



METHODOLOGICAL ISSUES FOR EMPLOYMENT RESEARCH IN GREEN ECONOMY

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ABSTRACT

The purpose of this article is to provide a methodological basis for analysis and evaluation of green jobs and to reveal the advantages and disadvantages of the main methodological approaches to their analysis.

Key words: green jobs concept, methodological problems

INTRODUCTION

There are various tools and methodologies for assessing green jobs. They enable the quantification of existing jobs and to predict the effectiveness of policies and investment programs in the area of provision of new green jobs. Are implemented quantitative and qualitative methods to assess the employment associated with green economy. Qualitative methods mainly include business studies and surveys relating to the policies for opening of green jobs whereas quantitative methods mainly used indicators presented in various mathematical models such as input-output analysis.

The purpose of this article is to provide a methodological basis for analysis and evaluation of green jobs and to reveal the advantages and disadvantages of the main methodological approaches to their analysis.

METHODOLOGICAL ISSUES FOR GREEN JOBS ASSESSMENT

The choice of funds for the survey largely depends on its objectives, the available budget, the quality and access to necessary data and the capacity of people realizing the study. In the assessment of policies promoting the detection of green jobs it is important to identify the type of effects that will be sought and measured - the creation only of direct

green jobs or will be covered the indirect and induced jobs; whether will be considered the negative effects as well from the creation of green jobs related to reducing of employment in traditional sectors.

In the literature (1, 2, 3, 4, 7, 11, 12, 13) are presented two approaches to research green jobs:

- industrial approach - which measures the number of employees in companies that produce green products or services;
- occupational approach - using the classification of professions and activities when establishing the number of employees of companies with activities that contribute to the development of green economy. The industrial approach recognizes the products received at the output of green industries, while the occupational approach takes into account the input resources for the green industries. This means that regardless of output production of the company, the number of environmental jobs is based on the fact that professional activities of a single workplace contribute to increasing environmental "green" products.

The approaches applied in the evaluation of green jobs take the form of a survey of the respective companies, industry organizations and ministries. As their positive side may be noted that they are an easy, cheap and effective way of assessing the presence of green jobs in certain sectors, regions or countries. These studies of the policy of green jobs support can have a different territorial scope. In carrying out consecutive studies over a period of time is

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provided an useful information about the effectiveness of the policy measures aimed at developing of green jobs. Business surveys are more suitable for the evaluation of jobs directly related to the environment, especially if the activity affects many different sectors. In calculating employment in the green economy, the unit of observation and measurement are work activity. It exists within the enterprise and can be classified depending on the manufactured products or services, the type of work performed (ie profession) and others. Therefore, they are one of the best methods for assessing trends in development of green jobs especially if repeated periodically.

The negative aspects of these studies are related to the fact that to some extent the respondent alone defines what is a green job and what is covered by green workplace. Another minus is that the preparation of the questionnaire takes a long time (requires a long period of time for planning, designing the questionnaire, testing it, conduction the study and analysis). A study in sufficient size volume to ensure representativeness of the study is costly. An additional difficulty creates the implementing of a complex system of marking the professional classifications. Newly created green jobs often are not included in national classifications of activities and are without the appropriate classification code, which impedes the release of their activities from the classical way of producing a good or service. Another drawback is that they do not allow assessment of the future effects of implemented employment measures.

Input-output analysis is an empirical tool designed to analyze the interdependencies in a given sector. This method applied by appropriate input-output tables describes the flow of goods and services expressed in monetary units for a period of time / usually one year / and allows to estimate the consumption of products from other sectors (ie intermediate demand) or end users. It is possible to include in the input-output matrix all sub-sectors in an economy and in detail to describe how the outputs of one sector are used as raw materials in the other. These models are based on information from national accounts and are one of the most widely used for evaluating existing green jobs. The rows in the table show the total output of an industry that is consumed by other sectors or goes to the end users. The columns represent in practice the proportion of inputs that a sector used to produce the desired final production. The basic input-output model measures how much additional output is required from each sector

for per unit increase in final demand. That is, if consumers buy an extra unit of goods, it is possible to identify what are the consequences for different sectors of industry. Thus, these models provide the link between production and consumption and show how the change in consumption can affect production in various sectors and the relationship between consumers of goods and services. This approach can be used to assess the effects on employment as a result of an increase in final demand for products or services from green industry. If there is information of the labor intensity of the various sectors in the economy, this matrix can be used to assess as well the effects on employment of an increase in demand for green service or product. The model can be used to evaluate short-term and medium-term effects on employment from the implementation of a particular policy measure. On this basis are assessed all economic results, including indirect and induced impacts and their interaction with the environment. For example, changes in sales of agricultural products generate direct effects on the food industry, but also indirect effects on the transport industry and all other sectors that provide inputs. Are revealed the economic links between different sectors of industry, government and households. It provides a good snapshot of the economy and the potential of green jobs in the design of future policy measures. A positive side of the described approach is the ability to use data from national statistics, making it cheaper and faster method.

Negative side of this method is the application of constant coefficients for production", which means that the ratio of output to input is constant, regardless of the scale of production, or the period of time. This eliminates the possibility the input resources to be replaced due to changes in technology or price. There is a risk of double counting, since for many green jobs there is a staff turnover resulting from the transition of workers from one sector to another or due to improvement of their qualifications, rather than creating of new economic activity.

Methods associated with reporting positive net national economic benefits of the shift to more environmentally sustainable activities, reveal the influence of the longer and more diverse supply chains and the higher labor intensity through the implementation of alternative technologies. Net benefit from replacing them counts the budgetary effects, resulting from the difference in price between the traditional and sustainable product or activity. If sustainable technologies are relatively

expensive, the higher cost burden is borne by consumers. Green profitable activities that have even little positive budgetary impact provide a higher net positive effect on employment.

The different effects of the costs of activities related to environmental protection are estimated using multipliers. Multipliers measure the way the expansion of a company leads to increased activity in other related companies. Multipliers are estimated using the input-output tables. They are calculated using estimates of the direct, indirect and induced effects.

There are three types of effects, namely:

- Immediate effect - investments in sustainable sectors lead to the expansion of production and generation of new direct jobs.
 - Indirect effect - increased production invariably leads to an increased demand for raw materials, leading to an increase in indirect jobs in the supply chain.
 - Induced effect - as a result of these effects in the supply chain, income level increases and a portion of this income is spent on other goods and services, leading to a further increase in demand and creation of new jobs.
- In practice, the use of sophisticated analytical models increases the range of responses characterizing the exogenous economic change. They combine empirical data, usually in the form of input-output matrix with a series of economic equations designed to capture the full dynamics and complexity of the economy. Thus are investigated the effects of policies over time through various macroeconomic parameters, including future scenarios for employment. Their application enables politicians to calculate the long-term effects of the implemented policies.

Difficulties in the application of complex models are that they are labor-intensive, resource-intensive and require a high level of competence of the people who made them. In their design are introduced a number of limitations and assumptions relating to how the economy works after a period of time that affect the results and limit their opportunities for analysis and explanation. The range of professions for green jobs varies across countries depending on local socio-economic conditions and national priorities in the field of environmental management. In their analysis, it is necessary to take into account the following factors:

- Structure of the economy - this includes the share and the importance of agriculture and / or management of natural resources; the scope of activities related to adaptation to climate

change and reducing the risk of disasters; achievement of low-carbon economy;

- Environmental priorities - in developing countries is likely to include improvement of air quality in cities, achievement of effective waste management, coping with the shortage of fresh water, improving poor hygiene conditions, coastal management, eradicating the problem of deforestation and unsustainable agricultural practices;

- Impact of regulation and policies – it is necessary they to be aimed at reducing the negative impact on the environment and improving the energy and resource efficiency, enhancing the standards of quality control in the workplace;

- Quality of information systems and the relative balance of formal and informal economy - they should allow the registration of employment and be the basis for the analysis and display of measures to improve the existing situation. Employment in the informal economy is also an important factor that is difficult to assess adequately.

In order to assess the scope of the green jobs it is needed to be revealed the links of the economy and the environment and when analyzing it is important to answer the following questions:

- The economic sector or individual activities whether they carry out direct use of natural resources (eg. Agriculture, fisheries, forestry, energy, water).

- Economic activity or sector how contribute to better management of the environment through: management of land and water resources for the production of environmental goods and services; pollution reduction and efficient management of waste (eg equipment for pollution control services in water treatment, recycling); more efficient use of energy and natural resources; providing products and services that have a significantly lower impact on the environment.

- Does the sector deal with management and mitigation of natural hazards and whether it has an impact on people and on the economy, including by building resistance to such impacts or adaptation to the effects of climate change.

- Are the economic sector or individual activities heavily dependent on the good

quality of the environment (eg eco-tourism, etc.).

If the answer is positive to any of the above criteria these activities and sectors should be further examined in terms of their environmental performance in order to identify and assess the number of decent green jobs in them. Economic activities that do not meet any of those criteria should not be subject of analysis .

CONCLUSIONS

It can be concluded that the methodological issues of the analysis of green jobs are directly associated with the typology of relationships that characterize the environmental management.

A. There exist three types of links between the economy and the environment covering the use of natural resources:

- Activities based on renewable natural resources such as fossil fuels, metals and minerals;

- Activities based on renewable resources covering agriculture, forestry, fisheries, renewable energy, water, resources for pharmaceutical products and others;

- The environmentally sustainable production. They are part of the activities involving the use of renewable resources and include organic agriculture, sustainable forestry and energy production from renewable sources.

B. The activities related directly or indirectly to environmental management and reduction of environmental impact there are three types of connections:

- Activities for the control of pollution defined by the levels of costs incurred for ready production (for example, solid waste management and recycling, wastewater treatment, control of air pollution);

- Management of natural resources and activities designed to support the delivery of environmental goods and services measured by the incurred cost;

- Green products and services - this includes Ecolabel products, such as sustainable construction (passive houses, energy saving), vehicles with zero emissions, ethical banking, energy management, offering products and services that have significantly lower

environmental impact compared to alternatives (eg public transport).

C. The activities related to the management and mitigation of natural hazards and adaptation to climate change help to reveal the links between economic and environmental systems. They cover insurance services for the prevention of natural disasters (avalanches, droughts, floods, fires, coastal erosion, earthquakes and tsunamis), the additional costs for the protection of property and the cost of restoration after the occurrence of natural disasters.

D. The activities, which are highly dependent on the quality of the environment predetermine the possibilities for application of tourist services that support the establishment of cultural identity, benefit the health and supplement the complete picture of the links between the economy and the environment. On this basis, according to the revealed key links between the economy and the environment is determined the scope of green jobs in different regions according to local socio-economic conditions and priorities in the field of environmental management.

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