

JAMAICA'S INNOVATION INFRASTRUCTURE: A COMPARATIVE ANALYSIS



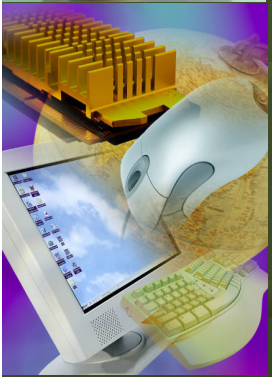
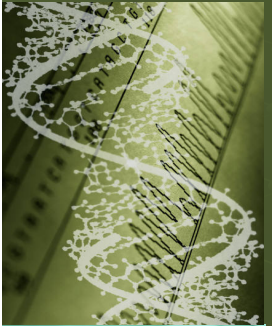
Richard Kelly

Planning Institute of Jamaica

SRC's S&T Conference 2006

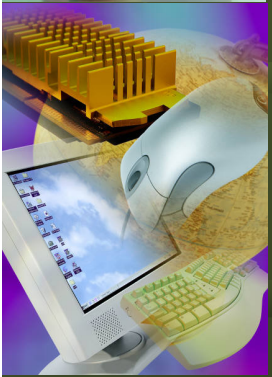
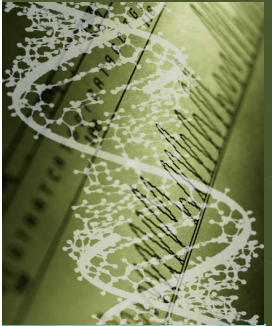
JAMAICA'S INNOVATION INFRASTRUCTURE: A COMPARATIVE ANALYSIS

- How does Jamaica's innovation infrastructure compare with that of other Small Island Developing States (SIDS) and developed countries?
- Pertinent question in light of the expressed goal of policy makers for Jamaica to attain first world status in 20 years.



JAMAICA'S INNOVATION INFRASTRUCTURE: A COMPARATIVE ANALYSIS

- This paper seeks to answer this question by comparing aspects of the innovation infrastructure in Jamaica with those of Singapore, Norway and other Caribbean Single Market (CSM) countries such as Barbados and Trinidad and Tobago.





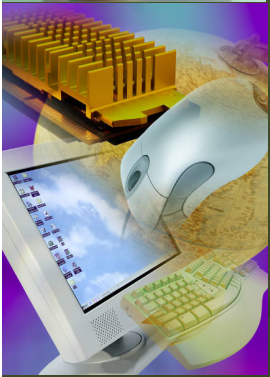
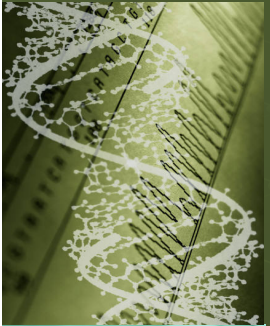
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Five quantitative indicators are compared:

- adult literacy;
- expenditure on education;
- percentage of tertiary graduates;
- expenditure on Research and Development (R&D)
- number of resident patents filed.

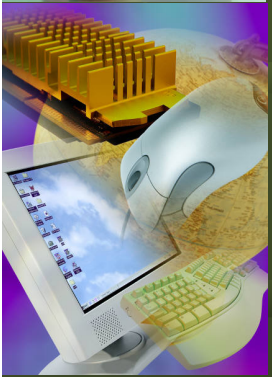
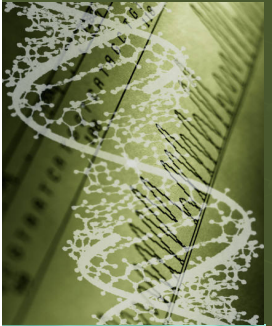
What is Innovation?

- Innovation is the conversion of knowledge and ideas into tangible or intangible products, processes and services which may be for commercial use, or for the public good.



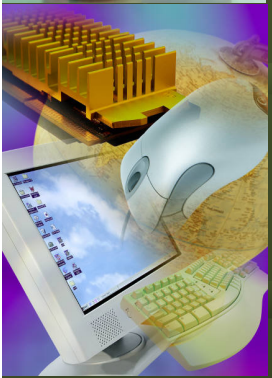
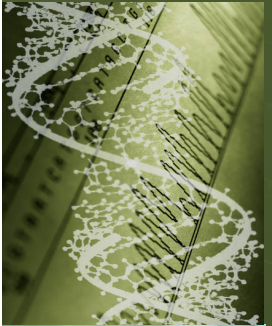
JAMAICA'S INNOVATION INFRASTRUCTURE

- increased expenditure on R&D (from 0.1 per cent of GDP to 0.3 per cent representing a 57 per cent increase between 2001 and 2004)
- award of the National Medal for Science and Technology by the Prime Minister
- establishment and capitalization of two funds



JAMAICA'S INNOVATION INFRASTRUCTURE

- Promotion of entrepreneurship
- The introduction of the National Innovation Awards for Science and Technology;
- The National Quality Awards Programme;
- Expansion of the Information and Communications Technology infrastructure
- R&D in some ministries and main tertiary institutions

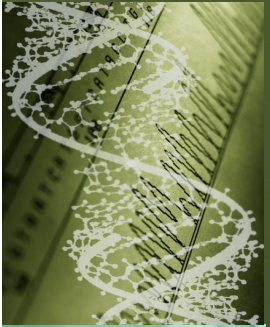


JAMAICA'S INNOVATION INFRASTRUCTURE

- Improved Intellectual Property Rights System

Improvement in the policy environment

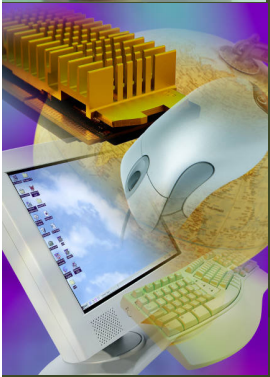
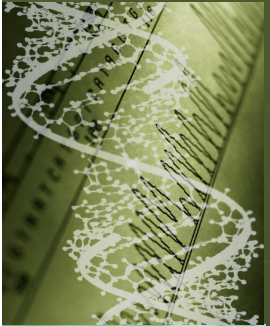
- S&T policy submitted to Parliament
- NCST legislation tabled
- Tax exemptions on purchase of R&D equipment

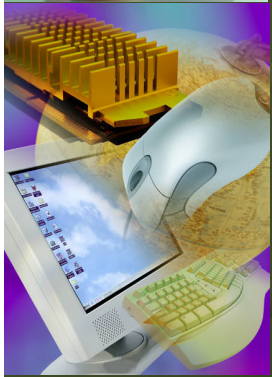
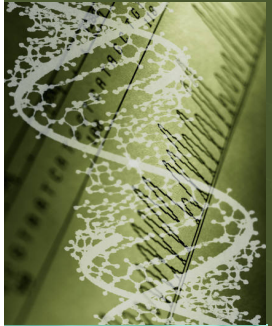


Singapore's Innovation Infrastructure

Singapore's innovation policy and strategy includes:

- Foreign Direct Investment
- Venture capital financing through public-private partnerships
- publicly funded secondment of research scientists and engineers into firms
- development of S&T/R&D clusters





Norway's Innovation Infrastructure

- a strong innovation policy;
- tax incentives and subsidies for R&D by private firms;
- development of supporting physical and electronic infrastructure;
- building knowledge capacity
- strong government support for the transition from idea to commercialisation.
- Promotion of entrepreneurship; revising and improving innovation systems and increasing the number of researchers in R&D.



Socio-economic indicators

Selected Socio-economic indicators in Selected Countries, 2005

Country	Population (million)	Real GDP growth rate (%)	Per capita GDP (US\$)	Unemployment rate (%)	HDI Rank	Global Competitive Index Rank
Jamaica	2.60	1.4	4,400	11.5	98	60
Norway	4.60	3.9	42,300	4.6	1	12
Singapore	4.50	6.4	28,100	2.5	25	5
Barbados	0.28	4.1	17,300	10.7	30	31
Trinidad and Tobago	1.06	7.0	16,800	8.0	57	67



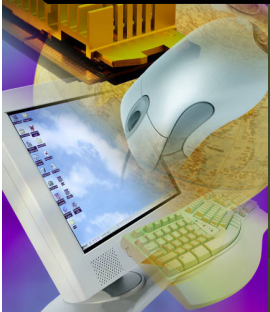
Sources: Economic and Social Survey Jamaica, 2005, CIA World Fact Book, 2005, Global Competitiveness Report, 2006, Human Development Report, 2005, Singapore Department of Statistics.



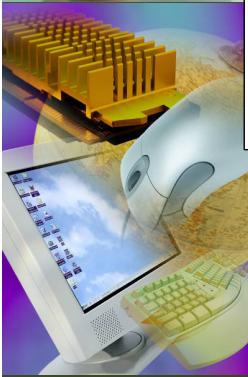
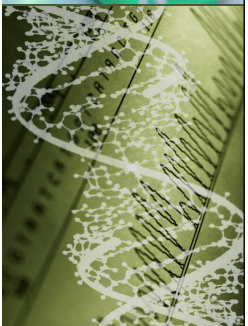
Education Variables

Key Educational Variables in Selected Countries, 2005

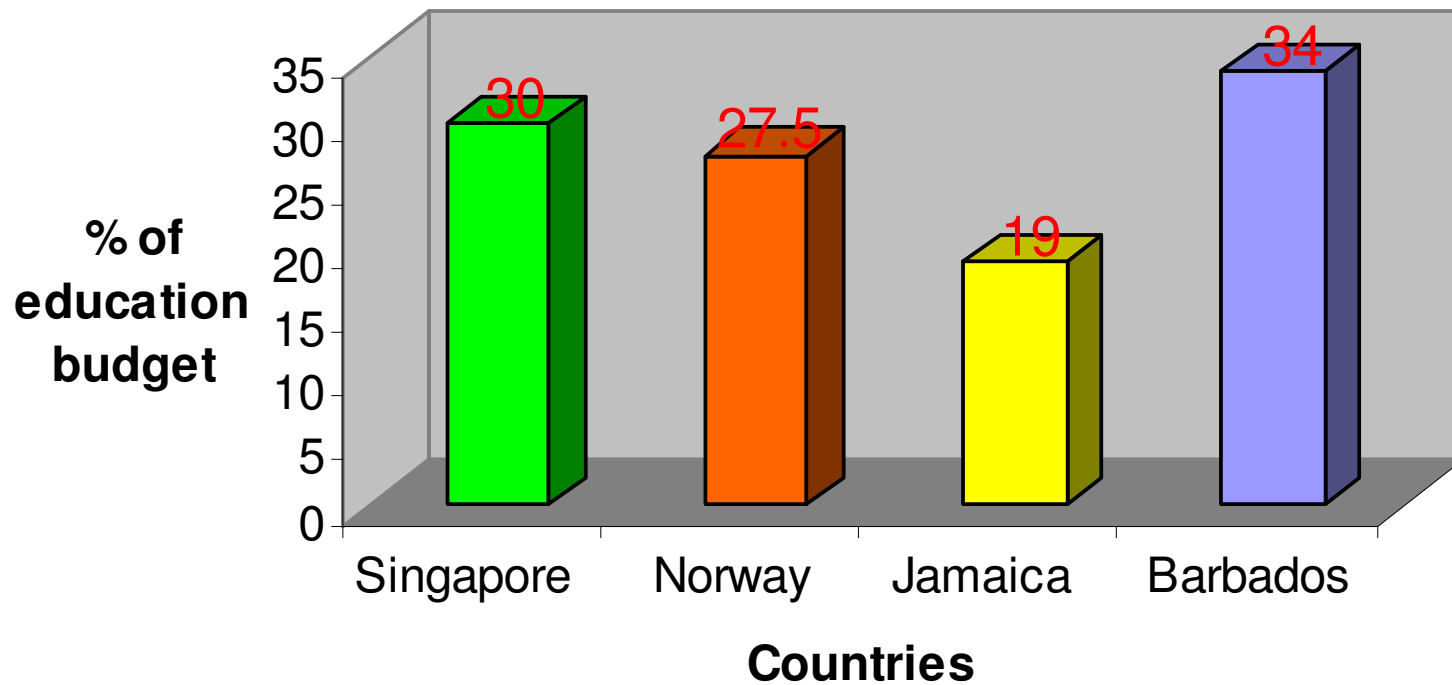
Country	Adult Literacy (%)	Public Expenditure on Education (% of GDP)	Average per capita expenditure per student (US\$ '000')	Tertiary education (% of population)
Norway	100	7.6	14.0	40
Singapore	95.0	3.5	5.0	25
Jamaica	88.0	6.1	1.2	8.3
Barbados	99.7	7.3	n/a	n/a
Trinidad and Tobago	98.5	4.3	n/a	n/a



Source: Human Development Report, 2005, Education Fact Sheet, 2005, Ministry of Education Singapore, Population Census, Jamaica 2001, UNICEF, Country Reports, 2005, OECD Tertiary Review, Norway, 2006.



Expenditure on Tertiary Education in Selected Countries






Research & Development

Expenditure on R&D and Researchers in R&D, 2005

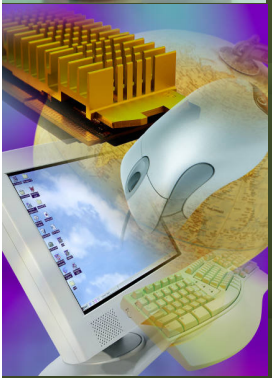
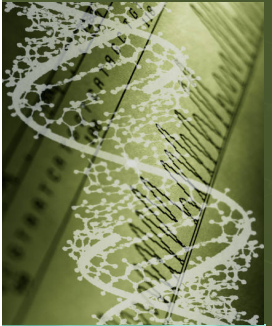
Country	R&D Expenditure (% GDP)	Number of researchers in R&D (per million persons)
Jamaica	0.3	n/a
Latin America and the Caribbean	0.6	261
Norway	1.8	4,587
Singapore	2.15	4,745
Developed Countries	2.3	3273
World	1.7	894



Source: World Development Report, 2006, S&T Indicators Report, 2005, UNESCO Science Report, 2005

Intellectual Property Rights (IPR)

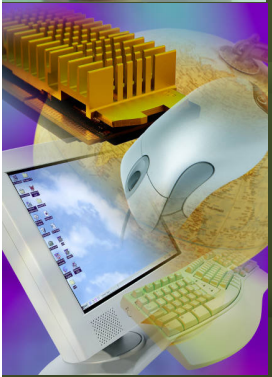
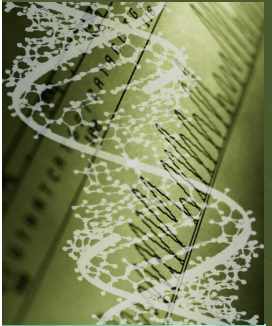
- In 2004, resident patent filings per million people in Norway were 335, 147 for Singapore
- Patent filings for Jamaica over the five year period (2000-2005) totaled 23 per million people
- Patents last for 20 years in Singapore and Norway
- 14 years in Jamaica with option to renew for another 7 years
- Norway and Singapore have both signed on to the Patent Cooperation Treaty (PCT) and have filed significant patent applications. Jamaica is not a member of the PCT.



Barriers

Some of the barriers stifling innovation include:

- Lack of STI culture
- Inadequate science education
- Unavailability of R&D funding

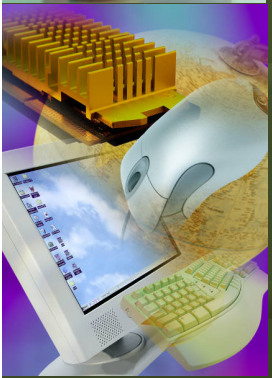
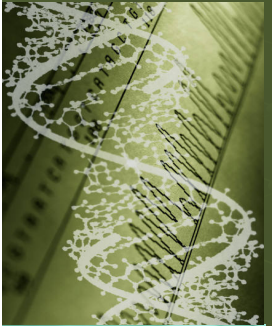


Number Of Jamaican Students Sitting Selected S&T Subjects at the General Proficiency Level, Caribbean Examination Council, 2000-2005

SUBJECT	2000	2001	2002	2003	2004	2005
Agricultural Science (Single Award)	935	1 043	1 263	594	653	676
Agricultural Science (Double Award)	280	314	397	295	324	358
Biology	3 696	3 610	3 779	4 069	3 698	4 661
Chemistry	2 471	2 469	2 646	2 905	2 575	3 597
Information Technology	3 538	3 823	4 628	6 018	5 360	6 545
Mathematics	16 095	16 558	17 124	16 983	15 489	15 958
Physics	2 368	2 502	2 509	2 613	2 196	3 071

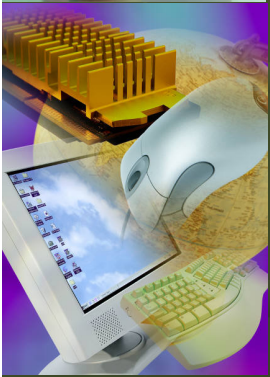
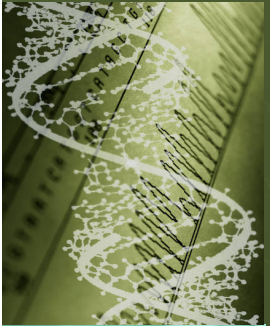
Recommendations

- Jamaica must create a scientific and technological culture where technology is not only consumed but created.
- There should be strong links among research bodies, tertiary institutions and industry to stimulate innovation and boost economic development.



Recommendations con'td

- Government funding for R&D, should be increased to at least 1 per cent of GDP in medium to long term and then to at least 2 per cent in the long term to be on par with developed countries.
- Forging strong, sustainable public-private sector partnerships is essential for stimulating, funding and maintaining R&D.
- There should be continued emphasis on stimulating the growth of small and medium enterprises and entrepreneurship



Conclusion

- Jamaica has made strides in stimulating innovation
- However there are gaps that must be addressed if Jamaica wants to achieve developed status by 2030.
- The countries within the CSM requires openness, new skills, innovation and creation and transfer of technology which will allow countries to successfully compete globally and enjoy high standards of living.

