European Journal of Sustainable Development (2018), 7, 3, 517-522 ISSN: 2239-5938
Doi: 10.14207/ejsd.2018.v7n3p517

Contemporary Development and Sustainability Indicators at the Royal Commission of Yanbu

Ayedh A.AlShehai[1]

ABSTRACT
Contemporary development in the Royal Commission of Yanbu (RCY) relies on the comprehensive set of sustainability indicators which have been developed through forty years of experience and studies. The city was built in 1974, with the concept of sustainable development for the oil and petroleum industries which serves the community with a population of 115,000. Recently, the RC won many international awards in development under the United Nation Development Program (UNDP) which is considered an indicator for positive progress in sustainability. The aim of this paper is to explore twelve sustainability indicators implemented at RCY. The proposed sustainability indicators were contributed by nine divisions. The methodology in selecting indicators in terms of measurable success was crafted through the knowledge of local and international organizations such as UNDP, European Union (EU), and Environment Protection Agency (EPA). The findings show that RCY has predominantly made excellent progress in sustainability by accomplishing the goal of efficiency in resources and materials. There are twelve categories designed for sustainable development at the RCY. It contains a comprehensive set of indicators updated annually. In conclusion: sustainability indicators influence the growth of income and made harmonious between the economies and the community at RCY.

Keywords: sustainability indicators, quality of life, sustainability development, harmony, industrial, economy and communities, environment.

1. Introduction

Sustainability is the spirit of the modern approach for alerting people of a problem before it's happened, and direct policy makers to which way to go for the best solution Charles, et al, [1]. From the literature review, as the definitions of sustainability are various, this is defined according to the frame of reference. However, in this paper the author focused on sustainability for a city which is designed for the petroleum industry. It required common developing pillars at any society; these are economy, community, as well as resources. More factors are developed with the relapse of time and added to the three pillars which shaped the current practice of sustainability development at the RCY. Moreover, the Environment Protection and Control Department (EPCD) at the RCY have contributed to the all of these pillars through policy and regulation to conserve past and future achievement. The sustainability concept at RCY became the first priority, which is involved in every project at the city. The RCY is responsible to implement the concept of sustainability from the start to the construction until operation [2]. According to the EPA Sustainability: "*to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations*" [3]. The UN definition of sustainability

[1]Royal commission of Yanbu, Environment and control department, Yanbu, Saudi Arabia.

development is *"meets the needs of the present, while improving the ability of future generations to meet their own needs*" [4]. RCY accommodates various views of global institutes and organizations such as EPA and UNDP into the Environment Regulation (RC-ER). However, national considerations for status of the basic support system are taken into account which gives clear vision on sustainability as well as indicator for Saudi Arabia. Brown et al, said that "*A clearer understanding of global sustainability and the development of appropriate indicators of the status of basic support systems would provide a useful framework for policy making*"[5]. Moreover, indicators require a demonstration of value to the organization, Meadows said that "*Indicators arise from values (we measure what we care about), and they create values (we care about what we measure*)" [6].

2. RCY Vision and mission toward sustainability development

The Vision of the Royal Commission is to be the best choice for investors in petrochemical and energy-intensive industries and the leading contributor to the Kingdom's growth. The Mission of the Royal Commission is to: "s*ustainability in planning, promoting, developing and managing Petrochemical and Energy intensive industrial cities though successful customer focus and partnerships with investors, employees, communities and other stakeholders*" [7].

2.1 RCY sustainability development objectives are:

- Developing best-in-class industrial cities and attractive urban communities.
- Providing top quality, responsive services to the tenants and the community, at the most optimal cost.
- Ensuring availability of top education, healthcare, social and security services, and enforcing world-class environmental and safety.
- Ensuring availability of top city infrastructure and services.
- Achieving financial sustainability, and developing private sector participation.
- Attracting, developing and retaining qualified employees at all levels.

2.2 Designing RCY with the concept of sustainability development

Yanbu Industrial City is a modern manufacturing and residential community located on Saudi Arabia's Red Sea coast 350 kilometres. Built from scratch in less than two decades, two long pipelines were built to connect east and west coasts of Saudi Arabia, ensuring steady supplies of oil and gas in Yanbu to be transformed into refined products and feedstock for petrochemical industries, as an outgrowth of the country's drive toward industrial diversification. Yanbu is now the largest crude oil export terminal on the Red Sea and a leading manufacturing centre for petroleum products, petrochemicals, and consumer items. 16 major plants in (RCY) industrial park are helping satisfy local and world demand for refinery products, petrochemicals, and other commodities. Approximately 70 smaller manufacturing and 30 support industries are also in operation, while several more plants are being designed or constructed. Royal Commission capital is $221 billion – the highest for any city in the country. Annual economic growth rate is 18 % and investment growth is 5.8 %.

2.3 RCY Desirable, traditional and contemporary indicators

The main goal of sustainability must be in general, flexibility, relevance and adaptability to the needs of countries according to capacities and priorities [8]. The result of other studies showed that the traditional sustainability focuses on [9, 10, 11]: environmental development economic development social development.

Additionally, the RCY added more indicators to measure its performance with a comprehensive set of indicators that could tackle many aspects for improving the quality of life [8]. It originated between the strategic planning department and other pertinent department. Furthermore, the RCY in general emphasises on quality of living standards at all levels. Therefore, the following indicators serve the city according to the strategic vision for quality of life. The indicators are as follow: economy and finance, housing, education, energy, environmental best practise, strategic planning, health, telecommunication, urban planning, waste (water, solid), and sanitation.

2.4 RCY Methodology for sustainability indicators

Annually, The RC evaluates the sustainability indicators through three teams. The first team come from the concern departments which provide desired indicators which could help accomplished the objective against the goals. The next step is writing the report to the strategic and planning department. The second team is the RCY higher management consultant team for review and assessment. The third team is the external reviewer from the UN under a memorandum of agreement between the RCY and UNDP. The project titled "Evaluation of the Status of Sustainability in Madinat Yanbu Al-Sinaiyah (MYAS)" is part of the cooperation between Royal Commission of Yanbu and United Nations Development Program (UNDP) on sustainability. Additionally, the methodology provides a reliable and valid application of sustainability development. This process identifies the strengths and weaknesses of the indicators at each category. The sustainability report is produced every year for assessment by higher management and shares the best practice of sustainable development at the RCY.

2.5 Sustainability indicators at the RCY

The RCY is the Saudi vanguard for developing the petrochemical and refinery industry. Local and international experience added their contribution determining the best practices of sustainability development. RCY tested their sustainable development indicators through many judgements teams locally and internationally. Recently, RCY won many awards under the UN program of sustainability development such as UN LivCom award in 2013 as well as UNEP Sasakawa Prize. The RCY achieved recognition as the third city in the world for sustainable communities. Additionally, the RCY won the prize for first city in environment management "2014 Kingdom's International Award for Environmental Management". The following section demonstrates the detail of the twelve categories that shape and drive the sustainability development at the RCY, and it contains a comprehensive set of indicators. Internally, the comprehensive set of indicators designed as a questionnaire and answers dialogue that present the progress of the performance of the RCY. Moreover, the following categories are the outcome of the process of selecting sustainability indicators. Each category consists of a list of indicators to be reported in standardized format according to Sustainability Reporting Guidelines

(SRG). The categories and the indicators as follow:

2.5.1 Industrial and Economy growth

Table 1 Industrial and Economy growth indicators

Number of industrial rate	Diversifying investment	City unemployment rate
Material supply	Innovation	Employee turnover Rate

2.5.2 Financial support

Table 2 Financial support indicators

Own-source revenue	Income rate
Financial stress	Tax rate

2.5.3 Housing

Table 3 Housing indicators

Housing affordability	Housing waiting list
Homeownership rate	Annual vacancy rate
Company-owned housing	Privately-owned housing

2.5.4 Education

Table 4 Education indicators

Educational attainment	Primary education	students completing primary education	Students completing secondary education
Early development	Female school-population	Male school-population	Students completing high education
Early development	Primary education school	Secondary education school	High education school
Number of higher education	Cultural Diversity in education	Knowledge transfer	School Ranking

2.5.5 Energy efficiency

Table 5 Energy efficiency

Energy supply	Energy efficiency policy
Electrical energy use	Energy consumption of public
Electrical interruptions	Renewable energy supply

2.5.6 Environment best practise,

Table 6 Environment best practice

Air quality	Marine	Disaster preparedness and response	Mangrove
Water quality	Greenhouse gas emissions	Monitoring discharge	Hazard waste control
Lab machine and dives availability	Particulate matter measurement	Study and research	Climate change

Renewable Energy	Lab services	Awareness program	Inspection
Penalty	Sustainability report	Environment impact assessment	Industrial waste Recycling

2.5.7 Strategic planning

Table 7 Strategic planning

Customer Satisfaction	Short term actions
Long term actions	Annual Business Plan
Guidance system	Master plan
Investment expenditure	Revenue generation

2.5.8 Healthy and community life style

Table 8 Healthy and community life style

Numbers beds	Number of physicians
Asthma hospitalization rate	Health care as percent of income
Death from incidents	Death from disease
Birth weight infants	Prenatal care
Number of in-patient hospital	Number of nursing
Population living in slums	Community engagement
Household crime and	Cultural Diversity

2.5.9 Telecommunication

Table 9 Telecommunication

Smart city project	Internet connections
Cell phone connections	landline phone connections
Equipment availability rate	

2.5.10 Urban planning

Table 10 Urban Planning

Site Development plan	GIS
Traffic planning	Geometric database availability
Development control	Land survey

2.5.11 Waste (water, solid) Sanitation

Table 11 Waste (water, Solid) sanitation

Water availability	Water consumption per capita	Water service interruption	City waste recycling rate
Waste disposed to landfill	Quantity municipal solid waste	Quantity industrial solid waste collection	Wastewater Treatment rate
Sea discharge control	sanitary landfill	Hazardous Waste Generation	Landscaping and irrigation rate

2.5.12 Transportation

Table 12 Transportation

Option of transport to work	Kilometres of high capacity public transport system	Incident rate
Vehicle and passenger kilometres travelled	Travel time to work	Annual number of public transport trips
Transportation fatalities	Bicycle paths	Personal automobiles

Conclusion

The RCY structure is complicated and required an appropriate practice and methodology of sustainability development to figure suitable indicators. Moreover the indicators can be a powerful tool in addressing the status of the sustainability in the organization. RCY should manage and build their activities with the principles of sustainable development [6]; otherwise it will reinvent the wheel. Sustainability indicators must come from inside the organization not from outside. However, effective indicators should be easy to understand and reliable and can be trusted. The outcomes of the qualitative and quantitative data need a careful review, since it provides the organization with appropriate information and status on targeted and future goals. The indicators should provide a roadmap for higher management in achieving the Royal Commission's strategic objectives. Additionally, it can be used as tangible tools for assessing performance. The indicators can assist the organization by addressing action plans for future development, as well as areas which need organizational improvements.

References

[1] Charles J. Kibert L, Thiele Anna Peterson Martha Monroe *The Ethics of Sustainability* (2012).
[2] Royal Commission Environmental Regulation (RCER) Volume II, section A pp. 4- section W pp5, 2010.
[3] Federal Register. "*Federal Leadership in Environmental, Energy, and Economic Performance*" into the Agency's Green Purchasing Plan. Washington D.C October 8, 2009.
[4] World Commission on Environment and Development. "*Our Common Future"*. Oxford: Oxford University Press ISBN 019282080X. pp. 27. (1987)
[5] Brown, Becky J., Mark E. Hanson, Diana M. Liverman, and Robert W. Merideth, J. "*Global Sustainability: Toward Definition*." Environmental Management 11 (6): pp 713-719. 1987
[6] Meadows, D. "*Indicators and Information Systems for Sustainable Development"*, The Sustainability Institute, Hartland VT, USA1998.
[7] Royal commission "*Annual business report (ABR)* " \ page 12, 2015
[8] United Nations publication "*Sustainable Development Challenges*" Department of Economic and Social Affairs ISBN 978-92-1-109167-0 United Nations, New York, 2013
[9] Fiksel J , Eason T, Frederickson H" *A Framework for Sustainability Indicators" at EPA pp* 2012
[10] J. Keeble, S Topiol, S Berkeley "*Using Indicators to Measure Sustainability Performance at a Corporate and Project Level"*. Journal of Business Ethics May 2003, Volume 44, Issue 2-3, pp 149-158
[11] United Nations publication "*Indicators of Sustainable Development: Guidelines and Methodologies"* Third Edition Sales No. E.08.II.A.2 ISBN 978-92-1-104577-2 pp 29-40, October 2007