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## **GREEN ECONOMY IMPLEMENTATION IN AGRICULTURE SECTOR – EMPIRICAL RESEARCH IN REPUBLIC OF NORTH MACEDONIA**

**Abstract:** Agriculture sector plays a significant role in the national economy in the Republic of North Macedonia and has strong linkages to other sectors. Its direct and indirect effect on people and environment additionally makes it important for implementation of principles of green economy. Agriculture can provide livelihoods and food security for population, reduce the risks from climate change and meet increasing demand for energy in terms of energy production shortage in the country. Although the pandemic further has complicated the situation in the Macedonian economy, it gives an advantage for development of the concept of green economy that is, by efficient use of resources and respect for the principles of natural laws to find new technological and innovative solutions that will contribute to production of food and agricultural goods on a sustainable basis, pollution reduction and maintaining and increasing farm production and profitability of agriculture sector.

Therefore, the main purpose of the paper is to analyze the agriculture sector of the Republic of North Macedonia in terms of the ability to implement the concept of green economy. Based on empirical research conducted among agricultural entities, recommendations are given with the aim of creating public policies for a better implementation of the principles of green economy in agriculture. The acceptance of paper recommendations in order to promote the implementation of the green economy concept will give an opportunity for agriculture sector to achieve its goals while protecting the environment, strengthening natural capital and energy efficiency of resources. In that context, prin-

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ciples of green economy in agriculture sector should be a significant part of long-term strategy for sustainability in the Republic of North Macedonia.

**Keywords:** green economy, agriculture sector, Republic of North Macedonia

**JEL classification:** Q50, Q56, Q57

## **Introduction**

The main goal of the green economy is to find ways and methods that will ensure the most efficient use of resources to meet human needs and thereby preserve the environment unchanged. The concept of green economy is very attractive for countries and businesses because it aims to provide a simultaneous solution to unemployment, economic growth and environmental issues by introducing new green industries and tools to mitigate the damage caused to the environment. Responsibility for the environment and green work means sustainability to be incorporated in the work in all activities of the company. Renewable energy, green buildings, clean transport, water management, waste management, land management and green market are the main sectors in which green economy operates.<sup>4</sup> At the UN conference, Rio +20, was created a set of principles according to which the framework for application of the concept of green economy could be defined:<sup>5</sup> Principle of equitable distribution of wealth; Principle of economic equality and justice; Principle of conservation of natural resources; Principle of careful approach to the environment; Principle of the right to development; Principle of cost recovery; Principle of international cooperation; Principle of international responsibility; Principle of informing and participating; Principle of sustainable consumption and production; Principle of strategic cooperation and integrated management; Principle of fair transition; Principle of redefining wealth; Principle of gender equality and Principle of biodiversity and prevention of environmental pollution.

It's known that many agricultural activities could provide solutions to the social, economic and environmental challenges that the green economy aims to address. More specifically, it can provide livelihoods and food security for population, reduce the risks from climate change and meet increasing demand for energy in terms of energy production shortage in the country. Green economy implementation is complicated by the fact that agriculture is a primary sector which tends to be resource-intensive and generally has adverse impacts on the environment, which is counter to the principles of a green economy. Namely, current ways of agricultural production lead to the emergence of many environmental problems, social tension and reduction of the natural

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<sup>4</sup> Brundland G., Jargon H., , Getting in the way of sustainable development, ECOCRED, 2012, <http://ecocred.me/tag/green-economy/>, 10.8.2020

<sup>5</sup> Stoddart H., Riddlestone S., Vilela M., Principles for the Green economy, Earth Charter Initiative, Earthsummit 2012, London, 2012, p.3

capital. Overcoming those issues are possible upon the transition of the agrarian sector to the model of green economy.

The greening of agriculture refers to the increasing use of farming practices and technologies that simultaneously:<sup>6</sup>

- Maintain and increase farm productivity and profitability while ensuring the provision of food and ecosystem services on a sustainable basis;
- Reduce negative externalities and gradually lead to positive ones;
- Rebuild ecological resources (i.e. soil, water, and air and biodiversity natural capital assets) by reducing pollution and using resources more efficiently.

Farming practices and technologies that are instrumental in greening agriculture include:

- Restoring and enhancing soil fertility through the increased use of naturally and sustainably produced nutrient inputs; diversified crop rotations; and livestock and crop integration;
- Reducing soil erosion and improving the efficiency of water use by applying minimum tillage and cover crop cultivation techniques;
- Reducing chemical pesticide and herbicide use by implementing integrated and other environmental friendly biological pest and weed management practices;
- Reducing food spoilage and loss by expanding the use of post-harvest storage and processing facilities.

The greening of agriculture does not rule out technologies or practices on ideological grounds. If a technology works to improve productivity for farmers, and does not cause undue harm to society and the environment, then it is acceptable. Although natural methods of pest and weed management and organic sources of fertilizer and seed are at one end of a green agriculture spectrum, the highly efficient and precise use of inorganic fertilizers, pest controls and technological solutions may also be included in the broad spectrum of sustainable farming practices.

Many agricultural activities could provide solutions to the social, economic and environmental challenges that the green economy aims to address. Depending on how it is practiced, agriculture can directly contribute to meeting many of the green economy's social and environmental aspirations, such

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<sup>6</sup> Transition of green economy in key sectors, p. 6 [https://www.un-page.org/files/public/module\\_4\\_transitioning\\_to\\_a\\_green\\_economy\\_in\\_key\\_sectors.pdf](https://www.un-page.org/files/public/module_4_transitioning_to_a_green_economy_in_key_sectors.pdf), 1.6.2022

as protecting biodiversity and ecosystems, and creating decent work and green jobs. To be in tune with a green economy, agriculture has to meet a number of requirements. These include producing food and agricultural goods and services on a sustainable basis; reducing pollution and using resources more efficiently; and maintaining and increasing farm productivity and profitability.

The agricultural sector is undoubtedly one of the most important in the Macedonian economy and there should be a priority for resource efficiency and green economy development. In addition to primary agriculture, with a contribution of up to 10% to GDP, the agro-production industry contributes an additional 6% to GDP in Republic of North Macedonia. Main goal in creating of agricultural policies in terms of economic development is to increase food security, reduce poverty, promote economic growth and create wealth through agricultural improvement.

Given this, the main purpose of the paper is to analyze the agriculture sector of the Republic of North Macedonia in terms of the ability to implement the concept of green economy, i.e. identify the opportunities and challenges it faces in the process of adopting green policies in its entities. For that purpose, a survey was conducted among entities (small and medium enterprises) in the Republic of North Macedonia, in order to perceive the current situation, awareness and knowledge of entities on environmental regulation and application of environmental practices and principles of green economy.

## **1. METHODOLOGY**

The methodology of research is based on primary data obtained from previously prepared, structured questionnaire, submitted to agriculture entities (small and medium enterprises) in the Republic of North Macedonia. In order to perceive the current situation, questions were referred to awareness and knowledge of entities on environmental regulation and application of environmental practices and principles of green economy. The analysis of the results is systematized in three areas:

- The application of environmental regulation and services,
- The current implementation of green practices by entities and
- The existing support for green practices in entities.

The questionnaire was distributed to more than 60 small and medium enterprises in the Republic of Northern Macedonia in the period November - December, 2020. The questionnaire covers 21 questions related to the possi-

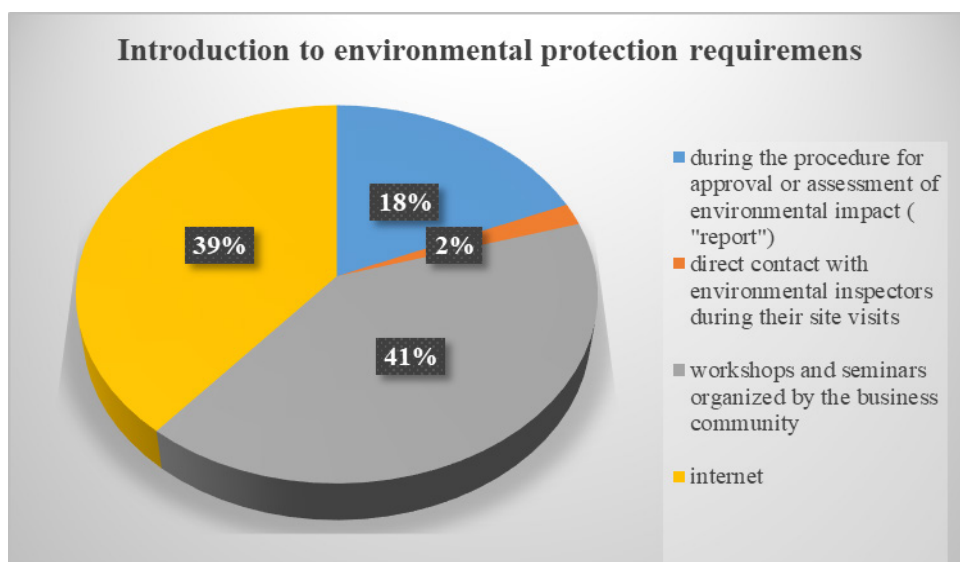
bilities of agriculture entities to apply the concept of green economy in their work.

The questionnaire was answered by a total of 54 micro, small and medium enterprises, of which 65% are micro enterprises, i.e. enterprises with up to ten (10) employees), 6% are small, i.e. enterprises with eleven (11) to fifty (50) employees and 29% are medium enterprises where the number of employees is from fifty one (51) to two hundred and fifty (250).

## 2. RESULTS AND DISCUSSION

The survey showed that agriculture entities have a lack of information on how entities can apply the concept of green economy and are facing with complex administrative procedure in implementing environmental practices and strict rules if they want to do more than the legally prescribed requirements. Asked about how your company meets the requirements for environmental protection, the highest percentage answered that it is the workshops and seminars organized by the business community and less that 39% said they introduced the Internet. (Graph 1)

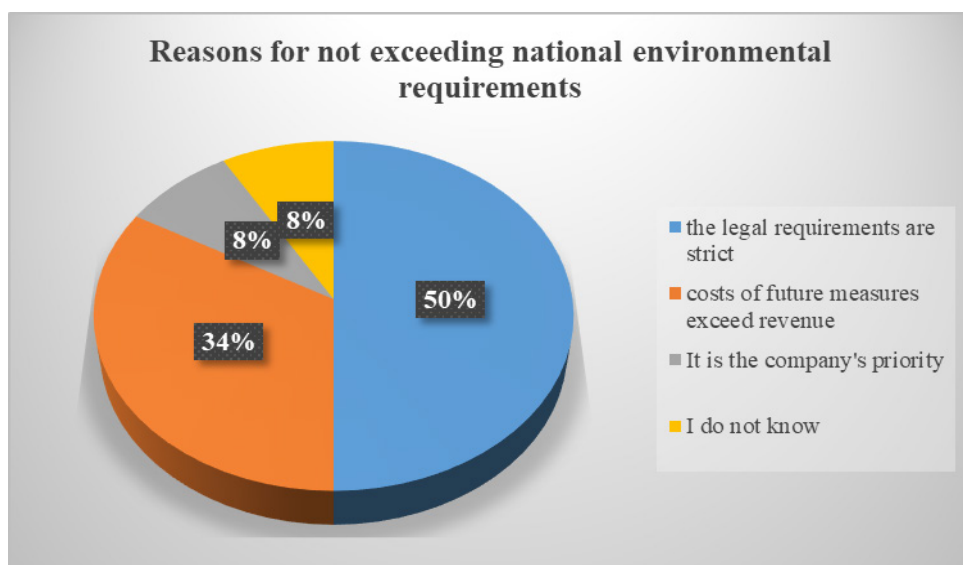
**Graph 1**



*Resource: Own research*

Graph 2 shows that half of the surveyed agriculture entities answered that the legal requirements are too strict, one third that the costs exceed the revenues, and the rest that it is not a priority in the operation of the company. They face a complex administrative procedure in enforcing environmental practices and strict rules if they want to do more (better) than legally prescribed requirements. It can be concluded that there are no concrete actions and measures to harmonize measures for growth and development of entities with environmental policies.

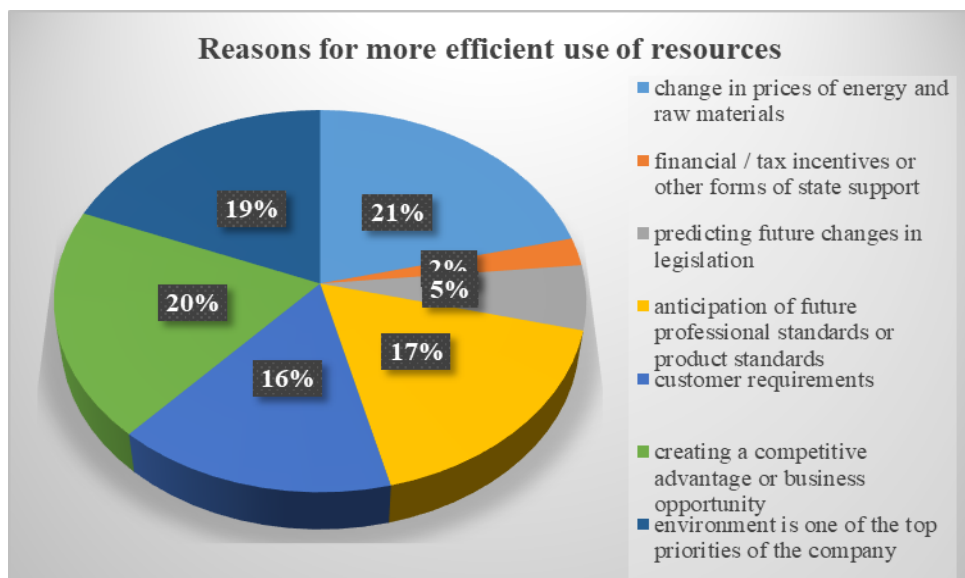
**Graph 2**



Resource: Own research

Most companies enter this market because they want to protect and preserve the environment, partly because of improving their market reputation, but there is a certain percentage who believe that offering green products or services will give them a competitive advantage. (Graph 3)

**Graph 3**

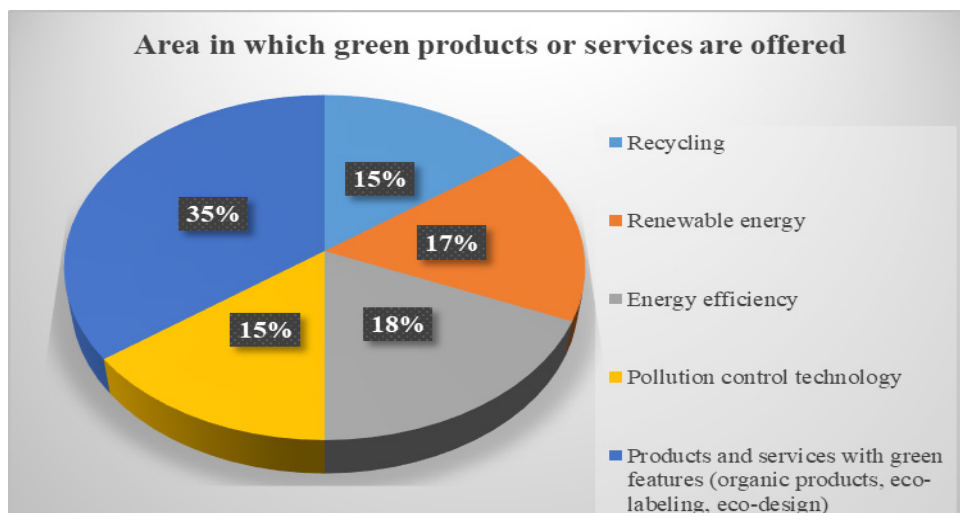


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The largest percentage of companies cited waste minimization as an activity for more efficient use of resources, including recycling, approximately the same percentage saving of raw materials, energy and water, and less the use of renewable energy.



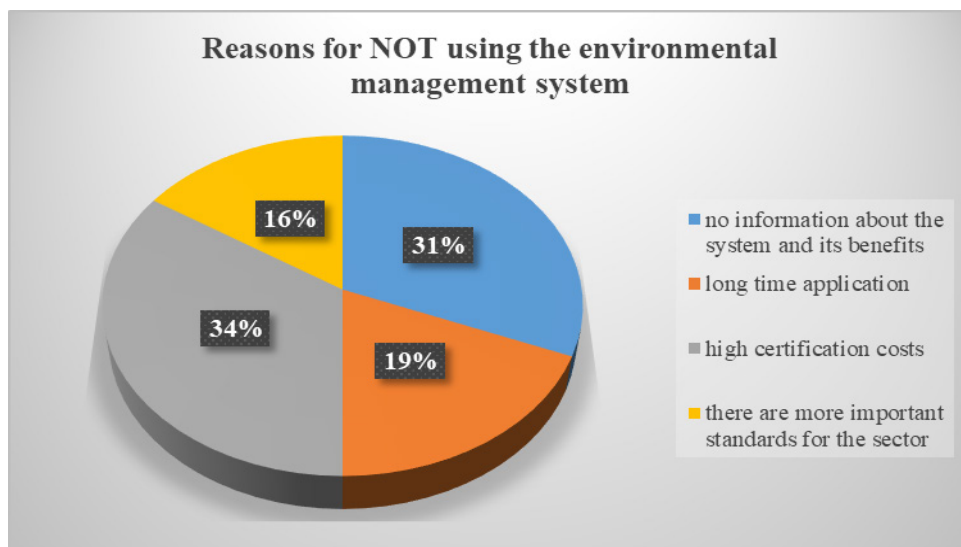
**Graph 4**



*Resource: Own research*

In order to find out whether the agriculture entities in the Republic of North Macedonia apply environmental practices in their operations, questions were asked about whether they use the ISO 14001 environmental management system or some other system that applies of environmental protection and the reasons why they use it or not. Graph 5 shows that the main reason for not using any system 34% of the surveyed companies answered that they are unfamiliar with the system, and 31% its benefits and costs for certification. Also, 19% of the surveyed entities answered that it is a long time to apply, but also that there are more important standards for the sector.

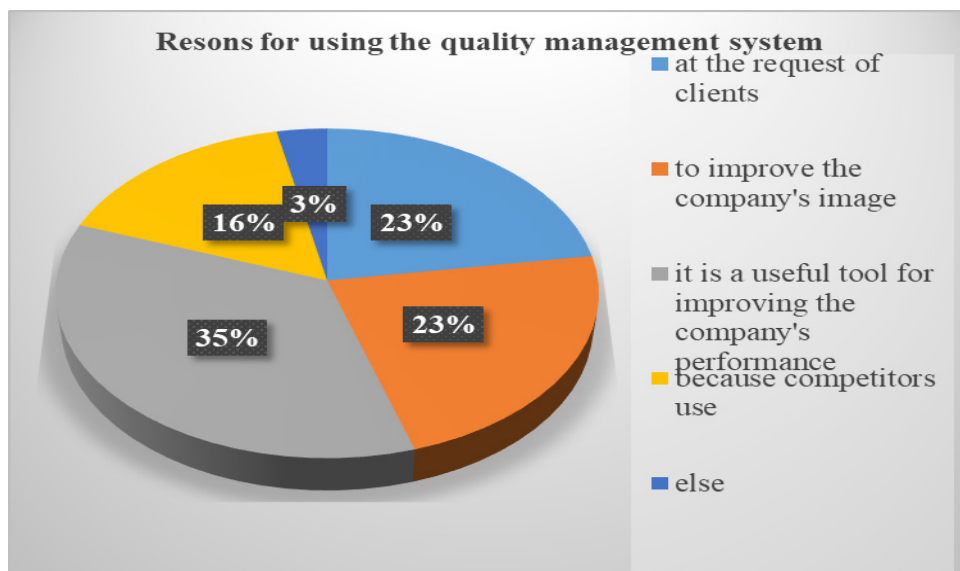
**Graph 5**



*Resource: Own research*

Of the surveyed companies that answered that they use an environmental management system, 35% singled out the improvement of the company's performance as the main reason, the improvement of the image - 23% and at the request of the clients - 23%. (Graph 6) This indicates lack of information, capacity or overload of time and costs for its implementation. First of all, there is very little market demand from business clients for the adoption of the system (such demand comes only from foreign companies), which means that the market benefits of investing in such a system are uncertain.

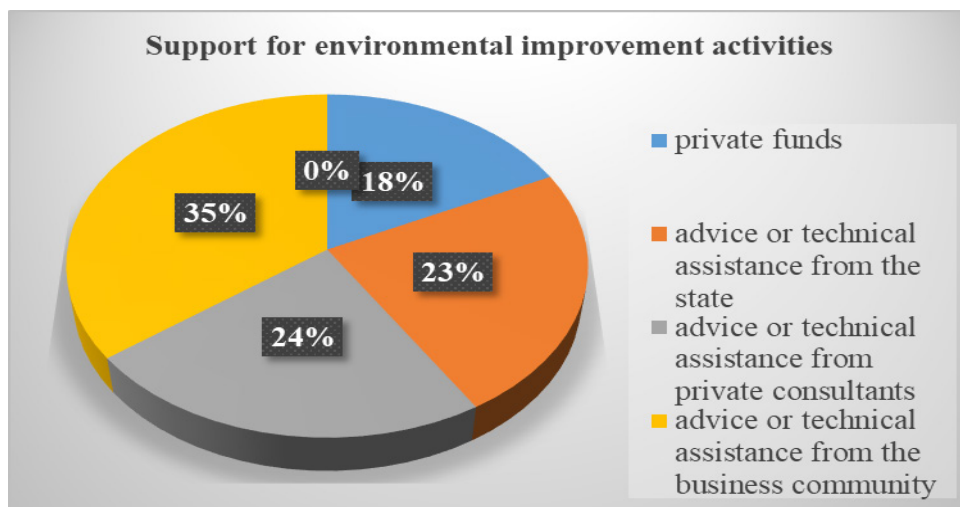
**Graph 6**



*Resource: Own research*

Despite the modest external support, most of the surveyed entities take measures for more efficient use of resources, in order to save and reduce costs. The main reason for such activities is purely economic, i.e. entities are already experiencing and expecting further increases in the prices of these resources, and it is known that the smaller the business, the more the impact of changes in resource prices is felt. The graph 7 shows that all types of support are present in agricultural sector.

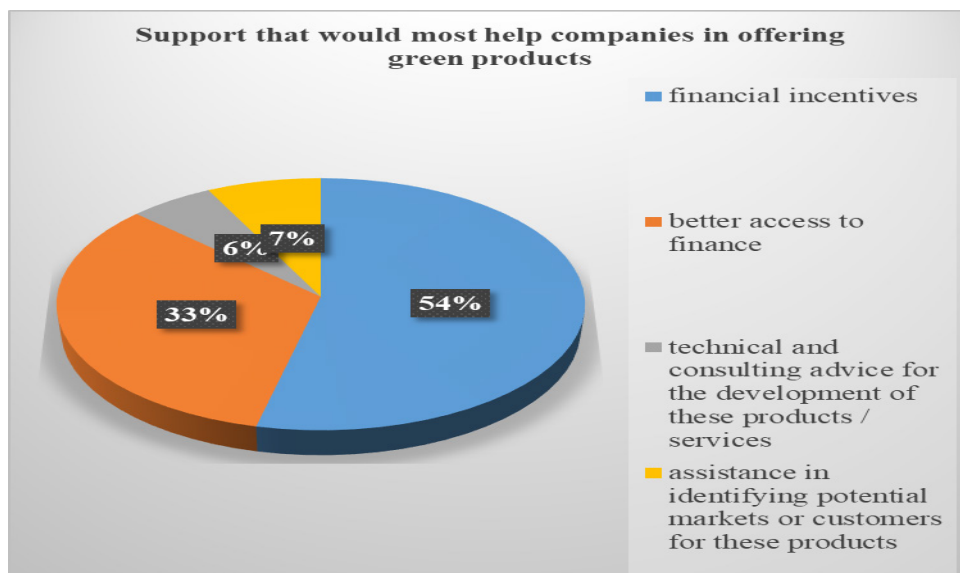
**Graph 7**



*Resource: Own research*

As part of the survey, entities were also asked about the type of state support that would most help them in introducing green products or services. (Graph 8) Financial incentives were mentioned by more than half of the respondents, while better access to finance and technical advice were named by about a third of the businesses surveyed. The need for better access to finance was particularly pronounced among companies in the food production sector and micro-businesses. Most entities require clear and consistent information that aligns agricultural growth and development measures with environmental policies.

**Graph 8**



*Resource: Own research*

### **3. CONCLUDING OBSERVATIONS AND RECOMMENDATIONS**

The analysis showed that in the agriculture sector there is obvious lack of information on how entities can apply the concept of green economy and are facing with complex administrative procedure in implementing environmental practices and strict rules if they want to do more than the legally prescribed requirements. This can be explained by the fact that many agricultural enterprises are subject to the environmental regulatory regime that is not appropriate for them. Despite the modest external support, most of the surveyed entities take measures for more efficient use of resources, in order to save and reduce costs. Many opportunities exist for promoting green economy principles in agriculture sector in Republic of North Macedonia. They include increased awareness by governments, donor interest in supporting agriculture development, growing interest of private investors in sustainable agriculture and increasing consumer demand for sustainably produced food.

Implementation of principles of green economy in agriculture sector will require a supportive policy environment and enabling conditions that

could help level the playing field between conventional and green agricultural practices. There needs to be a greater use of regulations and taxes that impose penalties for pollution in order to include externality costs into market prices for these inputs, as well as economic incentives that reward green practices. There are also opportunities for applying market solutions as alternatives to direct regulation. In general, governmental subsidies for farmer (producer) support should be increasingly decoupled from crop production and alternatively be retargeted to encourage farmers' efforts and investments in adopting green agriculture practices.

Primary, it is necessary to create a regulatory framework for green economy in North Macedonia by bringing clear and appropriate documents with specific activities and measures, harmonized with EU standards. That means to implement higher environmental standards and increasing investments in the sector of agriculture having on mind that green economy concept in the Republic of North Macedonia is relatively new for the entities.

It is obvious the need to expand state financial support for green businesses in agricultural sector and strengthen market incentives to improve the application of the concept of green economy, both directly (such as: green public procurement) and indirectly (green certificates and eco-labels) in order to increase the demand for improved environmental performance and green products and services. This will give an opportunity for agriculture sector to achieve its goals while protecting the environment, strengthening natural capital and energy efficiency of resources. In that context, principles of green economy in agriculture sector should be a significant part of long-term strategy for sustainability in the Republic of North Macedonia.

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