

Tools for "green" technology implementation in small and medium enterprises of foreign countries

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Abstract

The ways of improvement of processes of introduction, adaptation and dissemination of "green" technologies in small and medium enterprises of foreign countries are determined. It has been proven that in order to effectively support innovative "green" technologies for small and medium-sized enterprises in developing countries, governments and other stakeholders should consider the following key areas of support: accelerating business development; innovative financing; development of the market for "green" technologies; technology development; regulatory framework.

Keywords: "green" technologies, small and medium-sized enterprises, tools, innovative financing

1 Body text

To ensure effective support for innovative green technologies for small and medium-sized enterprises (SMEs) in developing countries, governments and other stakeholders should consider the following main areas of support: accelerating business development; innovative financing; development of green technology markets; technology development; regulatory framework. In each of these five areas, a variety of tools can be used to promote green technologies in SMEs.

Accelerating the development of entrepreneurship is implemented in the form of programs that provide training and capacity building for managers and business owners, ranging from general financial and management skills to purposeful support of technical aspects of business. These programs are often provided by consulting firms, business incubators or technical experts.

An example of such programs is the Climate Technology Program, infoDev, which is a global World Bank program that supports small and medium-sized enterprises as well as new entrepreneurs developing innovative products and new business models in the field of climate technology [3].

National or multilateral public-private partnerships may also be noted to link investors with technological opportunities in developing countries. For example, the PFAN Private Finance Advisory Network [4].

Attention should be paid to UN technology transfer initiatives. First of all, technology support for clean technologies is donor-funded, but country-led. The Climate Technology Center and Network (CTCN) is an operational tool of the UN Technical Assistance Mechanism, which provides technical assistance to developing countries to support their plans for the development of low carbon technologies [5].

Information platforms are designed to facilitate knowledge sharing both in technical resources and in the

implementation of business projects. An example is the international Cleantech network [6] organized by the Copenhagen Cleantech Cluster; Climate and Development Knowledge Network (CDKN).

Innovative financing involves tools designed to provide SMEs with several forms of early financing and venture capital that are not available from traditional sources of finance. It includes start-up capital, venture capital, loans and loans.

Governments and investors can support the private sector by providing loans to SMEs on preferential terms. Such support takes into account that in most countries there are significant barriers for SMEs in the green technology sector. This has been confirmed by surveys in India and Kenya, where access to finance has been identified as a major barrier for SMEs in the clean technology sector, especially in Kenya, where 70% of bioenergy firms have identified it as a major barrier, compared to 46% of solar power firms in India [7].

Innovative financing can also stimulate demand. The most important tool here is technological consumer credit. The main purpose of demand instruments is to reduce commercial uncertainty for clean technology companies, thereby reducing investment risk.

Another tool is loan guarantees [1]. The Central American Renewable Energy and Cleaner Production Facility (CAREC) provides interim financing for small grids related to renewable energy technology (TVE) projects with a mortgage guarantee from the United States Agency for International Development (USAID), the Development Credit Authority (DCA).

Government Venture and Equity Guarantees: China's Shenzhen Capital Group is one of China's most successful venture capital groups, creating state funding structures for the first time by investing in a host of new technologies, including clean technologies [2].

In renewable energy, the most popular tool for boosting market demand for grid technology in developed countries

is tax tariffs, which support approximately 75% of global installed solar power and 45% of wind power.

Manufacturer standards, product labeling, and product testing and certification are potentially powerful tools to stimulate demand for clean technologies and raise consumer awareness. However, such instruments are largely limited to consumer goods, such as household appliances, which are of marginal importance to small and medium-sized enterprises in developing countries, since these goods are more likely to be imported than produced locally. However, government standards, for example, to improve energy efficiency in buildings, are an important means of stimulating the demand for clean technologies that can be provided or installed by SMEs.

Technology development mechanisms are intended to assist SMEs in the technical aspects of developing an innovative product. These may include tax credits for research and development activities, research grants for research, public funding contests, public investment in R&D, public and private technology cooperation agreements, demonstration projects, and applied research networks. For example, direct subsidies in India have been recognized as the most popular form of government support for firms (32%) [7].

While government-backed R&D instruments can be a powerful catalyst for the development of clean technologies and the local potential of SMEs, they also carry structural risks that need to be considered and anticipated. First of all, public R&D funding can cause inefficient allocation of resources as a non-market means of selecting technologies and business models, and / or lead to excessive subsidies that leave technologies out of the market.

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Another important area of technology development is intellectual property rights (IPRs). To support the strategic importance of patenting in the "knowledge economy", many developing countries have implemented patent policies, often with the support and funding of the World Intellectual Property Organization (WIPO). For example, Rwanda has a comprehensive IP policy as a means of supporting scientific and technological potential and technology transfer [8].

2 Conclusion

The toolkit that governments and other stakeholders can use in each of five areas to promote "green" technology in SMEs is considered: accelerating business development; innovative financing; development of the market for "green" technologies; technology development; regulatory framework.

Such direction as accelerating the development of entrepreneurship is implemented in the form of programs that provide direct training and capacity building for managers and business owners.

Innovative financing involves tools that provide SMEs with various types of early financing and venture capital that are not available from traditional sources of financing.

Technology development mechanisms are intended to assist SMEs in the technical aspects of innovative product development.

It is considered the regulatory framework, which is aimed at strengthening the overall conducive environment for the implementation of "green" technologies in small and medium-sized enterprises.