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Research Article

Anticipation and Prioritization of Green Jobs in Iran Using a Multi-Criteria Decision Analysis Method

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Abstract
The green economy is defined as an economy that aims at reducing environmental risks and ecological scarcities, and that aims for sustainable development without degrading the environment. This new economy will lead to the creation of new jobs, thus improving community health and providing opportunities for sustainable wealth and value creation. The paper aimed to study and anticipate the future skill needs for the green economy. Research population was the whole Iran. Data gathering was done in two phases, first by using both interview and questionnaire for 5 related chief experts and second one by using only questionnaire for 61 specialist and experts as the research sample. The primary results showed 604 green skills and jobs for Iran. Finally, 102 jobs were identified as the future green jobs during 3 steps. These were prioritized from 1st rank to 102nd rank by using TOPSIS, 35 green jobs in group 1 (high ranks), 35 green jobs in group 2 (medium ranks) and 32 green jobs in group 3 (low ranks). The results showed the important consideration about training and education in the field of green jobs. One of the biggest challenges facing the green economy is shortage of skillful labor force. Considering the results of this study and using other potential resources in Iran in the field of green jobs, Iran Technical and Vocational Training Organization as an establishment responsible for skill training shall take essential steps to get the green economy.
Keywords: green economy, entrepreneurship, labor force, skill, sustainability.

Introduction

It is now widely accepted that our current way of living poses a serious threat to the quality of life of future generations. Every development requires exploiting and using the environment and natural resources. The evidence shows that the human's activity is the main cause of changes and disorders in environment and eco-systems. The environment's horrible consequences faced by the world are caused by the human's illogical behavior to environment and resources. Instead of focusing on long-time revenue, people prefer to devastate the resources and use the short-time benefits. Thus, they provided a devastated path for their future.

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In monetary terms, the costs of environmentally unsustainable practices are significantly high: The Lancet Commission on Pollution and Health has estimated the welfare losses due to environmental pollution at more than 4.6 trillion US dollars per year, or 6.2% of global GDP (Dordmond et al., 2021).

Moving toward an economy that focuses on the production, economic and environmental aspects is a step toward decreasing these difficulties and provides new job opportunities. Policies focused on green growth have ignited the transformation of economies into so-called green economies (Grazi et al., 2007). Javaheri et al. noted that attention to the environments is as an instrument to enhance the quality of life, and community development (Javaheri et al. 2016). Since significantly more jobs are linked to environmental jobs than perhaps initially thought it is not surprising that Bezdek et al. (2008) find a positive relationship between economic growth, job creation, and environmental protection.

Economists found out that moving toward the green economy not only help solving the climate changes, but also provides an opportunity for creating a stable global economy. The harmony between the social, economic and environmental policies provides mutual benefits, job opportunity and a greener economy (ILO 2011). In practical terms, the green economy is a system of economic activities related to production, distribution and consumption if goods and services which lead to human's welfare in a long time and keep future generation away from the environmental risks and ecologic shortage (Jarvis et al. 2011; UNEP 2022).

This rise of the green economy is accompanied by the rise of "green jobs." In fact, the emergence of green jobs is one of the driving forces behind the transition toward green economies (Dordmond et al., 2021). Today, a considerable number of businesses do not have a proper conception for the necessity of green skills so that lack of skillful experts in the field of green economy in many countries is a main barrier in implementing the national strategies in order to avoid the greenhouse gases and to analyze the environmental changes (ILO 2011). The green economy requires work forces equipped with green skills. These skills are not only related to production skills and environmental services with low carbon but it requires skills that help enterprises use the natural resources efficiently and be flexible toward the climate changes. On the other hand, the emerging green economy has the potential to employ workers with an even wider range of skills and experiences in a variety of sectors and contribute to a sustainable, low-carbon economy. Industries directly related to carbon reduction, such as renewable energy sectors and waste management, can create new jobs that did not exist before.

A flagship report on green jobs by the United Nations Environment Program (UNEP, 2008) provided comprehensive insights on the impact of a green economy on the world of work. The report argued that, rather than being a drag on growth, the greening of economies can spur additional growth and contribute to additional creation of decent jobs. The report pointed out that green growth would in fact help economies to create jobs that did not exist before and provide opportunities for governments to reinvigorate employment in new and transformed occupations and bring higher value-added work for populations.

In order to develop and train the skillful (green) labor force, a true understanding of the society's needs and jobs is necessary. Using surveys around the status of green jobs can help a country identify the importance of employment in the green economy, the growth capacities and weaknesses of special industries. By using these surveys, it can be understood how the green jobs approach can help different processes of national development. Not much effort has been dedicated on this issue by the international organizations and local governments. But, the International Labor Organization (ILO) conducted an analysis in the framework of ILO by cooperation of 16 developing countries. Moreover, the ILO and UNEP provided a report together with the subject of "Green Jobs: Towards decent work in a sustainable, low-carbon world". Jagannathan (2013) reported that none of the EU Member States, with the exception of France, had put in place integral skills response strategies as part of their environmental and

green growth strategies. Many of the green industries in Asia are currently fragmented. University offerings lack cross-disciplinary breadth and faculty needed to train future workers in the technical, economic, social, and managerial challenges associated with green industry development (Jagannathan, 2013). Garica Vaquero et al, (2021) examined the situation of green jobs in Spain. Their study focused on the analysis of the green jobs' opportunity for Europe, at a country level, with a specific analysis made for the Spanish case. the following research questions were formulated in their study: (1) what is the estimated number of new green jobs that would be created as a consequence of the implementation of the Recovery Plan in Spain; (2) which new soft skills or re-skilling would be necessary to develop such new green jobs(García Vaquero et al., 2021). A study (Govindan and Bhanot, 2014) investigated potentials and perspectives of green jobs in India. their study reported that in India, the issue of a green jobs has been appreciated by all the relevant economic agents and there is a need for appropriate public policy interventions through removing distortions and front-loading of green investments in some key sectors. Jacob (Jacob, 2015) has published a report on green jobs of German society. In line with the report, linked with the change to a green economy is economic structural change which also concerns the labor markets. Labor markets should be designed to be dynamic and efficient in order to enable this structural change to take place. In addition, a series of specific challenges for employment policy in the context of a transformation to a green economy has also been identified. An important challenge concerns the development and adaptation of education and further training programmes to the skill requirements of green sectors. Another challenge for the implementation of green economy strategies is how to deal with shrinking sectors and the associated job losses. These include for example offers of mediation and further training for the affected workers and the creation of public employment services (Jacob, 2015). Annandale et al. (2004) reviewed the current state of knowledge about green jobs in Australia. It draws some initial conclusions about what is likely to 'drive' worldwide green job generation in the foreseeable future, and then reviews recent work that examines the implications for Australia (Annandale et al., 2004). In another study, Thomas et al. (Thomas et al., 2010) captured the breadth of complexity in the debate about green jobs in Australia. A consideration was provided within both the Australian and international contexts of the current assertions and projections regarding green jobs, their definition and location in the economy. The substantive focus of the paper was on the development of these notions in the Australian context. In Canada, Gallon notes that by the beginning of the 21st Century green jobs, across more than the single energy sector, were generating ―approximately 2.2 percent of Canada's gross domestic product, a figure that may actually underestimate the true size of the sector (Gallon, 2001). Interest in green jobs is also reported in Europe. Here Ghani-Ene et al. (2009) in 'Low carbon jobs for Europe' report on trends in such jobs associated with the renewable energy sector, transport, and energy efficiency. Their estimates are that green jobs account for some 3.4 million direct jobs, while indirect jobs may add up to an additional 5 million. Regarding the future they suggest that: "The number of green jobs is still a relatively small share of that total, but compares favorably with the 2.8 million jobs in polluting industries (mining, electricity, gas, cement, and iron and steel sectors). And indications are that jobs in the renewable energy sector and other green economic activities will continue to expand in the future, whereas employment in extractive and polluting industries continues to decline" (Ghani-Ene et al., 2009). In essence these reports and studies argue that there is tremendous potential‖ for green jobs. Encouragingly, the business case for greening both the economy and the job market has been growing increasingly powerful.

The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) can be used for ranking and comparing a set of alternatives by identifying weights for each criterion, normalizing scores for each criterion and calculating the distance between each alternative and the ideal alternative, which is the best score in each criterion. This method is the most common

method used for subject prioritization. Simplicity, clarity, comprehensiveness and having reliable and accurate results are the reasons that researchers pay attention to this method (Bhutia and Phipon 2012).

The shift to a low carbon future will certainly create new jobs and raises a number of questions important for our understanding of local labor markets and the future-of-work. The purpose of this paper is twofold: We first use collective wisdom to identify green jobs and skills for Iran economy. Second, we apply the TOPSIS methodology to detect high priority skills and then discuss about transition toward a green economy through the channel of green job creation. Anticipating, identifying and developing the skill needs in different areas including green skills and jobs are one of responsibility for Iran Technical and Vocational Training Organization (Iran TVTO) that should be done by joint cooperation of domestic and overseas institutions such as the related social partners, universities and organizations. Therefore, the paper aims to study and anticipate the Iran's future skill needs for the green economy. The study determines the main sectors in the green economy. It's also tried to prioritize the skills based on Iran's conditions.

Material and Methods

First of all, a team of five members were constituted of those who were expert in terms of green skills and jobs. This paper adopts the definitions of a green economy and job proposed by the Occupational Information Network Resource Center. They define the green economy as "economic activity related to reducing the use of fossil fuels, decreasing pollution and greenhouse gas emissions, increasing the efficiency of energy usage, recycling materials, and developing and adopting renewable sources of energy" (Dordmond et al., 2021). Based on these definitions, first tries to identify the main sectors of green economy with a comprehensive review and analysis of related literature and scientific context in Iran. Each of the identified sectors includes a range of jobs that are also identified. Each sectors includes a wide range of jobs, which all share a common factor: they contribute to economic activities that are beneficial to the environment. This contribution is sometimes very direct, but can also be rather indirect. A systematic search of electronic databases and consultation with environment and job experts were used to identify green jobs and skills of Iran. By reviewing and specifying the effective factors on green jobs of Iran, valuable skills were presented in the assessment stage during brainstorm meetings and flow of thoughts by these experts of the problem. After identifying these jobs, it was necessary to prioritize them and identify the most important ones. Therefore, the group designed a questionnaire and distributed it among 61 chief experts in the field of green jobs in order to use their comment for the prioritization. The experts were selected in a way that covers a wide spectrum of people who are active in the field and accommodated in different geographical place. The sample size of this research (number of interviewed experts) was determined based on the following equation (Sandelowski, 1995):

$$N = \frac{z^2 \times s^2}{d^2} \quad (1)$$

Where N is the sample size, S^2 is the estimated variance, Z^2 is the abscissa of the normal curve that cuts off an area α at the tails (1-α equals the desired confidence level is 95%), d is the desired level of precision. Thus, minimum calculated sample size in this study was found to be 61. According to the nature of the research, the population includes all scholars and chief experts in the field of green economy and curriculum development. In the first step, 10 main sectors in green economy were finalized; then 604 jobs and skills were identified and classified based on Iran's conditions.

After this, the green jobs and skills were identified based on the chief expert's views and prioritized based on the future's needs by using TOPSIS. From these skills and jobs, the least

important jobs were omitted in three stages and finally 102 important jobs were remained. The questionnaires were designed in a way that the experts could score each job (0 to 10) in terms of the importance. After collecting the data, the importance of each job was estimated by using the TOPSIS method.

Selecting an appropriate Multiple Attribute Decision Making (MADM) method for a given MADM problem is always a challenging task. Within the MADM domain, the TOPSIS is highly regarded, applied and adopted MADM method due to its simplicity and underlying concept that the best solution is the one closest to the positive ideal solution and furthest from the negative ideal solution. TOPSIS has been applied for MADM problem solving by various researchers. TOPSIS has been used extensively with over 13 000 citations for practical MADM problem due to its sound mathematical foundation, simplicity, ease of applicability (Chakraborty, 2022). Some of the advantages of TOPSIS methods are: simplicity, rationality, comprehensibility, good computational efficiency and ability to measure the relative performance for each alternative in a simple mathematical form (Roszkowska, 2011). TOPSIS includes the following steps for implementation and prioritization (Bhutia and Phipon 2012; Mehrparvar et al. 2012).

Step 1) Form a decision matrix consisting of m alternatives and n criteria. The structure of the matrix can be expressed as follows:

$$D = \begin{bmatrix} - & X_1 & X_2 & \dots & X_j & \dots & X_n \\ A_1 & x_{11} & x_{12} & \cdots & x_{1j} & \cdots & x_{1n} \\ A_2 & x_{21} & x_{22} & \cdots & x_{2j} & \cdots & x_{2n} \\ \vdots & \vdots & \vdots & \cdots & \dots & \cdots & \vdots \\ A_i & x_{i1} & x_{i2} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \vdots & \vdots & \cdots & \dots & \cdots & \vdots \\ A_m & x_{m2} & x_{m2} & \cdots & x_{mj} & \cdots & x_{mn} \end{bmatrix} \quad (2)$$

Where A_i is the i^{th} alternative projects and X_{ij} is the numerical outcome of the i^{th} alternative projects with respect to j^{th} criteria.

Step 2) Normalize the decision matrix D by using the following formula:

$$nij = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}} \quad , j=1,2,\dots,n \quad (3)$$

Step 3) Construct the weighted normalized decision matrix by multiplying the normalized decision matrix by its associated weights. The weighted normalized value v_{ij} is calculated as:

$$V_{ij}=w_j \times n_{ij} \quad , i=1,\dots.m \, , j=1,\dots,n \quad (4)$$

Where w_j is the weight of i^{th} criteria and the total weights of each column equals 1.

Step 4) Determine the positive ideal solution and negative ideal solution using the following formula:

$$A^+ = \left\{ \left(\left(\max_i v_{ij} | j \in J \right), \left(\min_i v_{ij} | j \in \acute{J} \right) \right) | i = 1,2,\dots,m \right\} = \{v_1^+, v_2^+, \dots, v_m^+\} \quad (5)$$

$$A^- = \left\{ \left(\left(\min_i v_{ij} | j \in J \right), \left(\max_i v_{ij} | j \in \acute{J} \right) \right) | i = 1,2,\dots,m \right\} = \{v_1^-, v_2^-, \dots, v_m^-\} \quad (6)$$

Where J is associated with the benefit criteria, J' is associated with the cost criteria.

Step 5) Calculate the separation measure. The separation of each alternative from the positive ideal one is given by:

$$d_i^+ = \sqrt{\sum_{j=1}^{n} \left(v_j^+ - v_{ij} \right)^2}, i = 1,2,\ldots,m \quad (7)$$

Similarly, the separation of each alternative from the negative ideal one is given by:

$$d_i^- = \sqrt{\sum_{j=1}^{n} \left(v_j^- - v_{ij} \right)^2}, i = 1,2,\ldots,m \quad (8)$$

Step 6) Calculate the relative closeness to the ideal solution. The relative closeness of Ai with respect to A+ is defined as:

$$cl_i^+ = \frac{d_i^+}{d_i^+ + d_i^-}, i = 1,2,\ldots,m \quad (9)$$

Step 7) Rank the preference order. The larger the cl+ value, the better the performance of the alternatives.

Results and Discussion

By reviewing the related literature and analyzing the contexts and findings, the researchers found ten main sectors for the green jobs. The sectors were identified based on the green jobs around the world and they were finalized by considering Iran's conditions. Table 1 shows the main sectors in green economy.

Table 1. Main Sectors in Green Economy for Iran

Item	Main sector	Sub sectors
1	Renewable energy	solar; wind; geothermal; wave; biogas; fuel cells
2	Green building	audit of residential and commercial buildings; improvement and update of efficiency of energy and water facilities in buildings; green construction materials; construction based on energy management and environmental design in buildings
3	Clean transportation	future fuels; hybrid and electronic vehicles; personal electronic cars; public transportation and carpooling
4	Water management	water recycling; management system of rain waters and non-industrial (gray) wastes; drip irrigation; water purification; planning and management of rain flood
5	Waste management	waste recycling; recovery management and use of second-hand items; modification of toxics; identification, clean and restoration of all polluted/ contaminated areas (including dangerous and passive wastes); green packing with the aim of keeping production for a longer time
6	Land management (agriculture and fishery)	organic agriculture; prevention of local habitat; development of green civic parks; restoration of the woods and creation of new ones; soil stabilization and prevention of its erosion
7	Green markets	carbon trade; green banking; green finance and investment services
8	Tourism	sustainable development of tourism; tourism
9	Manufacturing (industry and mine)	includes jobs related to industrial manufacturing in green technology in addition to the production processes in case of energy efficiency
10	Research, education and consultation services	jobs that are indirectly along with green economy and includes activities namely consultation, research and education in the field of energy and other business services

Based on table 1, ten sectors in the green economy were listed including the renewable energy, green building, clean transportation, water management, land management, green markets, tourism, manufacturing, and research, education and consultation. These sectors designed in a way that entails all green jobs in Iran.

After identifying the main sectors of the green jobs, 604 jobs and skills were identified and classified. From these skills and jobs, the least important jobs were omitted in three stages. Finally, 102 jobs were selected as the most important jobs. These were prioritized from 1st rank to 102nd rank. In this step, TOPSIS was used to prioritize these jobs in terms of Iran's conditions. In this technique, each job has a separated *cl*+. The larger the *cl*+ value, the more important the job. Finally, the suggested jobs were classified in three seeds including; 35 green jobs in seed 1 (high ranks/ highly prioritized jobs), 35 green jobs in seed 2 (medium ranks/ fairly prioritized jobs) and, 32 green jobs in seed 3 (low ranks/ lowly prioritized jobs). Table 2 shows the green jobs in seed 1. Seeds 2 and 3 are respectively shown in tables 3 and 4.

Table 2. Seed 1- High Ranks/ Highly Prioritized Green Jobs

Rank	Job Name	Cl_i^+	Rank	Job Name	Cl_i^+
1	Organic Farming Specialist	0.373	19	Hybrid Cars Technician	0.679
2	Marine Low Emissions Technician	0.717	20	Green Kindergarten Trainer	0.679
3	Solar Greenhouse Designer	0.716	21	Green/Environmental Journalist	0.678
4	Solar/Photovoltaic Cell Designer-Solar System Designer	0.710	22	Biofuel Fertilizer	0.676
5	Recycling and Waste Management Technician	0.706	23	Biofuel Production and Processing Technician	0.675
6	Water Pollution Control Technician	0.706	24	Air Pollution Specialist	0.675
7	Eco Tourism Gardens Designer	0.704	25	Green Commercial Building Architect	0.672
8	Wind Power System Designer	0.703	26	Environment and Natural Resources Contractor	0.669
9	Vermicomposting Production Technician	0.703	27	Food Preservation Technician	0.669
10	Energy Efficiency Inspector	0.701	28	Wind Turbine Technician	0.667
11	Environment Restoration Planner	0.700	29	Energy Efficiency Specialist	0.664
12	Green Jobs Trainer	0.698	30	Green Technology measurement and metrology Specialist	0.664
13	Energy Efficiency Trainer	0.692	31	Photovoltaic Solar Panel Installer	0.662
14	Biogas Production Technician	0.690	32	HVAC System Installer	0.660
15	Low Emitting and Fuel-Efficient Designer	0.688	33	Residential and Commercial Solar System Sales counselor	0.658
16	Sprinklers System Designer	0.685	34	Fuel Reservation Technician	0.658
17	Drip Irrigation System Designer	0.679	35	Photovoltaic Panel Installation Trainer	0.656
18	Renewable Energy Systems Trainer	0.679			

As shown in Table 2 and others, the five highly prioritized jobs are respectively “Organic Farming Specialist”, “Marine Low Emissions Technician”, “Solar Greenhouse Designer”, “Solar/Photovoltaic Cell Designer-Solar System Designer” and “Recycling and Waste Management Technician”. It is all based on the suggestions of the chief experts. The least prioritized green jobs found to be “GIS Technician”, “Recycling Truck Driver”, “Sheet Metal Worker (Solar, Geothermal and …)”, “Solar Laboratory Technician” and “Chemical Equipment Operator”.

Table 3. Seed 2- Medium Ranks/ Fairly Prioritized Jobs

Rank	Job Name	Rank	Job Name
36	Corporate Environment Technician	54	Environment Trainer
37	Solar desalination Repairman	55	Green/Sustainable Products Sale and Marketing Officer
38	Eco-tour Guide	56	Risk Assessor
39	Green Auto Repairman	57	Hydro Electric Power Plants Technician (Electrical Systems)
40	Alternative Fuel Vehicle Repair and Maintenance Technician	58	Double Glazing Installer
41	Conservation Officer	59	Geothermal Power Generation Technician (Mechanical Systems)
42	Waste Craftsman	60	Hydro Electric Maintenance Worker
43	Climate Change Risk Auditor	61	Green Marketer
44	Maintenance Worker of Methane Extraction System	62	Water Filtration System Technician
45	Environment Sampling Technician	63	Hazardous Waste Management Expert
46	Hydro Electric Power Plants Technician (Mechanical Systems)	64	Fuel Restoration Technician
47	Renewable Energy System Financial Officer	65	Landscape Designer
48	Building Energy Consultant	66	Hydro Electric Power Generation Technician
49	Biomass System Technician	67	Thermal Power Storage and Distribution Technician
50	Wind Turbine Technician	68	Geothermal Power Generation Technician (Electrical Systems)
51	Wind Energy Trainer	69	Construction Heating System Technician
52	Greenhouse Gas Emission Permit Officer	70	Green/ Sustainable Landscape Architects
53	Insulation Worker		

The considerable issue in this ranking is the expert’s focus on education, institutionalizing and training the professional workforce in the green economy field. 5 out of 35 jobs (in seed 1) are related to education and training services. These jobs are “Green Jobs Trainer” (rank 12), “Energy Efficiency Trainer” (rank 13), “Renewable Energy Systems Trainer” (rank 18), “Green Kindergarten Trainer” (rank 20) and “Photovoltaic Panel Installation Trainer” (rank 35). The article on the Republic of Korea questions the government’s Green Growth strategy by comparing its flagship “Four Major Rivers Restoration Project” (FMRP) to its support for renewable energy, both in terms of whether the jobs created are environmentally sustainable and in terms of its employment potential.

Table 4. Seed 3- Low Ranks/ Lowly Prioritized Jobs

Rank	Job Name	Rank	Job Name
71	Hazardous Material Control Auditor	87	Green Banking Officer
72	Contaminated Sites Rehabilitation Expert	88	Thermal Power Generation Technician
73	Green Surveyor	89	Green Plumbing Mechanics
74	Fuel Testing and Inspection Technician	90	Automation Technician
75	Hybrid Cars Repairman	91	Green Building Auditor
76	Carbon Extraction System Installer	92	Waste and Methane Gas Collection System Operator
77	BMS Technician	93	Wind Turbine Metal Worker
78	Organic Farming Worker	94	Environment Permission Specialist
79	Vehicle Repair and Emission Testing Technician	95	Green Accountant
80	Industrial Equipment Consultant (Business and technical services)	96	Raw Material Supply and Replacement Worker
81	Plumbing, Sewer and industrial Services Technician	97	Process Analyzer using SimaPro
82	Electric Vehicles Technician	98	Chemical Equipment Operator
83	Diesel Improvement Designer	99	Solar Laboratory Technician
84	Energy Auditor	100	Sheet Metal Worker (Solar, Geothermal and …)
85	Photovoltaic Panel Production and Testing Technician	101	Recycling Truck Driver
86	Insulation Co-Worker	102	GIS Technician

The government is investing heavily in the FMRP (about 22.2 trillion Korean won, 2009–12) while support for renewable energy is rather modest (3.75 trillion Korean won during the same period, plus 3.18 trillion Korean won of Green New Deal investment). The authors of the article argue that despite the huge gap in investment, the job creation impacts of the FMRP are not as good as they could have been with the same amount of investment in the renewable energy industries. When the government announced Green New Deal policies and associated programmers to create 960,000 new jobs, there was little, if any, consideration for the training and education required for these jobs and how decent wages and working conditions were to be secured (Chang et al., 2012). similarly, the article on China indicates that the lack of coherence and coordination in the policy environment is one of the major barriers for the development of renewable energy. This is, for instance, needed to integrate the electricity generated from wind energy into the existing power grids. Another issue raised in the article is that of skills. Most workers who lose their jobs in the conventional energy sector have difficulty finding a new job. This is because renewable energy involves new technologies and requires higher education and skill levels. It has been shown that workers in the wind power plants are generally more educated compared to those working in the thermal power units. The renewable energy sector is a knowledge-intensive rather than a labor-intensive sector. The current speed of structural change in the labor's educational level is far below the pace required to meet the needs of the industry, resulting in structural unemployment. In other words, instead of being able to rely on some employment security, the workers from the conventional energy sector are facing immediate job losses (Chan and Lam, 2012). However, the articles on China and Korea indicate that the lack of education is one of the major barriers for the development of green jobs.

As seen, developing green economy is leading to new skill requirements. While some areas require altogether new skills, a large number of existing occupations require additional skills and competencies in the context of efforts to move toward a low-carbon world. New types of skills and competencies will need to be incorporated into existing occupational profiles of the workforce. There is need for developing new training curricula and launching green entrepreneurship promotion campaigns. Abdi and Davoudi reported that help of education to solve the social and cultural problems in Iran society is very important (Abdi and Davoudi, 2015). Providing good and proper education is one of the indicators of social, educational improvement of individuals. Pop et al (2011) considered the green jobs as the new requirement for the European societies. Therefore, they conducted a study for training and promoting the green jobs among the organizations. They reported the role of training for the green jobs especially for students, and transfer of updated training and providing refresher courses for human resources as an efficient way for promotion and development of green jobs (Pop et al., 2011). Cai et al (2011) argues that a matching educational system and personnel structure is needed especially in solar PV, biomass and wind technologies (Cai et al., 2011). Role of developing green economy on job gains is important, for every one percent increase in the share of solar PV generation there could be a 0.68% increase in total employment in China, larger than any other power generation technology. Annandale et al. (2004) in Australia, for extension of green jobs reported that government training departments and registered training organizations need to be more adaptive to provide 'just in time' practical training to meet the demands of a rapidly growing industry. Training is needed in both generic skills similar to all emerging industries and specific environmental industry and occupation training (Annandale et al., 2004). Similar results by other studies reported that the provision of vocational education and training in regional areas contributes to regional innovation and development of green jobs (Brown, 2013; Kearns et al., 2008)

In most countries, major part of economic activities is done by small and medium enterprises. Therefore, the government can support them by providing different types of training and consultation in order to realize the environmental goals as well as enforce their competitive power. Moreover, creating and developing new green jobs are necessary. The lack of skillful work force is one of the most challenges in green economy. In the PRC and India, rural electrification programs are suffering from a lack of skilled workers. Reasons for these shortages include a scarcity of scientists and engineers, the poor reputation and limited attractiveness of some sectors important for the green transition such as waste management, and a limited number of teachers and trainers in environmental services (Buckler and Creech, 2014; Jagannathan, 2013). Similar conditions are conceivable for Iran. Identifying and delivering the proper skills for new jobs can be regarded as a step toward the greener economy and it guarantees the share of society in new opportunities. The lack of experts in the domain of green economy is regarded as the main barrier in implementing the national strategies for prevention of environment (Jarvis et al., 2011). The way of entering to these training should be taken into consideration by the governments. Anticipating, identifying and developing the skill needs in different areas including green skills and jobs are one of responsibility for Iran TVTO that should be done by joint cooperation of domestic and overseas institutions including; social partners, universities and organizations. The way of training and developing such jobs should be carefully analyzed and implemented by this Organization. Borken (2011) analyzed the best green job training techniques in Oakland city, California. The study suggested that, having an accurate plan in training and focusing in economic issues along with the training play important roles in successful development of green job (Borken, 2011).

Yet in Iran, there is no systematic and comprehensive approach to linking education and training policies with climate change adaptation, mitigation, and greening policies. Therefore, support of Iran TVTO in developing curriculum and training objectives for 102 recognized

green jobs is necessary. Some actions should be seriously considered: Providing a proper infrastructure for implementing training courses in the field of green job comprehensively by Iran TVTO and other organizations; providing free training (through mobile, internet and social medias); empowering the local forces to take the responsibility of green jobs in every region; paying attention to develop cooperatives and their efficient role in developing the green jobs; and the role of women in developing and institutionalizing the culture of environment and green jobs. The article on South Africa also recognizes that skills policy is important and states that the government acknowledges that the country is falling short in this area. Various skills requirements depend on the support of the Sector Education and Training Authorities; this support must accommodate the large pools of unskilled and semi-skilled workers in rural, undeveloped areas (Aroun, 2012).

Despite the concept of green growth, policies that benefit the environment often have the stigma of being expensive and inefficient, which is why policymakers often expect such policies to hurt economic growth. This belief is not based on facts. This claim is supported by the abundant literature that finds a positive link between sustainable development (and green job creation in particular) and economic growth (Bezdek et al., 2008; Cai et al., 2011; Dordmond et al., 2021; Lehr et al., 2012). The transition toward a green economy should thus not only be wished by policymakers due to its ability to mitigate the effects of climate change but also as a way to generate wealth. Certainly, the gap presently experienced in Iran's green economy will be filled by training of green jobs. Therefore, policymakers should pay more attention to investing in education of green skills instead of looking to transient policies. Investing in green skill education is not just the right move but it is also smart economies.

Conclusion

It is argued that greening growth is necessary, efficient, and affordable. Green growth is seen as a way to pursue economic growth and development while preventing environmental degradation, biodiversity loss, and unsustainable natural resource use. Green jobs are connected with sustainable development, people wellbeing and healthy organizations. The paper studied and anticipated the future skill needs for the Iran's economy. Transforming current economic structures into a green economy is a complex process. Education and training have a crucial role to play in the successful transition of economies to green and clean development that is conducive to inclusive growth. Vocational and technical training will be critical in building the necessary skill base for green jobs. Link with education and training at higher levels through the tertiary sector is required. Comprehensive green skill standards and certification systems need to be developed. Benchmarking standards, establishing protocols for standards in new green jobs, existing but transformed jobs, and in green processes will require participation of higher education institutions. Educational decision-makers of Iran need to establish pathways for training, skill development, and advanced knowledge building between skill development and technical and vocational education and training institutions and higher education institutions. this study lays the foundations for future research on the development of green skills, competences and jobs in Iran's economy.

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