‘STE(A)M’ & I for CARIBBEAN DEVELOPMENT

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NATIONAL COMMISSION ON SCIENCE & TECHNOLOGY, JAMAICA
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‘THERE ARE SOME THINGS WHICH WE IN THE CARIBBEAN WILL DO BEST ... AND THERE ARE SOME THINGS WHICH ONLY WE IN THE CARIBBEAN WILL WANT TO DO’

...SIR ARTHUR LEWIS...1960s
TRAINING

SCIENCE ...... DISCOVERY/CULTURAL

TECHNOLOGY ...... APPLICATIONS

ENGINEERING ...... ALL MODES

ARTS ................... EXPRESSION

MATHEMATICS ..... MEASUREMENT
SINCE 1980, GRADUATE EDUCATION more emphasised IN THE REGION
GRADUATE STUDIES

* MORE INNOVATION

* CRITICAL ANALYSIS

* ADOPT & ADAPT BEST PRACTICES

* FORESIGHTING
FINANCING 3yr Education

* GOVERNMENT SUBSIDIES

* PRIVATE SECTOR

* STUDENTS LOAN SCHEMES

* SELF
<table>
<thead>
<tr>
<th>GRADUATES</th>
<th>% RATE OF RETURN ON MONEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURE &amp; APPLIED SCIENCES</td>
<td>39</td>
</tr>
<tr>
<td>AGRICULTURAL SCIENCES</td>
<td>38</td>
</tr>
<tr>
<td>LAW</td>
<td>35</td>
</tr>
<tr>
<td>BUSINESS</td>
<td>34</td>
</tr>
<tr>
<td>SOCIAL SCIENCES</td>
<td>19</td>
</tr>
<tr>
<td>Engineering &amp; Computing</td>
<td>18</td>
</tr>
<tr>
<td>Humanities / Education</td>
<td>13</td>
</tr>
</tbody>
</table>
NEEDS

Nursing
Land surveyors
Pharmacists
Teachers
Engineers

(Ja. 2010)
EXTREME SHORTAGE

ARCHITECTURE

SCIENCES - APPLIED ...eg engineering, agriculture, environment

LAW...intellectual property, sports, sea

BUSINESS & MANAGEMENT
3yr centres of excellence
WORLD BANK (2004)

GOLD STANDARDS FOR RESEARCH-BASED INSTITUTIONS:

- ARTISTS, SCIENTISTS, ENGINEERS, TECHNOLOGISTS, INNOVATORS  > 30% OF ACADEMIC STAFF.
WB stds

REGISTRATION OF
~ 500
PATENTS/COPYRIGHTS /
TRADEMARKS per
1m popn /yr.
WB stds

- EARN ROYALTIES/LICENCE FEES > US$100/1000 popn/yr
CARIBBEAN UNIVERSITIES

- LINK WITH INSTITUTIONS, NATIONALLY, REGIONALLY AND INTERNATIONALLY
CARIBBEAN UNIVERSITIES

NB: CONSULTANCIES

2% VS 98%
IN THE OECD

R & D ~ 50% GDP

GOVT & PRIVATE SECTOR COMBINED ~ 31% BUDGET ON R & D (ST & I)
CARICOM

SPENDS <0.1% OF BUDGET ON R & D

R & D CONTRIBUTE < 1% GDP
<table>
<thead>
<tr>
<th>Region</th>
<th>% GDP*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>3.2</td>
</tr>
<tr>
<td>Rep. of Korea</td>
<td>3.0</td>
</tr>
<tr>
<td>North America</td>
<td>2.7</td>
</tr>
<tr>
<td>Singapore</td>
<td>2.4</td>
</tr>
<tr>
<td>Caribbean</td>
<td>0.13</td>
</tr>
</tbody>
</table>

*Source: UNESCO institute for Statistics, 2004*
Caribbean Council for S & T recommends that Caribbean Govts should spend ~3% of GDP on active R&D
CARIBBEAN NICHE MARKETS

MUSIC (reggae-dancehall, calypso, steelpan)

TOURISM (all incl, eco-, health-, cuisine...jerk)

SPORT (athletics, cricket, netball)
<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>VALUE ADDED/ US$</th>
<th>LABOUR PRODUCTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music/Sport</td>
<td>6.18</td>
<td>1.33</td>
</tr>
<tr>
<td>Radio &amp; TV</td>
<td>4.25</td>
<td>1.46</td>
</tr>
<tr>
<td>Horse Racing</td>
<td>3.81</td>
<td>5.65</td>
</tr>
<tr>
<td>Movies &amp; Video Production</td>
<td>3.63</td>
<td>1.59</td>
</tr>
<tr>
<td>Publishing</td>
<td>2.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Advertising</td>
<td>2.37</td>
<td>1.89</td>
</tr>
<tr>
<td>Telecoms</td>
<td>1.49</td>
<td>4.25</td>
</tr>
</tbody>
</table>
THE NICHE MARKET NEEDS:

- RESEARCH
- INNOVATION
- ADAPTATION
- TECHNOLOGY SUPPORT
CARICOM Development
Govt & private sector partnerships in ST & I

... & attract *Foreign Direct Investment* ... (Diaspora)
FOCUS on domestic industries
e.g.: tourism, foods, energy, agriculture and nutraceuticals
JAMAICA

- National Nutraceutical Industry...

plants, animal products & minerals (land & water)
JAMAICA

- Ginger, Coffee, Cocoa
- Honey
- Limestone *(pharmaceutical)*
- Spas ........ *(S, P, Ca & low radioactivity)*
3yr Education for Sustainable Development

- relevant to niche
- practical/applied
- eg: nutraceutical farming
Sustainable Development... *crisis*

The avg worker’s formal schooling:

<table>
<thead>
<tr>
<th>yrs</th>
<th>country</th>
</tr>
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<tbody>
<tr>
<td>9.5</td>
<td>jm</td>
</tr>
<tr>
<td>10</td>
<td>t &amp; t</td>
</tr>
<tr>
<td>10.5</td>
<td>b’dos</td>
</tr>
</tbody>
</table>
Sustainable Development... *crisis*

**Graduate pursuits are NOT geared to country needs** *but* rather to maximal ROI in 3ry education

*V James, 2006*
Sustainable Development... crisis

NB:

THE LAND OF OPPORTUNITY

UP NORTH....
Train our Human Resources

...and keep them within our shores,

...plus promote a ‘brain gain’ from the diaspora
The Mantra

- C ...creating capacity
- O ...offering opportunity
- R ...research & relevance
- E ...emphasising excellence
POPULARISING ‘STEAM & I’

THE PEOPLE

- QUIZZES
- AWARDS
- EXPOS
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...SIR ARTHUR LEWIS..1960s
May we like him ponder upon these thoughts!!!...

...and the work goes on.....

...thanx much!