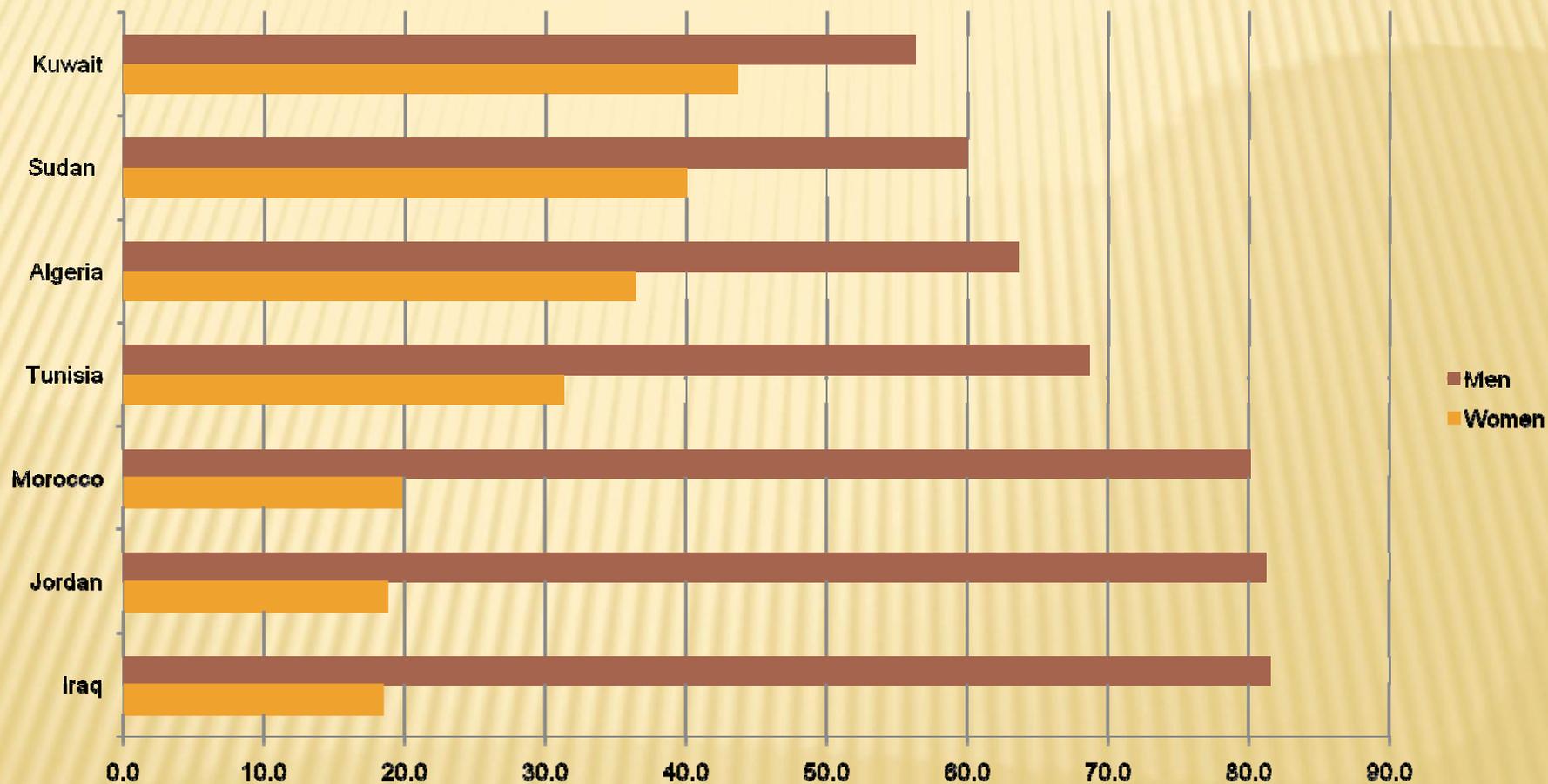
# NATURAL SCIENCES



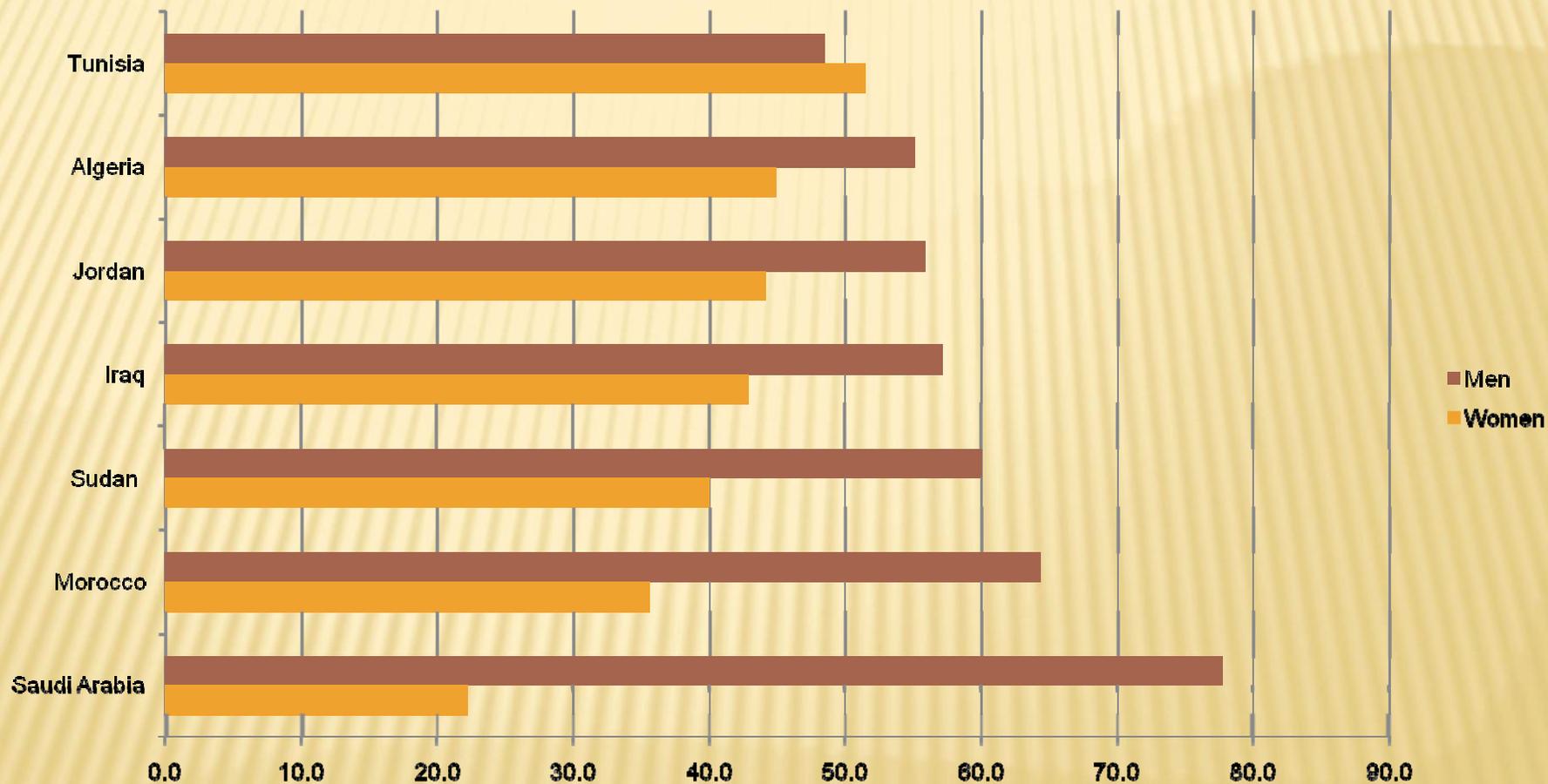
# ENGINEERING AND TECHNOLOGY



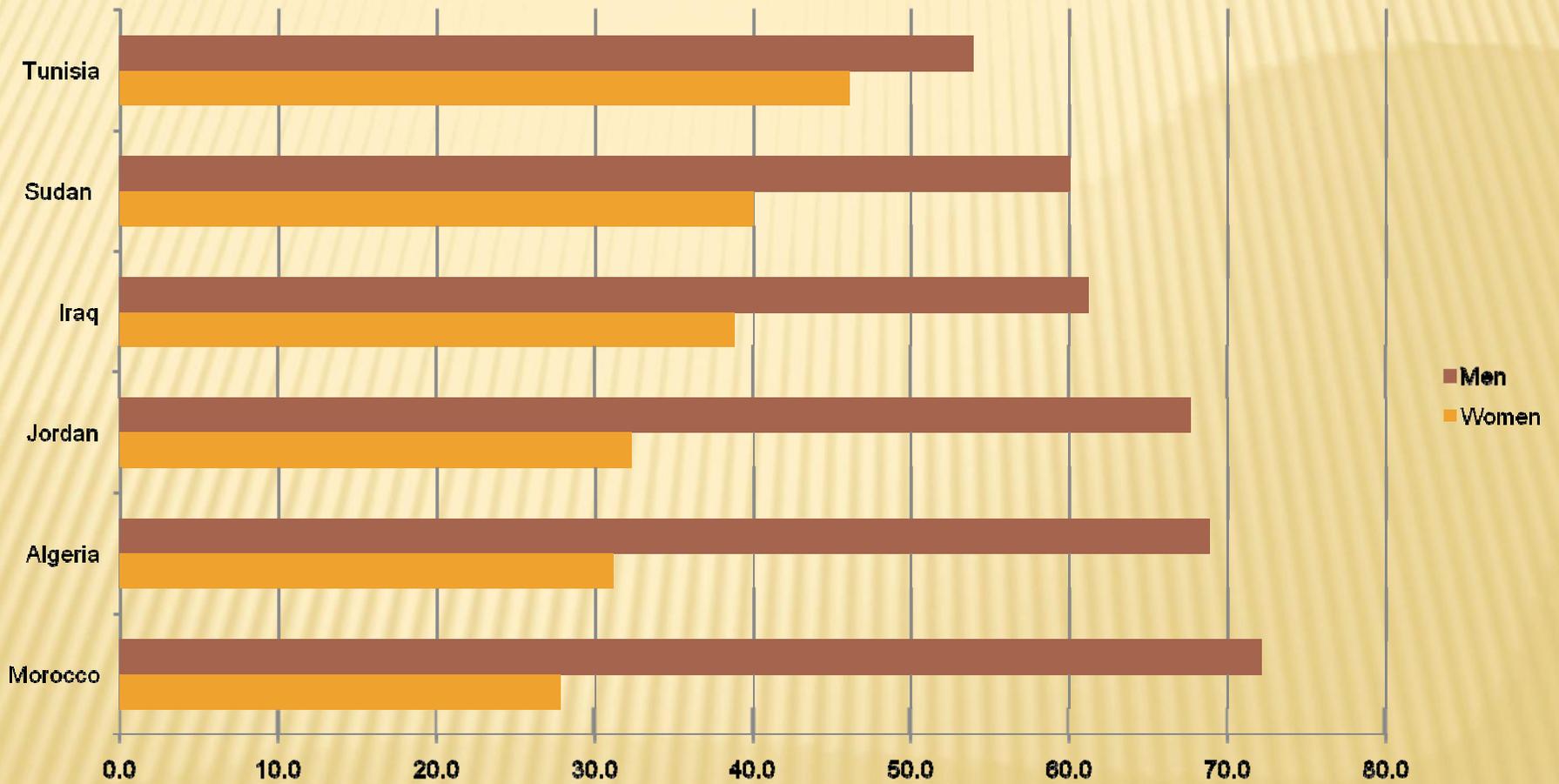
# AGRICULTURAL SCEINCES



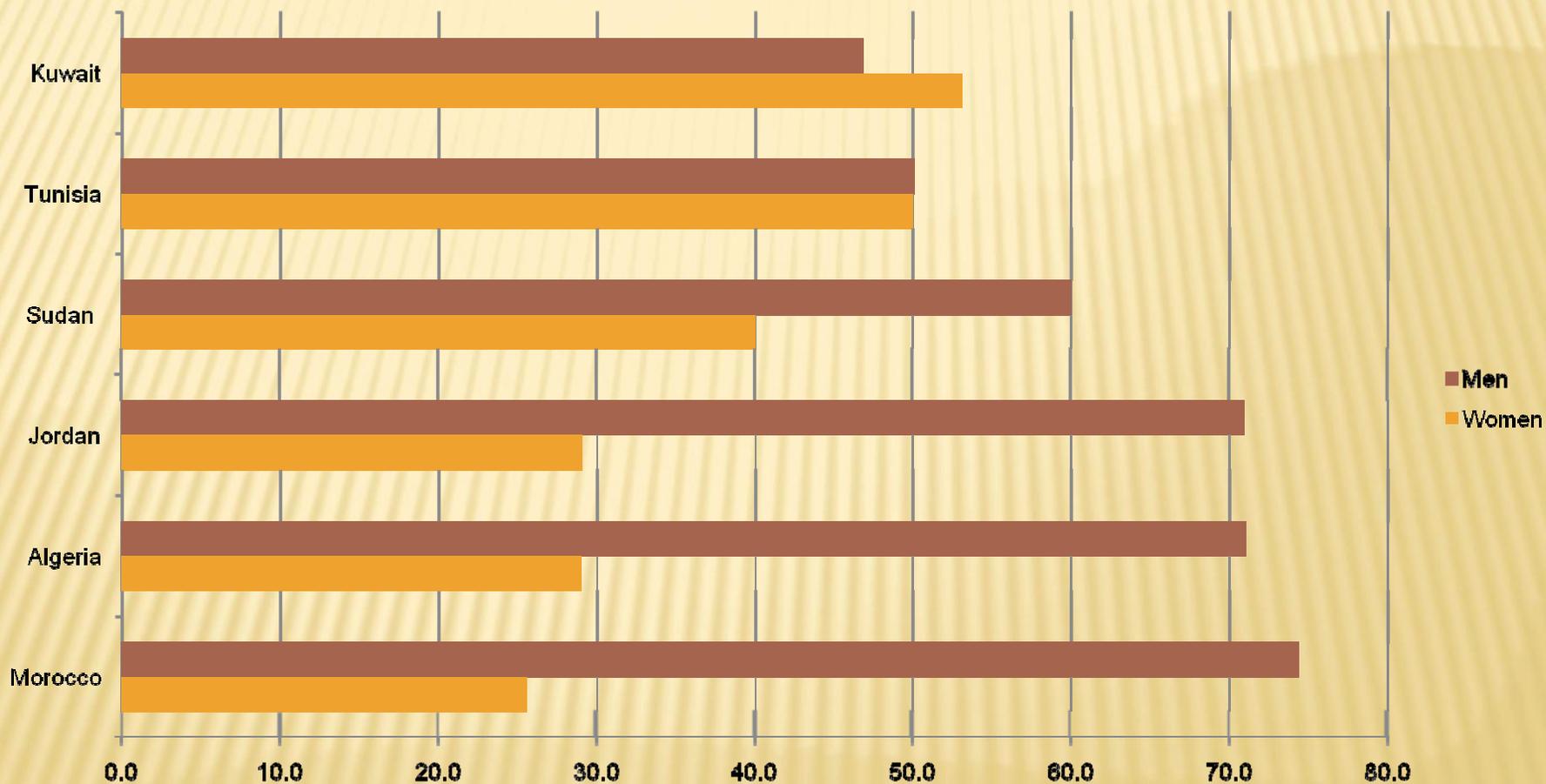
# MEDICAL AND HEALTH SCIENCES



# HUMANITIES



# SOCIAL SCIENCES



# AVG EARNINGS IN S&T OCCUPATIONS

Country	Occupation	GPI
 <p>Egypt Time: Weekly Currency: Pounds</p>	Petroleum and natural gas engineer	1.0
	Petroleum and natural gas extraction technician	0.7
	Chemical engineer	1.1
	Chemistry technician	0.5
	Electronics engineering technician	0.4
	Power distribution and transmission engineer	1.0
	Automobile mechanic	0.6
	Aircraft engine mechanic	2.7
	Computer programmer	1.2
	Mathematics teacher (third level)	0.9
	General physician	1.1
	Dentist	1.2
	Medical X-ray technician	0.6

Jordan Time: Monthly Currency: Dinar	Chemical engineer	0.4
	Chemistry technician	0.5
	Electric light and power	0.8
	Aircraft engine mechanic	0.9
	Computer programmer	1.3
	Mathematics teacher	1.1
	General physician	0.8
	Dentist	0.9
	Medical X-ray technician	1.0

Kuwait Time: Monthly Currency: Dinar	Petroleum and natural gas engineer	1.2
	Petroleum and natural gas extraction technician	0.8
	Chemical engineer	0.6
	Chemistry technician	0.9
	Electronics engineering technician	1.2
	Power distribution and transmission engineer	0.8
	Aircraft engine mechanic	1.5
	Computer programmer	0.7
	Mathematics teacher (third level)	1.0
	General physician	0.9
Dentist	1.0	
Medical X-ray technician	0.8	

# RESEARCHERS & PUBLICATIONS

Researchers (thousands)		World share of researchers (%)		Researchers per million inhabitants		GERD per researcher (PPP\$ thousands )	
2002	2007	2002	2007	2002	2007	2002	2007
105.2	122.8	1.8	1.7	354.9	373.2	34.3	38.4
Total publications		Change publications (%)		World share of publications (%)			
2002	(%) 2008			2002	2008		
8 186	13 574	65.8		1.1	1.4		

# ARAB WOMEN IN SCIENCE

Egyptian immunologist Rashika El Ridi (2010)

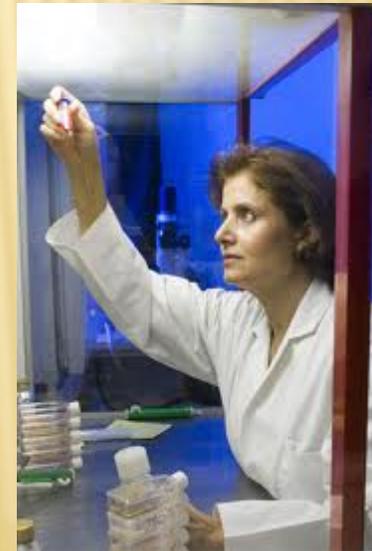


Tunisian physicists Zohra Ben Lakhdar (2005)

Egyptian physicist Karimat El-Sayed (2004),



UAE, Lihadh Al-Gazali on genetic disorders, (2008)



Tunisian physicists Habiba Bouhamed Chaabouni (2007)

## RECOMMENDATIONS - DATA

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- ✘ Need for regular data collection with gender dimension of science and to monitor gender equality
- ✘ Harmonized statistics to facilitate cross-national comparisons and monitoring
- ✘ Disseminate quality and timely data to monitor progress

## RECOMMENDATIONS - POLICIES

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- ✘ Strategies to encourage the participation of girls in Science education especially in male dominated fields like engineering, technology, ..
- ✘ Increase in GERD
- ✘ Increase Government expenditure in post graduate studies
- ✘ Engage the private/business sector
- ✘ Eliminate pay gap

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*Making differences between women and men visible is a basic premise for being able to take active gender equality measures.*

*Statistics are an important tool to show differences and how gender equality has developed over time.*