Measurement framework for assessing Iran's provincial state in terms of green economy concept

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Expanded Abstract

Introduction

The concept of green economy was first introduced in 1989 by a group of environmental economists aiming at setting up operational sustainability agendas, developing a framework for measuring the rate of economic progress in the form of a report for the UK government. Following these efforts, in 1991 and 1994, reports titled as blueprint 2: Greening the world economy and blueprint 3: Measuring Sustainable Development was re-published. In 2008, this concept was revived by the United Nations Environment Program (UNEP), which supported the idea of "green stimulus package" for certain areas where massive public investment leads to green growth. Also, in April 2009, a Global Green New Deal (GGND) report, including a series of operational restructuring policies for the economy, was published by one of the authors of the Green Economy Blueprint.

As a summing up of all existing definitions, the green economy is defined as a new redefinition of the concept of sustainable development and the new 21st century model of economically sustainable, low-carbon economy with low emissions that respects ecological frameworks and capacities while supporting peaceful coexistence of human and nature. Having this introduction with the intention of answering the main question of "What is the status and position of Iranian Provincial Regions in terms of the Green Economy Concept?" the present paper aims to "formulate a proper framework for assessing the analogical situation of the Provinces according to the concept of the green economy" and "pathology situation of the regions". Due to the incomplete conventional global benchmarking methods in the regional analogical assessment, in this research, the proposed methodology of a multi-sections based on the typological analysis has been used in the framework of PSR-analysis (pressure-state-response).

As the outputs of this research, the regions are divided into six groups: (non-developed), unsustainable regions, unpredictable growth regions, protective and distributive areas, the emerging areas towards the green economy and the green economy regions. Four approaches to absolute protection/ prevention, contingency or restorative, sustainability and ecological innovation have been proposed base on the location.

Materials and Methods

In this study, meta-synthesis methodology has been used to infer the proposed operational framework as a result of the reviewing the operational frameworks in the world. Based on this methodology as well as the frameworks of the main sources and references in the field of green economy indices, the proposed pressure-state-response model of the Organization for Developmental-Economic Co-operation, the conceptual framework of this paper has been formulated and proposed in the form of the following chart. As a compilation of writers in this framework, the green economy refers to the balance between the two pillars of the environmental sustainability system as well as the economic growth and development system.

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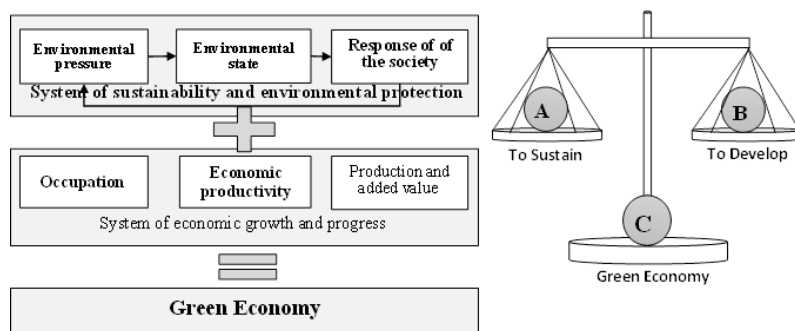
Fig. 1. The Conceptual Theoretical Framework of the Paper on Green Economy Concept

Based on the conceptual-operational model, and with the intention of assessing the status of the provinces of the country in terms of the green economy concept, the following steps have been taken in the agenda:

• First step: Determining the operational (measuring) model of the green economy and proposing measuring indices for the dimensions and components of the model based on the meta-analysis of the indices introduced in the quadruple resources of UNEP, OECD, World Bank and GGGI for the green economy.

• Step 2: Collecting the required data for measuring each index, producing a composite index (CI) in order to measure the components of the operational model while generating a model for measuring the green economy of the 31 provinces.

• Step 3: Explaining the wisdom and the logic for the typology of the 31 provinces based on the conceptual model of the paper aiming to rank and assess the analogical state of the regions. Then they were classified in six categories in a structural analysis based on the logic and wisdom of Table 1.

Table 1. Typology of the regions based on the green economy concept (the basis of the conceptual model of this research)

	The continuum of sustainability system	The continuum of growth and development system	Typology of regions based on the green economy concept
Undeveloped societies	Low consumption	Low production	First type: undeveloped societies
Unpredictable growth	High consumption	Low production	Second type: unsustainable societies
Protection and control	Unpredictable consumption and distribution	Unpredictable growth of production and GDP	Third type: regions with unpredictable growth
Sustainable development (passive)	Consumption Control and Production / Production (Pressure Reduction)	Distribution of wealth and job creation	Fourth type: protective and distributive regions
	Consumption and production within the framework of environmental potentials and constraints along with the innovative promotion of environmental capabilities (environmental improvement)	Productivity and efficiency	Fifth type: regions moving towards green economy
Green economy	Green and innovative production, consumption and employment along with environmental responsibility	Competitiveness and Fair Productivity	Sixth type: regions with green economy

• Step 4: Analogical analysis and assessment of the provincial state. In this final step, the position and analogical state of the regions is determined. In this four-dimensional diagram, (1) the horizontal axis (X) represents the growth and productivity of the economy, (2) the vertical axis (Y) represents the amount of pressure control imposed on the environment. Also, (3) is the intensity of management and control responses from these regions to environmental issues in four different sizes, and (4) is the environmental state as well as the natural and human assets of the region. These are represented in the form of colored circles from white to black (meaning the natural richness of the area).

Discussion of Results

Based on the proposed methodology of the research, in order to provide an accurate understanding of the relative situation of the provincial regions, the four-dimensional analyzing and assessing logic of analogy for the regional state according to the composite index of the green economy are classified according to their state in one of these four dimensions based on the six states:

- Regions that have a relatively higher productivity, economic growth and competitiveness, but at the same time have made a lower relative pressure on the environment and also provide optimal response to environmental issues are classified as the regions with green economy.

- Regions with a relatively high productivity, economic growth and competitiveness (higher than average) and at the same time have brought a relatively low (below average) pressure on the environment, provided that they offer an appropriate response to environmental issues, are classified as the regions moving towards a green economy.

- Regions with a relatively high impact on environment (above average) experience a range of very high to moderate growth and are categorized as the regions with unpredictable growth. Of these, the regions that are facing environmental poverty and have not responded adequately to environmental challenges, are far more unsustainable.

- Regions that have a low growth and production but at the same time add high pressure to the environment are categorized as unstable regions.

- Regions of relatively low growth and low pressure on the environment are classified as protective regions.

- Regions with very low economic growth, which have little impact on the environment are classified into undeveloped and basic regions.

Based on this conceptual classification and the analysis made:

- There are no provinces with the green economy in the country;

- Yet, the province of Semnan can move towards the green economy in case of providing measures to confront existing environmental issues and planning to respond to environmental challenges. This will be achieved by adopting strategies. Also, Kohkiluyeh and Boyerahmad province can maintain this in case of controlling the pressure on the environment by improving the tension and water poverty, reducing carbon dioxide and carbon emissions in different sectors, with an emphasis on oil and gas industries, as well as optimizing water consumption and energy carriers.

- Ilam, South and North Khorasan provinces are considered as undeveloped regions.

- Hormozgan, Khuzestan, Yazd, Markazi, Tehran, Kerman, Isfahan, Qazvin and Fars provinces are growing rapidly due to high consumption and high pressure on the environment. So, they are far from achieving the status of green economy. Among all, Tehran province will have the opportunity to access the green economy due to the better position in the environmental responses in case of controlling the pressure on the environment and improving the productivity of the economy. But provinces such as Yazd and Hormozgan will lose their resilience in the face of the ongoing economic downturn and environmental constraints (natural poverty).

Other provinces of the country are considered unsustainable because they have neither good economic efficiency nor proper control of their environmental pressures. Among them, the provinces of Qom, Zanjan, Hamedan, Golestan and Alborz have a much more critical situation because of the limitations and poverty that they have in terms of renewable and non-renewable environments and the quality of human environments as well as human health and safety.

Conclusion and Compilation

Based on the model of the research and given the need to pay attention to the differences in the regions, the macroeconomic approaches to green economy planning could be categorized in four groups. (A) Strict approaches of precautionary or absolute protection that focus on less emissions and limitations on the use of natural resources and the production of publications and waste. The regions with unpredictable growth of the land are in this group. Of these, Hormozgan, Yazd, Esfahan and Qazvin, which are also facing natural poverty, are in the top priority. (B) Forecast or post-crisis approaches (environmental restoration) that focus on responding after an environmental crisis.

This approach will be effective in the regions of natural richness and positive ecological balance (environmental capability is more than environmental pressures), and their economic growth is a priority based on the national divisions or internal strategies. (C) Sustainable approaches that focus on adjusting population and activity loading within the framework of regional environmental capacity. In this approach, consumption and economic growth are coordinated with the speed of nature's self-healing. (D) The ecological innovation approach focuses on modified and updated patterns of low carbon or zero-carbon production and consumption. Application of this approach seems to be more effective in the spatial planning system of provinces such as Tehran, which, in terms

of environmental response and development status, enjoys a more appropriate position than the majority of regions. Although the successful realization of the green economy agenda requires the integration and simultaneous implementation of all the outlined approaches in the regions, of course, with different prioritization of approaches based on regional conditions.

Green production and employment, through increasing the attractiveness of green jobs, will help to maintain or restore environmental quality. This will require education through strengthening the institutions of consolidating the green economy and training various skills to promote this concept. To meet the needs of green skills, in addition to the need for governments to participate in the provision of green skills, joint efforts by employers and professional education institutions as well as higher education are essential. Support for innovation and green entrepreneurship and technology development will also help to establish environmentally friendly production processes: Attracting and supporting the flow of green investments through legal and financial measures, building capacity and awareness of the development of green infrastructure, promoting energy efficiency, water, renewable energy, industry, and so on.

Ultimately, the implementation of the aforementioned depends on the planning, management, and monitoring phase through a combination of operational tools and approaches, such as the implementation of the national and corporate integrated environmental and economic accounting or full cost accounting (FCA), both in the calculation of national added value and in the auditing of profits and benefits of economic units, fiscal environmentalism, new environmental regionalism, Green Taxation System, carbon trading system and emissions, necessitating a Strategic Environmental Assessment (SEA) in integrated land use plans at national and regional levels, and promoting community participation in the conservation as well as using sustainable management practices.