

HUMAN DEVELOPMENT REPORT 2001

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Some developing countries become hi-tech leaders while others fall far behind

Success depends on encouragement of innovation, skills and access

Mexico City, 10 July 2001—The *Human Development Report 2001*, commissioned by the United Nations Development Programme (UNDP) and released today, includes a ranking indicating the world's leading hubs of technological innovation and achievement. Not surprisingly, many of these hubs are in Europe, Japan and the US. But there are also world-class hubs in developing countries—including Campinas and São Paulo, Brazil; Bangalore, India; Kuala Lumpur, Malaysia; Gauteng, South Africa; and El Ghazala, Tunisia.

Each of these technology hubs brings together research institutes, business start-ups and venture capital. But the Report draws particular attention to the fact that, through information and communications technology, these hubs are increasingly linked to each other and to the global economy more generally. For instance, hubs are increasingly using the Internet to provide real-time services for clients all over the world. Technology-oriented businesses now typically have research facilities in several countries and outsource production worldwide.

This year's Report also includes, for the first time, a Technology Achievement Index (TAI). The index ranks 72 countries in terms of their overall achievement in creating and using technology. Finland is ranked first, followed by the US, Sweden and Japan. Finland's lead over the United States is largely because a higher percentage of its citizens are using the Internet and because it has a greater

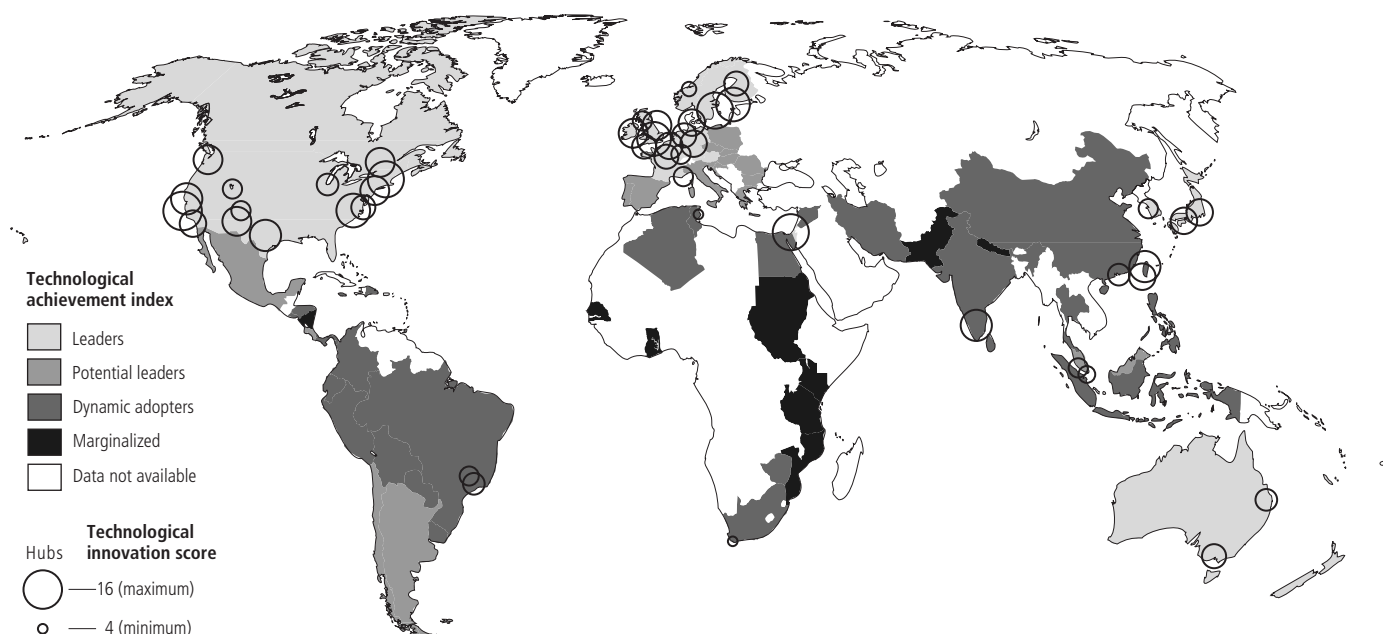
TABLE 2.5
Investing in domestic technology capacity

Country or group	Gross tertiary enrolment ratio (percent)		Share of tertiary enrolment in science (percent) 1995–97
	1980	1997	
Korea, Rep. of	15	68	34.1
Singapore	8	43	62.0
Sweden	31	55 ^a	30.6
Thailand	15	22 ^a	20.9
United States	56	81 ^a	17.2
Developing countries	7	9 ^a	27.6
High-income OECD	39	64 ^a	28.2

a. Refers to earlier year.

Source: Human Development Report Office calculations based on UNESCO 1999 and 2001a and World Bank 2001h.

THE GEOGRAPHY OF TECHNOLOGICAL INNOVATION AND ACHIEVEMENT



Global hubs of technological innovation In 2000 *Wired* magazine consulted local sources in government, industry and the media to find the locations that matter most in the new digital geography. Each was rated from one to four in four areas: the ability of area universities and research facilities to train skilled workers or develop new technologies, the presence of established companies and multinational corporations to provide expertise and economic stability, the population's entrepreneurial drive to start new ventures and the availability of venture capital to ensure that the ideas make it to market. Forty-six locations were identified as technology hubs, shown on the map as black circles

Score	16	15	15	15	14	14	14	13	13
	Silicon Valley, US	Boston, US	Stockholm-Kista, Sweden	Israel	Raleigh-Durham-Chapel Hill, US	London, UK	Helsinki, Finland	Austin, US	San Francisco, US

Source: Hillner 2000.

TECHNOLOGY ACHIEVEMENT INDEX

(see annex 2.1, p. 46; and annex table A2.1, p. 48)

LEADERS	POTENTIAL LEADERS	DYNAMIC ADOPTERS	MARGINALIZED
1 Finland (2 hubs)	19 Spain	38 Uruguay	64 Nicaragua
2 United States (13 hubs)	20 Italy	39 South Africa (1 hub)	65 Pakistan
3 Sweden (2 hubs)	21 Czech Republic	40 Thailand	66 Senegal
4 Japan (2 hubs)	22 Hungary	41 Trinidad and Tobago	67 Ghana
5 Korea, Rep. of (1 hub)	23 Slovenia	42 Panama	68 Kenya
6 Netherlands	24 Hong Kong, China (SAR)	43 Brazil (2 hubs)	69 Nepal
7 United Kingdom (4 hubs)	25 Slovakia	44 Philippines	70 Tanzania, U. Rep. of
8 Canada (1 hub)	26 Greece	45 China (3 hubs)	71 Sudan
9 Australia (1 hub)	27 Portugal	46 Bolivia	72 Mozambique
10 Singapore (1 hub)	28 Bulgaria	47 Colombia	
11 Germany (3 hubs)	29 Poland	48 Peru	
12 Norway (1 hub)	30 Malaysia	49 Jamaica	
13 Ireland (1 hub)	31 Croatia	50 Iran, Islamic Rep. of	
14 Belgium (1 hub)	32 Mexico		
15 New Zealand	33 Cyprus		
16 Austria	34 Argentina		
17 France (2 hubs)	35 Romania		
18 Israel	36 Costa Rica		
	37 Chile		

TABLE 2.6
Competing in global markets: the 30 leading exporters of high-tech products

Rank	Country or area	Billions of US dollars, 1998–99	Index (1990=100)
1	United States	206	250
2	Japan	126	196
3	Germany	95	206
4	United Kingdom	77	255
5	Singapore	66	420
6	France	65	248
7	Korea, Rep. of	48	428
8	Netherlands	45	310
9	Malaysia	44	685
10	China	40	1,465
11	Mexico	38	3,846
12	Ireland	29	535
13	Canada	26	297
14	Italy	25	177
15	Sweden	22	314
16	Switzerland	21	231
17	Belgium	19	296
18	Thailand	17	591
19	Spain	11	289
20	Finland	11	512
21	Denmark	9	261
22	Philippines	9	1,561
23	Israel	7	459
24	Austria	7	172
25	Hungary	6	..
26	Hong Kong, China (SAR)	5	111
27	Brazil	4	364
28	Indonesia	3	1,811
29	Czech Republic	3	..
30	Costa Rica	3	7,324

Source: Human Development Report Office calculations based on data from Lall 2000 and UN 2001a.

percentage of citizens who are educated in advanced sciences. (The index does not measure technological might or global leadership.)

More recently industrialized countries are also prominent in the index—the Republic of Korea (fifth) is ahead of the UK (seventh), Canada (eighth), Singapore (10th), Germany (11th) and Norway (12th). Mexico, which ranked 32nd, is listed among the “emerging leaders” in technological achievement.

The TAI also shows that having a world-class technology hub is not sufficient to ensure the diffusion of technology across an entire country. India, home to one of the world’s most dynamic hubs, still ranks only 63rd in the TAI, behind Zimbabwe, Syria and Paraguay. This is because Bangalore, where much of India’s new technology is concentrated, is a small enclave in a country where the average adult receives only about five years of education. More than 40 percent of adults in India are illiterate, electricity consumption is half that in China, and there are just 29 telephones per 1,000 persons.¹

The *Human Development Report 2001* stresses that in this network age, any country that fails to make effective use of technology is likely to find itself falling behind in human development and marginalized in the global economy. It concludes that all countries, even the poorest, need to implement policies that encourage innovation, advanced skills and access to new technologies.

“Not all countries can be at the cutting edge of technological advance” said Nancy Birdsall, Special Adviser to the Administrator of UNDP. “But in today’s knowledge-based global market, every country, no matter how poor, needs to build its own capacity to master and adapt global technologies to local needs. That means investing in secondary education and university research and creating incentives for firms to train their workers.”²

The Report notes that in every technologically advanced country today, governments have provided incentives and funding for education and training. But not enough resources have been mobilized, from either domestic or international sources, to do the same in many developing countries.

ABOUT THIS REPORT: Every year since 1990, the United Nations Development Programme has commissioned the *Human Development Report* (www.undp.org/hdro) by an independent team of experts to explore major issues of global concern. The Report looks beyond per capita income as a measure of human progress by also assessing it against such factors as average life expectancy, literacy and overall well-being. It argues that human development is ultimately “a process of enlarging people’s choices.”

The *Human Development Report* is published in English by Oxford University Press, 2001 Evans Rd., Cary, NC 27513, USA. Telephone (919) 677-0977; toll free in the USA (800) 451-7556; fax (919) 677-1303.

¹ For more on technology inequalities within countries, see HDR 2001 page 38,40

² For more on such national policies, see HDR 2001 Chapter Four (pages 79-93)