



ISSN: 0975-766X  
CODEN: IJPTFI  
Research Article

Available Online through  
[www.ijptonline.com](http://www.ijptonline.com)

## PHARMACISTS' EXPECTATIONS OF THE GREEN ECONOMY EVOLUTION AND ITS IMPACT ON THEIR TRADE IN A DEVELOPING COUNTRY

Sandeep Maharaj\*\*, Sureshwar Pandey\*\*, Alicia Ramdial\*\*, Florence Jobe\*\*, Indra Pamela Mohammed\*\*, Carin Flores\*\*, Gracious Mathologodi\*\*, Robin M. Antoine\*\*\*, Isaac Dialsingh\*\*\* and Ashok Sahai\*\*\*

\*\* School of Pharmacy, Faculty of Medical Sciences, The University of the West Indies,  
St Augustine Campus, Trinidad and Tobago.

\*\*\* Department of Mathematics and Statistics, The University of the West Indies,  
St Augustine Campus, Trinidad and Tobago.

Email: [sahai.ashok@gmail.com](mailto:sahai.ashok@gmail.com)

Received on 25-05-2012

Accepted on 12-06-2012

### Abstract

The emergence of the green economy represents the next stage in the evolution of the environmental sector. Its growth is in step with increasing public awareness of environmental impact<sup>1</sup>. At its most basic level, the green economy is the clean energy economy, consisting primarily of four sectors: renewable energy (e.g. solar, wind, geothermal); green building and energy efficiency technology; energy-efficient infrastructure and transportation; and recycling and waste-to-energy. This paper looks at the expectations of pharmacists taken from 37 retail pharmacies in Trinidad and Tobago with the introduction of the concept of the green economy with respect to the retail industry in Trinidad and Tobago. The main areas we address are the human resource implications and other likely impacts of green pharmacy in Trinidad and Tobago. In addition, we determine the pharmacists' views on going green.

### Introduction

Greater public awareness, together with government policy, regulatory requirements and financial incentives, influence organizations to embrace green technology and adopt greener practices. Companies operating in almost every sector of the economy now consider the 'greenness' of their operations in decisions that differentiate their products and services, realizing that in many cases their decisions present long-term cost saving opportunities<sup>2</sup>.

No set financial standard has yet been made for measuring performance of green companies. In addition, most companies produce a combination of green and non-green products, so it is not always possible to differentiate between their relative impact.

The current economic situation has forced pharmaceutical companies to re-think their stand on Environmental, Health and Safety (EHS) policies and by extension the green economy. There is need to examine how pharmaceutical industries can go green using less hazardous chemical synthesis, designing energy efficient methods of production hence moving towards pollution prevention.

Numerous companies have started moving towards a green and more efficient method of doing business. Some of the growing needs for small businesses in the UK such as being more independent of the price of fossil fuel and being able to access financing for such purposes<sup>3</sup>.

The pharmaceutical manufacturers have also gone in the direction of a more green industry. Johnson & Johnson now has 30 products in its Earthwards portfolio of environmentally conscious health care and pharmaceutical products, with 19 added to the range in 2011. It is now halfway towards its goal of having 60 products in the line by 2015<sup>4</sup>. Pfizer has saved an average of \$1.4 million annually between 2004 and 2009 by installing energy-efficient light fixtures, timers and occupancy sensors at all of its Kalamazoo County, Michigan facilities. This savings amounted to \$2.6 million in 2009<sup>5</sup>. In addition, a thermal oxidizer that serves Pfizer's Kalamazoo County manufacturing sites reduced natural gas use by 65 percent and cut carbon-dioxide (CO<sub>2</sub>) emissions by 2,570 tons. Savings amounted to \$350,000 in energy costs. Novo Nordisk exceeded long-term targets for reducing CO<sub>2</sub> emissions, water consumption and total energy consumption, while increasing its workforce by 8 percent and sales by 12 percent in 2009, according to the company's integrated annual report. The pharmaceutical company reduced CO<sub>2</sub> emissions by 32 percent and water consumption by 20 percent in 2009. Novo Nordisk surpassed its 2014 target of a 10 percent absolute reduction in CO<sub>2</sub> emissions, compared to 2004 at the end of 2009, due to energy savings in all global production facilities, despite continual increases in production. The company's energy consumption in Denmark has dropped by 30 million kWh<sup>6</sup>.

The concept of implementing *green economy* concepts within the retail pharmacy industry is not a totally new ideal. In the US, the CVS chain of retail pharmacies has taken some steps in this direction. All CVS pharmacies offer the Sharps Compliance Corp.'s Environmental Return System, which provides customers with the ability to safely dispose of unused medication. Under the system, unwanted prescription and over-the-counter medication is placed in a prepaid envelope, which is then mailed through the U.S. Postal Service to a licensed, secure facility for safe

destruction. An estimated 200 million pounds of unwanted medication are improperly disposed of every year. Leftover and unused pharmaceuticals continue to be a major hazard since the opportunity exists for abuse if these are not properly disposed of<sup>7</sup>.

The purpose of this research is to gather descriptive information from pharmacists on the twin island of Trinidad and Tobago concerning their views, possible human resource needs and some other impacts of instituting a green pharmacy approach. This country is situated at the Southern end of the Caribbean - Northeast of Venezuela; measures 5,128 square kilometers and comprises a population of 1,229,953<sup>8</sup>. We describe the methodology employed then we give a table of the results.

### Methodology

A questionnaire with 18 questions was distributed to 37 pharmacists during the period June-July 2011. Questions incorporated all aspects of operating a retail pharmacy. This included Manufacturers, Employees, Employers, the Pharmacy Board, Educators and the Government's role.

The pharmacists were randomly selected and were from both the Public and Private sectors. Regional Health Authority (RHA) pharmacies were excluded since RHA pharmacists had no role in recruiting staff or drug procurement in terms of the tendering process.

Using a five-point Likert scale (1-5 rating scale) the pharmacists' expectations of the green economy were determined. A Likert scale is a type of psychometric response scale often used in questionnaires, and is the most widely used scale in survey research. The format of this Likert scale was; Strongly Agree, Somewhat Agree, Neutral, Somewhat Disagree and Strongly Disagree.

### Results

The results are summarized in Table 1.

		<b>Strongly agree</b> N (%)	<b>Somewhat agree</b> N (%)	<b>Neutral</b> N (%)	<b>Somewhat disagree</b> N (%)	<b>Strongly disagree</b> N (%)
<b>1</b>	<b>The move towards a green economy has caused you to re-evaluate your business operations</b>	7 (19.0%)	<b>15</b> (40.5%)	14 (37.8%)	1 (2.7%)	0
<b>2</b>	<b>The shift to a green economy requires the need for change in job</b>	<b>17</b> (50.0%)	15 (40.5%)	3 (8.1%)	1 (2.7%)	1 (2.7%)

	skills and knowledge					
3	The shifting economy will cause you to lay off staff	1 (2.7%)	7 (18.9%)	11 (29.7%)	<b>13</b> <b>(35.1%)</b>	5 (13.5%)
4	There is a need to train staff in green economy product sales	<b>18</b> <b>(48.6%)</b>	15 (40.5%)	3 (8.2%)	1 (2.7%)	0
5	You consider yourself flexible and innovative in moving towards a green economy	<b>18</b> <b>(48.6%)</b>	16 (43.3%)	1 (2.7%)	2 (5.4%)	0
6	It is easy finding employees with the right set of skills for selling new green products	0	4 (10.8%)	12 (32.4%)	<b>15</b> <b>(40.6%)</b>	6 (16.2%)
7	Green energy, renewable resources and low carbon industries are the way forward	<b>21</b> <b>(56.7%)</b>	13 (35.2%)	1 (2.7%)	2 (5.4%)	0
8	Your business is ready for shopping online in this era of technological growth	2 (5.4%)	10 (27%)	<b>17</b> <b>(50.0%)</b>	4 (10.8%)	4 (10.8%)
9	Used Materials should be recycled whenever possible	<b>29</b> <b>(78.3%)</b>	2 (5.5%)	5 (13.5%)	---	1 (2.7%)
10	You agree with the reduction in use of fossil fuels	<b>22</b> <b>(59.4%)</b>	14 (37.8%)	1 (2.7%)	0	0
11	There should be an increase in drugs produced by biotechnology	<b>19</b> <b>(51.3%)</b>	12 (32.5%)	5 (13.5%)	1 (2.7%)	0
12	Green manufacturing practices can save money in the pharmaceutical industry.	13 (35.2%)	<b>16</b> <b>(43.2%)</b>	6 (16.2%)	2 (5.4%)	0
13	Pharmacist need to be educated about green chemistry.	<b>25</b> <b>(67.6%)</b>	11 (29.7%)	1 (2.7%)	0	0
14	Pharmacy board needs to implement laws for the operation of the green economy	<b>17</b> <b>(45.9%)</b>	9 (24.3%)	7 (18.9%)	4 (10.9%)	0
15	The citizens of Trinidad and Tobago need to be made aware of the benefits of the green products	<b>30</b> <b>(81.1%)</b>	7 (18.9%)	0	0	0
16	Guidance is needed to purchase green products developed by pharmaceutical companies	<b>25</b> <b>(67.5%)</b>	12 (32.5%)	0	0	0
17	A green product rating system should be developed by pharmaceutical companies.	16 (43.3%)	<b>17</b> <b>(45.9%)</b>	3 (8.1%)	1 (2.7%)	0
18	Goals should be set on producing more green pharmaceutical options	16 (43.3%)	<b>18</b> <b>(48.6%)</b>	3 (8.1%)	0	0

Table 1: Summarized responses.

## **Discussion**

It may be seen from question 1 in Table 1 that a large proportion (40.5%) of pharmacists in Trinidad and Tobago somewhat agrees that green pharmacy would require them to change their day-to-day operations.

## **Pharmacist Views on Going Green**

Over 90% of pharmacists surveyed are in agreement with a reduction in fossil fuel use (Question 10). Seventy eight percent (78.3%) of them are in agreement with the use of recycled material (Question 9) and 83% of them would like to see a greater shift towards biotechnology manufacturing (Question 11). Over 75% perceive that the green pharmacy can save money (Question 12) however, only 32.4% of the respondents think their business has the technological platform to really move towards green pharmacy (Question 8).

## **Human resource Implication of the Green Economy**

A large number of respondents (86.4%) agree that this new economy will require their staff having new skills (Question 2); however 89.2% are either neutral or are in disagreement that the proper staff exists to run the green pharmacy (Question 6). Given this need, only 21.6% are in agreement with laying off staff (Question 3). This clearly shows that even though a large number of persons think the green economy will have significant changes to the retail pharmacy industry only a few are willing to lay off staff. They rather retrain current staff (Question 4). This may be due to them think the core pharmacy business will remain the same and it is really inexpensive to retrain staff rather than hire new trained staff. It can also be due to the fact they do not think there are staff to run this new industry out there and hence it may be better to just retrain current staff.

## **Impact of green Pharmacy in Trinidad and Tobago**

Approximately 90% of pharmacists are either in support of or neutral to the view that the pharmacy board should implement green pharmacy laws (Question 14). In addition, all agree with increased awareness and increasing guidance towards the use of green product and green pharmaceuticals (Questions 15 and 16). Finally, all were in agreement with or neutral towards goal creation for new green pharmaceutical products (Question 18).

## Conclusion

From this study, it can be seen that pharmacists clearly view a green economy as being important and as having an impact in Trinidad and Tobago. The research lays the groundwork for detailed systematic research into regulatory and human resource changes to ensure this succeeds.

## References

1. ECO Canada, Defining the Green Economy. (Labor Research Study 2010). <http://www.eco.ca/pdf/defining-the-green-economy-2010.pdf>
2. Kate Gordon and Jeremy Hays, Green-Collar Jobs in America's Cities: Building Pathways out of Poverty and Careers in the Clean Energy Economy (Apollo Alliance and Green for All, 2008). <http://www.apolloalliance.org/downloads/greencollarjobs.pdf>
3. Available from [http://www.businesslink.gov.uk/Horizontal\\_Services\\_files/Enabling\\_the\\_Transition\\_to\\_a\\_Green\\_Economy\\_\\_A\\_Gu\\_1.pdf](http://www.businesslink.gov.uk/Horizontal_Services_files/Enabling_the_Transition_to_a_Green_Economy__A_Gu_1.pdf)
4. Available from: <http://www.environmentalleader.com/2012/03/02/johnson-johnson-expands-green-product-range/>
5. Available from: <http://www.environmentalleader.com/2010/10/07/energy-efficient-measures-saves-pfizer-2-6m-in-2009/>
6. Available from: <http://www.environmentalleader.com/2010/02/08/novo-nordisk-cuts-co2-emissions-by-32-water-use-by-20/>
7. Available from: <http://www.environmentalleader.com/2011/08/17/all-cvs-locations-now-recycle-unwanted-medication/>
8. Central Intelligence Agency (2009). The World Fact Book. Trinidad and Tobago. <https://www.cia.gov/library/publications/the-world-factbook/geos/td.html>.

## Corresponding Author:

**Sandeep Maharaj\***

**Email:** [sandeepmaharaj@hotmail.com](mailto:sandeepmaharaj@hotmail.com)