



**SUSTAINABLE
DEVELOPMENT POLICY:
EXPERIENCE OF GERMANY
IN COMBATING
ENVIRONMENTAL AND
SOCIAL RISKS, POSSIBLE
WAYS TO IMPLEMENT IT
IN UKRAINE**

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Sustainable development policy: experience of Germany in combating environmental and social risks, possible ways to implement it in Ukraine

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ABSTRACT

This publication is an analytical report, which reveals the essence, stages of development and basic tools of sustainable development policy. The main emphasis is on financial instruments for combating social and environmental risks and transitioning to a low carbon economy. The paper highlights the experience of development and implementation of the German sustainable development policy and outlines possible ways to use it in Ukraine.

Young scientists from the Chair in Finance (Kyiv National Economic University named after Vadym Hetman), experts from the NGO “Energie Libre” and consulting company “BFSE LLC.” collaborated to prepare this report.



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SUSTAINABLE DEVELOPMENT POLICY: EXPERIENCE OF GERMANY IN COMBATING ENVIRONMENTAL AND SOCIAL RISKS, POSSIBLE WAYS TO IMPLEMENT IT IN UKRAINE

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FOREWORD

Environmental and energy problems are playing a key role in the activities of The Konrad Adenauer Foundation. Organizing events and carrying out research on these topics, the Foundation joins the political and public debates on the core challenges of our time.

Energy and environmental safety are important components of the social market economy.

Due to its compliance with the requirements, social balance and basis for life of present and future generations are provided.

In particular, the Konrad Adenauer Foundation conducts projects in such areas such as:

- new energy policy in Germany;
- global issues of resources provision;
- negotiations on climate protection;
- sustainable development policy.

In addition, the Foundation conducts two regional programs on energy and climate protection, which are carried out in Latin America and Asia. Some projects in this area are performed in Europe. In Ukraine, they take place as a part of the implementation of the Association Agreement between the EU and Ukraine and adaptation of the European energy and environmental standards in this country.

We are happy to have an opportunity to present Germany`s experience of sustainable development policy of Germany in this report, and hope that some aspects of it can be implemented in Ukraine. We want to thank the authors of the publication, who have been dealing with these issues for many years, supporting the need of sustainable development in Ukraine.

Enjoy your reading!

Gabriele Baumann
Director of Konrad Adenauer Foundation in Ukraine
Kyiv, August 2015

1. INTRODUCTION

Modern economic relations are marked by a number of important features that forced significant adjustments in economic policies at all levels of the economic system. Thus, problems of economic, social and environmental nature led to the popularisation of the concept of sustainable development as the basis for the modern economic tactics and strategy.

Government policies pursuing a steady economic growth by all means has led to a rapid increase in consumption of traditional energy resources, greenhouse gases (GHG) concentration in the atmosphere and, as a consequence, to climate changes¹. This has forced the international community to unite against the depletion of natural resources and to balance the interests of all the participants of economic relations, taking into account the needs of different generations.

Since 1972 the UN has initiated a series of conferences and summits with the main purpose of developing an effective sustainable development policy at the international and national levels.

During these meetings the concept of sustainable development was at the center of negotiations. Thus, the idea of Hans Carl von Carlowitz (1645-1714)² about the need to regulate the consumption of limited natural resources is reflected in a modern concept of sustainable development and sustainable growth³.

Germany has shown one of the best performances in achieving the goals of sustainable development. The experience of this country has demonstrated that it is very important to determine the necessary range of tools to ensure sustainable development. From the historical point of view, environmental taxes were the first financial instruments used by the governments to compensate the costs of combating the pollution and climate changes. Nevertheless, these instruments have certain limitations and there is a need to involve other tools to boost sustainable development. Hence, the new idea was developed by Ronald Coase (1910-2013) who offered to introduce the property rights for reduced emission units⁴. This approach allows companies to sell a surplus of emission reduction units on the market and even make a profit.

Carbon or emission trading demonstrated its effectiveness and enabled Germany and other EU-countries to effectively reduce GHG and fight climate change. Also this tool gives a positive signal to investors and provides the necessary conditions for the financial market development. Financial markets immediately responded to the existing needs in financing environmental and social projects by introducing new instruments such as climate, green bonds and social impact bonds.

¹ Derek Osborn, Amy Cutter and Farooq Ullah. Universal Sustainable Development Goals. Understanding the Transformation Challenge for Development Countries// Report of Study by Stakeholder Forum, May 2015. – P. 6.

² Hans Karl von Carlowitz. Sylvicultura oeconomica oder Haußwirthliche Nachricht und Naturmäßige Anweisung zur Wilden Baum-Zucht. - Bey Johann Friedrich Brauns sel. Erben, 1732 - 284 S.

³ The UN Sustainable development goals. [Source]: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁴ Coase, Ronald. The Problem of Social Cost // Journal of Law and Economics, v. 3, N1., 1960. – P. 1–44.

German experience in this area is an interesting one as the country is actively using fiscal and financial market instruments, preferring the latter and keeping the former only when there is no carbon market for certain sectors.

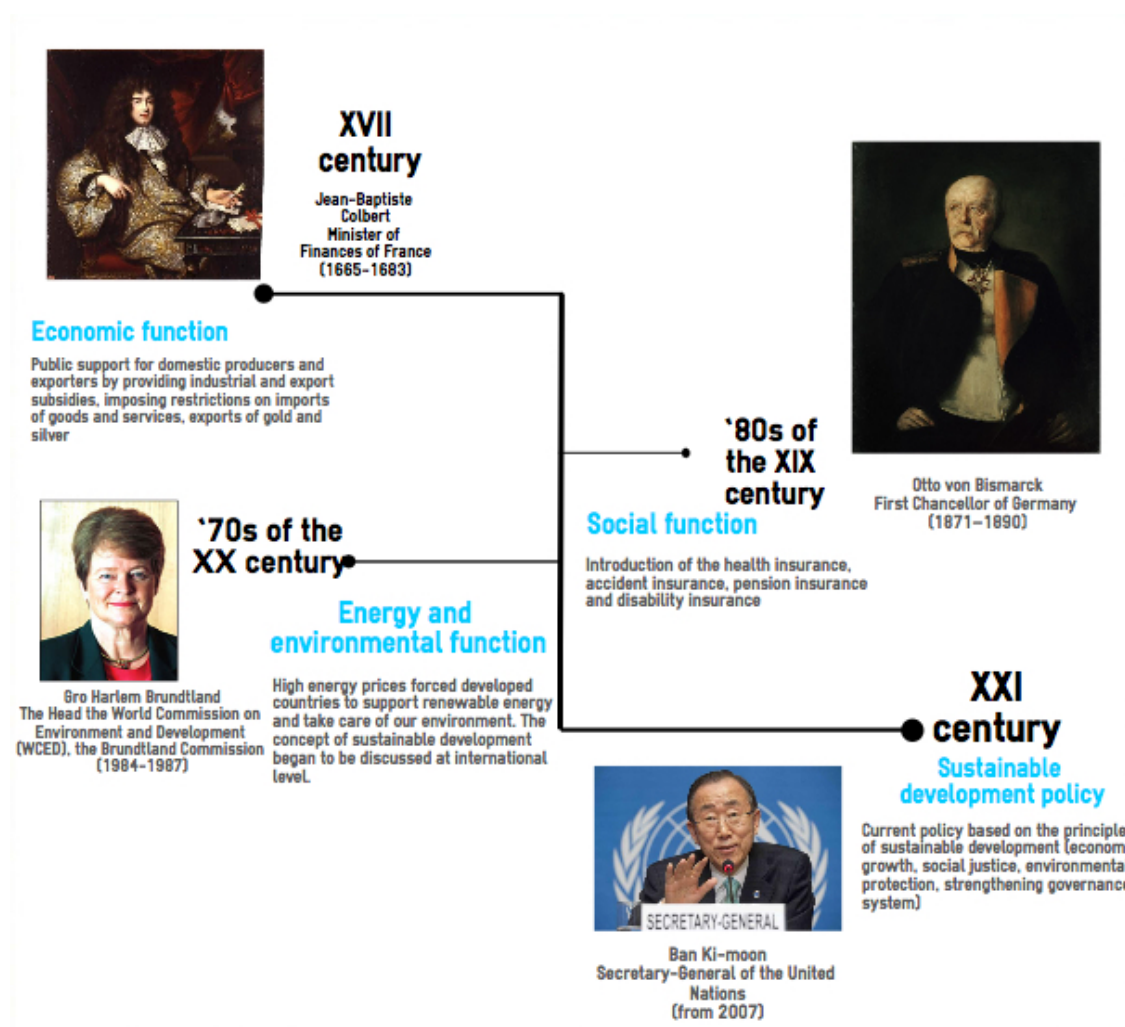
Germany, being part of the EU and playing an important role in the policy formation for the whole Union, can be the practical example of using the emissions trading scheme in the EU (EU ETS) for Ukraine and can provide an opportunity to build up an effective and efficient mechanism for environmental protection and to create the necessary conditions for EU integration.

2. The concept of sustainable development as a basis for the modern economic development and social policy in Germany

2.1. The increasing role of government in regulating the economy

If at the time of Jean-Baptiste Colbert (1619-1683) the primary purpose of the government intervention was public support for domestic producers and exporters, in the early twentieth century social problems became an especially important issue (see Figure 1). Social protection policy started to play a key role in the late 19th century in New Zealand and Germany (social security), but it acquired its modern form during the Great Depression (specifically the 1930`s). In the 20th century the laws that introduced the minimum wage and many social guarantees appeared in the United States. In addition, at this time the first deposit guarantee fund (Federal Deposit Insurance Corporation, FDIC) appeared.

Figure 1. The historical functions of government



Source: built by the authors

The energy crisis of the 70`s showed how the countries and the ordinary citizens depend on the price of natural resources and their availability. Developed countries not only felt the lack of energy resources, but also began to realize the magnitude of the negative impact traditional energy sources have on the environment. At this time they began to develop appropriate policies on the prevention of air and water pollution and encourage the use of alternative energy sources (see the experience of Denmark in 70 years of the 20th century)⁵ (see Figure 1).

Today, government is responsible for a wide range of socially important issues which can't be solved in the interests of all subjects of economic relations without its intervention.

2.2. Role of the international community in sustainable development policy implementation

The first global forum where some sustainability issues were at the center of the international attention was the UN Conference on the Human Environment (Stockholm, Sweden, 1972) (see Table 1).

Table 1. The most important international conferences (summits) on issues of sustainable development

	Name	Place and time	Main achievements
1.	The United Nations Conference on the Human Environment	Stockholm, Sweden, 1972	27 principles of environmental protection and development (human rights, preservation and access to natural resources, economic development, fight against pollution, etc.) Action plan "Agenda 21" (the fight against poverty, resource management, strengthening the role of social groups, the means to achieve these goals)
2.	The United Nations Conference on Environment and Development	Rio de Janeiro, Brazil, 1992	Convention on Biological Diversity United Nations Convention to Combat Desertification United Nations Framework Convention on Climate Change Kyoto protocol to United Nations Framework Convention on Climate Change (1997)

⁵ IRENE. *IRENA-GWEC:30 years of policies for wind energy*. Available at: https://www.irena.org/DocumentDownloads/Publications/IRENA_GWEC_WindReport_Denmark.pdf

Table 1 (continued)

3.	The United Nations Millennium Summit	New York, USA, 2000	Millennium Development Goals developed (to reduce poverty, provide access to education, gender equality, improve the status of women in society, reduce mortality among infants and children under five, combating diseases, environmental sustainability issues, global cooperation for development)
4.	The United Nations Conference on sustainable development, RIO+20	Rio de Janeiro, Brazil, 2012	Sustainable development goals (emphasis on poverty reduction, promotion of education, renewable energy sources development, tackling climate change, etc.)
5.	United Nations sustainable Development Summit 2015	New York, USA, 2015	Millennium Development Goals Reports, elaboration of the Action plan for the Period after 2015

Source: The United Nations website, available at: <https://sustainabledevelopment.un.org/post2015/summit>

As a result of the conference many important decisions were adopted. Those decisions allowed the launch of the United Nations Environment Programme (UNEP) and other agencies for environmental protection at the national level. The recommendations of this conference were the starting point for development in 1980 of the World Strategy for Nature Protection (World Conservation Strategy) by IUCN (International Union for the Conservation of Nature) in cooperation with WWF (World Wildlife Fund) and the UN Environment Programme (UNEP). The purpose of this alliance was to support sustainable development by identifying the major environmental goals⁶.

In 1983, under the auspices of the UN, the World Commission on Environment and Development (WCED) was established and Gro Harlem Brundtland was chosen as the Head of this Commission (former Prime Minister of Norway). In 1987 WCED issued a report "Our Common Future", which contains the most widely used definition of "sustainable development". Thus, according to this definition, sustainable development - is "development which meets the needs of present generations without compromising the ability of future generations to meet their own needs"⁷.

Due to the above-mentioned facts the concept of sustainable development has gained special importance. In fact, this concept is an interpretation of the most influential risks in our daily life, the lack of natural resources and the need to ensure the sustainable economic growth.

This concept entails all the most historically important formed functions of government (economic, social and environmental) (see Figure 1). The crucial step in the genesis

⁶ Drexhage John, Murphy Deborah (2010). *Sustainable Development: From Brundtland to Rio 2012*. Background Paper. New York: United Nations: 8.

⁷ World Commission on Environment and Development (1987). *Our Common Future*. Oxford: Oxford University Press: 45.

of sustainable development policy was the approval of the sustainable development concept at the level of the UN (The United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, 1992). As a result of this conference the document "Agenda 21" was adopted, which describes in 180 pages the immediate essential steps needed to ensure sustainable development (see Table 1).

2.3. Essence and goals of sustainable development policy implementation

The sustainable development policy can be defined as a set of actions, measures and instruments aimed at achieving the sustainable development goals. As a result of the joint efforts of different countries at international level the common vision of the policy, its goals and instruments were elaborated.

A significant event that provided an opportunity to set up the sustainable development goals for humanity was the UN Millennium Summit, which took place in September 2000 (New York, USA). Overall, eight of the most important goals for sustainable development were determined (see Table 1).

The next significant step towards sustainable development was the UN conference on sustainable development in 2012, RIO + 20 (Rio de Janeiro, Brazil). The conference participants began to elaborate the Sustainable Development Goals (SDG) – 17 goals (see Table 2).

Table 2. Ranking of SDGs by level of transformational challenge in developed countries (maximum level – 8)

Goals	The overall rating of the goals
Goal 13. Take urgent actions to combat climate change and its impact	7,1
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all	6,4
Goal 12. Ensure sustainable consumption and production patterns	6,3
Goal 14. Conserve and sustainable usage of the oceans, seas and marine resources for sustainable development	4,4
Goal 10. Reduce inequality within and among countries	3,6

Source: Osborn D., Cutter A. And Ullah F. (2015). *Universal Sustainable Development Goals. Understanding for Developed Countries*. Report of a Study by Stakeholders Forum: 6.

Current problems and challenges are at the center of concern not only for the UN but also for international economic and financial institutions. According to the report prepared by World Economic Forum "Global Risks 2015", risks associated with international conflicts and extreme weather conditions have the highest probability (see Table 3).

Besides the international level the concept of sustainable development is reflected in strategic documents and relevant policies at regional and national levels. Thus, in the EU strategy "Europe 2020"⁸ was elaborated and accepted, the main purpose of which is to create conditions for the sustainable development of all member-states.

Table 3. Five global risks in terms of likelihood and impact in 2015.

	Likelihood	Impact
1 st	Interstate conflict	Water crisis
2 nd	Extreme weather events	Spread of infectious diseases
3 rd	Failure of national governance	Weapons of mass destruction
4 th	State collapse or crisis	Interstate conflict
5 th	Unemployment or underemployment	Failure of climate-change adaptation

Source: *Global Risks 2015. 10th Edition (2015)*. Geneva: World Economic Forum: 14.

The core idea of the EU strategy "Europe 2020" is to create conditions for "smart", sustainable and inclusive growth. In particular, this strategy foresees the reduction in percentage of persons who prematurely terminated school education (from the current 15% to 10%), and the increase in percentage of population in the age group between 30 and 34 years with higher education (from 31% to at least 40%), investing at least 3% of GDP in research and development.

Sustainable growth foresees the achieving of environmental goals ("20-20-20" – reducing greenhouse gas emissions by at least 20%, increasing the share of renewable energy sources in final energy consumption to 20% and increasing energy efficiency by 20%) compared to the levels of 1990.

Inclusive growth is linked to the need for increasing the percentage of employed population to 75%; reduce the number of people who live below the official poverty line by at least 20 million.

In order to achieve these goals, the strategy introduces seven initiatives (Flagship Initiatives). Three initiatives are aimed at promoting smart growth (Digital Agenda for Europe, Innovation Union and Youth on the move), the next two – sustainable growth (Resource efficient Europe, An industrial policy for the globalization era) and another two – inclusive growth (An Agenda for new skills and jobs, European platform against poverty)⁹.

Germany plays a leading political and economic role in the EU and was one of the cofounders of the European Coal and Steel Community, European Economic Community and will remain the engine of European integration.

⁸ Europe 2020. Strategy for smart, sustainable and inclusive growth. Available at: [http://ec.europa.eu/eu2020/pdf/COMPLET EN BARROSO 007 - Europe 2020 - EN version.pdf](http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20007%20-%20Europe%202020%20-%20EN%20version.pdf)

⁹ Official site of the European Commission. Available at: [http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/flagship-initiatives/index en.htm](http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/flagship-initiatives/index_en.htm)

Today, the economic and financial systems in Germany are developing according to the specific targets (defined at European level). That is why the main goals of German economic policy – the so-called "Magic Hexagon", are: full employment, stable currency and balance of payments, economic growth, fair distribution of income and property in the society, protecting the environment¹⁰.

As Germany is a federal state, the economic development policy is implemented at several levels: the federal level, the level of states and communities. At the federal level among the priorities is the necessity to create framework conditions, mechanisms for balancing and co-financing, as well as social policy development. The priorities of states and communities are: promotion of local and regional infrastructure, human capital and education.

In order to operationalise the mission at the national and local levels, appropriate indicators, which help to describe the current situation and assess the achievement of development goals, were elaborated¹¹.

According to the National Strategy of Germany, sustainable development is one of the leading policy principles of the Federal German government. The initial points of sustainable development are the following principles:

- equality of opportunity across the generations;
- quality of life;
- social cohesion;
- international responsibility.

Economic productivity, environmental protection and social responsibility must interact in such a way, so that the decisions which are taken globally, will be reliable and stable in all three directions. The government is currently facing four implementation vectors for granting balanced and sustainable development in Germany:

- achieving fiscal sustainability;
- sustainable development of economic activities;
- measures in the field of energy policy and climate protection policy;
- sustainable water policy and management.

The concept of sustainable development lies in the heart of international, regional and national economic development policy. Thus, it gives an opportunity to take into account economic, social and environmental issues and create conditions which meet the interests of present and future generations.

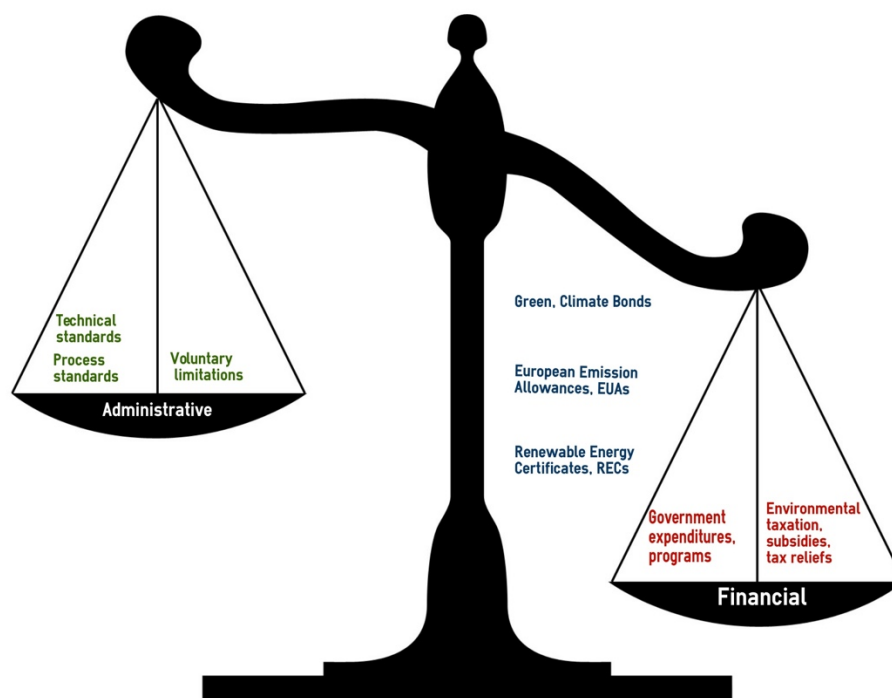
¹⁰ Kevenhörster P. *Politikwissenschaft: Band 2: Ergebnisse und Wirkungen der Politik* (2014). Verlag: 162.

¹¹ Gehrlein U. (2004) *Nachhaltigkeitsindikatoren zur Steuerung kommunaler Entwicklung*. Springer Verlag: 322.

2.4. Essential tools for the achievement of the sustainable development policy goals

Effective tools and measures are required to achieve the goals. Germany is an example of a country where sustainable development policy instruments are quite different, allowing them to be ahead of the sustainable development objectives at EU and national levels (see Figure 2)¹².

Figure 2. Financial (fiscal, market) and administrative instruments for achieving the sustainable development goals



Source: built by the authors

Administrative tools give an opportunity to determine the limits and conditions for production processes, to establish the necessary characteristics of provided goods and services. Standardization of residential building construction in Germany is an integral, vivid example of such restrictions, where there is a special standard that covers all aspects, from the choice of building materials to the process of the building exploitation (see table 4).

¹² Official website of the Federal Government of Germany. [Electronic resource]. - Electronic access mode:<http://www.bundesregierung.de/Content/DE/Artikel/2015/03/2015-03-25-strategischer-sozialbericht-kabinett.html>

Table 4. Certification system DNGB (Deutsche Gesellschaft für Nachhaltiges Bauen) for buildings.

Criterion	Characteristic
1. Environmental Quality	<ul style="list-style-type: none"> • greenhouse gas emissions • impact on the local area • use of the ecological materials • water consumption and waste volumes • land use
2. Economic Quality	<ul style="list-style-type: none"> • building maintenance costs • flexibility and adaptability • commercial viability
3. Sociocultural and Functional Quality	<ul style="list-style-type: none"> • thermal comfort • indoor air quality • access to the building • other
4. Technical Quality	<ul style="list-style-type: none"> • fire safety • sound insulation • cleaning and maintenance of the building • other
5. Process Quality	<ul style="list-style-type: none"> • availability of the agreed project • integrated design • the impact of construction on the environment • other
6. Site Quality	<ul style="list-style-type: none"> • local environment • public image and social conditions • transport access • access to shops, sports clubs, educational, medical and administrative establishments

Source: built by the authors on the basis of:

The official website of the German Society of Sustainable Construction. [Electronic resource]. - Electronic access mode: <http://www.dgnb-system.de/en/system/criteria/core14/>

However, only mandatory limitations makes it impossible to achieve the set of sustainable development goals at necessary scale. That is why, a broad range of financial (fiscal and market) tools is used along with administrative ones.

3. Fiscal instruments to promote sustainable development in Germany

3.1. Taxes as an important tool to implement sustainable development policy

The existence of financial instruments is connected with a need for “internalization of costs”, which is the consequence of the negative influence of one person’s activities on the welfare of others (negative social externalities) or on the quality of the environment (negative environmental externalities). Taxes were the first financial instrument aimed at the compensation of such costs.

Personal Income Tax is an example of how German government can ensure equal income distribution and social justice (deal with negative social externalities). So, the tax rate depends not only on the level of income but also on social status of the taxpayers (see table 5).

Table 5. Some specific features of income taxation in Germany (2010-2015).

Tax rate	2010-2012	2013	2014-2015
Non-taxable minimum			
Single:	8 004 Euro	8 130 Euro	8 354 Euro
Married:	16 009 Euro	16 260 Euro	16 708 Euro
Initial tax rate	14%	14%	14%
	(from 8 005 Euro)	(from 8 131 Euro)	(from 8 355 Euro)
Maximum rat rate	42%	42%	42%
Single:	(from 52 822 Euro)	(from 52 822 Euro)	(from 52 822 Euro)
Married:	(from 105 764 Euro)	(from 105 764 Euro)	(from 105 764 Euro)
Maximum tax rate	45%	45%	45%
Single:	(from 250 731 Euro)	(from 250 731 Euro)	(from 250 731 Euro)
Married	(from 501 461 Euro)	(from 501 461 Euro)	(from 501 461 Euro)
Mandatory filing of declaration			
Single:	8 004 Euro	8 130 Euro	8 354 Euro
Married:	16 009 Euro	16 260 Euro	16 708 Euro

Source: built by the authors on the basis of Einkommensteuer Berechnung, Steuertarif 2015. Available at: <http://imcc.de/steuer/einkommensteuer/index/html>

Another very important aspect of anthropogenic activities is the lowering of environmental quality (negative environmental externality). The main purpose of environmental taxation is to compensate the negative impact of production on the environment. A. Pigou (1877-1959) in his famous book “The economics of welfare” offered to introduce an environmental tax, which would equal to the marginal costs associated with losses caused by the company to the environment. The establishment of a cost compensation mechanism can cause the increase in prices on products and, as a consequence, lead to the manufacturing drawback to the optimal level.

According to the Strategy 2020, the main goals of the German draft budgetary plan¹³ are the following: reducing greenhouse gas emissions by 40% by 2020 from the 1990 levels (by 80-95% by 2050), increasing the share of renewable energy sources in gross final energy consumption to 18% by 2020 (to 60% by 2050) and at least to 80% in the electricity sector. Hence, environmental taxation introduced in Germany (tax on electricity, airline carbon tax, energy tax etc.) are very effective tools to protect the environment. German experience shows how the fiscal instruments can attract and increase the volumes of “green investments” (for instance, reconstruction and sanation of buildings)¹⁴. Moreover, environmental taxation is an additional source of financial resources for the government.

Nowadays direct and indirect environmental taxation in Germany exists in various forms: air passenger tax, vehicle tax, nuclear fuel tax, tax on electricity, energy tax. Those taxes were implemented in order to limit the negative impact of fossil fuels on the quality of the environment and climate change, and to promote the preservation of natural resources (see table 6).

Table 6. Environmental taxation in Germany (as for beginning of 2015).

Taxes	Characteristics
German air passenger tax ¹⁵	The tax rate fluctuates from €7,5 to €42,18 for a passenger depending on distance
Vehicle Tax ¹⁶	Tax rates for cars fluctuate from €6,75 to 37,58 for 100 cubic cm of engine displacement.
Nuclear Fuel Tax ¹⁷	Tax rate is €145 for 1 gram of plutonium 239
Tax on Electricity ¹⁸	Tax rate is 20,50 cents for MW/h
Energy Tax ¹⁹	For example, the fee for coal use (as heating) is 0,33 € for 1 GJ

Source: built by the authors

So, nearly €50 billion were accumulated from the environmental taxation in Germany in 2014 (nearly 20% of the total amount of federal budget tax revenues)²⁰.

A healthy environment and careful handling of natural resources are the prerequisites for long, stable economic and social development. As a part of the environmental policy, Germany takes measures which are aimed at conducting ecological

¹³ German draft budgetary plan 2016 according to Regulation (EU) No 473/2013, October 2015. Available at: http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/dbp/2015/2015-10-15_de_dbp_en.pdf

¹⁴ Schlegelmilch Kai. Energie versteuern aber richtig// Die Zeit, 13. August 2012. Available at: <http://www.zeit.de/wirtschaft/2012-08/oekosteuer>

¹⁵ Luftverkehrsteuergesetz (LuftVStG). Available at: <http://www.gesetze-im-internet.de/luftvstg/>

¹⁶ Kraftfahrzeuggesetz (KraftStG). Available at: <http://www.gesetze-im-internet.de/luftvstg/http://www.zeit.de/wirtschaft/2012-08/oekosteuer>

¹⁷ Kernbrennstoffsteuergesetz (KernbrStG). Available at: <http://www.gesetze-im-internet.de/kernbrstg/BJNR180400010.html>

¹⁸ Stromsteuergesetz (StromStG). Available at: <http://www.gesetze-im-internet.de/stromstg/>

¹⁹ Energiesteuergesetz (EnergieStG). Available at: <http://www.gesetze-im-internet.de/energiestg/>

²⁰ Official Website of the German Federal ministry of Finance. Available at: <http://www.bundesfinanzministerium.de/Web/EN/Home/home.html>

modernization projects and promoting sustainable development. For this reason, even considering the policy of gradual transition to the use of market financial instruments in the fight against climate change, the government does not refuse the use of taxes for the purpose of restricting the anthropogenic impact on the environment and to accumulate the budget resources necessary to support “green projects”.

3.2. Government financial support and subsidies for the achievement of the sustainable development goals

Fighting against climate change, promoting energy generation from alternative sources, energy and resource efficiency, providing clean air and environmental protection - these are only a few areas on which the German Government is working. In 2014 most of the expenditures in the field of environmental policy were headed to the Federal Ministry for the Environment, Nuclear Conservation, Building and Nuclear Safety - almost 1.8 billion EUR. The Ministry is planning to spend 791.8 million EUR for research projects in the field of renewable energy over the period 2013-2017. To improve energy efficiency in 2013 - 2017 the Ministry is providing financial resources up to 149.5 million EUR.

The state support for education and research at all levels is important to ensure the development of forthcoming generations. From 2010 to 2014 the state provided approximately 360 million EUR for vocational education and other areas of education under the so-called “Initiative on educational chains”²¹. The federal government has promoted the creation of additional educational places and made a major contribution to the development of educational structures (cross-border cooperation in education, dual education, and testing new approaches in the framework of the Professional Education Act). In general, according to the German National Strategy for 2020, expenditures on education and research should not be less than 10% of GDP by 2015.

Another important fiscal instrument of promoting sustainable development in Germany is providing subsidies for the economy. In the last years the German government’s subsidy policy has been primarily influenced by a decision associated with the transformation of the German energy system. It covers such aspects as: ensuring reliability and economic viability of energy supply, taking into account climate change and its impact on the environment without a negative influence on the competitiveness of the German economy. The Federal government provides a differentiated subsidy policy, with regard to the course of sustainable development, selected by Germany, and priorities connected with implementing the decision mentioned above.

That is why in the years 2013-2015 the German government cut some subsidies (concerning areas of food, agriculture and consumer protection, subsidies on technologies and innovations, regional structural measures, transport, savings and investment promotion) while at the same time temporarily increased or introduced new forms of financial support to businesses and consumers of the energy sector.

Current state support measures are aimed at accelerating the implementation of an energy system transformation program in Germany (Energiewende) and preserving and strengthening the competitiveness of energy-intensive business.

²¹ Bildungskette. Abschluss schaffen. Anschluss finden. Fachkräfte sichern. Available at: https://www.bmbf.de/pub/flyer_bildungsketten.pdf

Table 7. Thirty major areas of federal financial support directions and types of tax reliefs in 2014.

- The reduced rate of VAT on cultural and related services
- Tax breaks for businesses hardest hit by the tax load
- Discounts for the payment of energy tax for electricity producers
- Reducing tax rates for repairs
- Subsidies to private pensions
- Reduced tax rate for public transport
- Tax benefits for enterprises in electricity (consumption of more than 50 MW for business)

- Reduced energy tax rate for specific processes
- Benefits of aviation fuel class G, s / d diesel
- Tax breaks for manufacturers of mineral oils
- Partial discount for paying energy tax for combination, normal heat and electricity

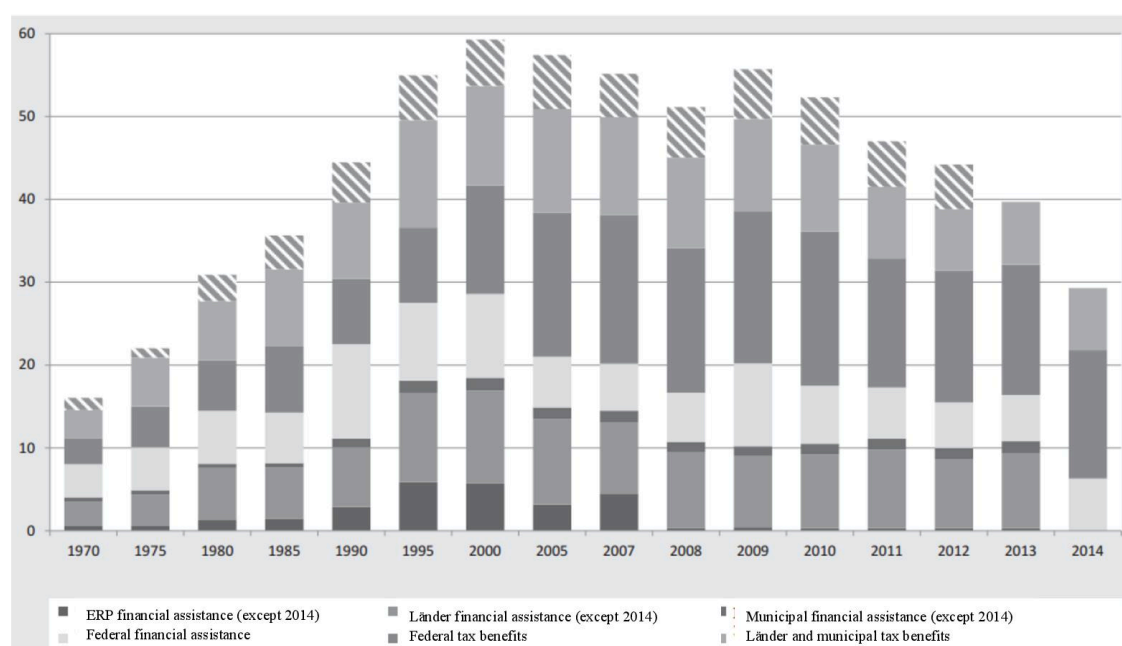
- Investment subsidies for purchasing equipment
- Depreciation activities for SMEs
- Subsidies for the sale of German coal for electricity production and counteracting the effects of adjusting capacity
- Subsidies KfW (Reconstruction Loan institutions) on energy saving measures for repair
- Subsidy for specific measures to develop renewable energy sources
- Joint task subsidy "Improving agricultural structures and coastal protection"
- Joint task subsidy "Improving regional economic structures"
- Central Innovation Programme for SMEs
- Compensation electricity prices
- Urban Development Grants
- Financing energy efficiency
- Subsidies for insurance c / d Accidents
- Adjusting earnings for miners
- Support for small and medium businesses, freelancers and training
- The subsidy for the combined transport terminals
- Providing subsidies for interest under aid of programs ERP (the European Recovery Programme)
- Financial contributions for maritime transport
- Venture capital investment grants

Source: 24th Subsidy Report of the Federal Government. Available at:
http://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Press_Room/Publications/Brochures/2013-10-10-24th-subsidy-report-summary-pdf?__blob=publicationFile&v=8

In 2014, there were 62 federal financial support programs, 30 of which are the most significant in volume (93% of total losses) (see Table 7).

It's necessary to note that the total budget expenditures in the period compared to the previous years (including before crisis²²) declined. This trend means that the policy of subsidizing not only supports, but positively impacts fiscal consolidation while ensuring environmental protection and competitiveness of the German economy (see Figure 3).

Figure 3. Dynamics of total federal, municipal and land subsidies in Germany, ERP and financial support of the EU, 1970 - 2014 (billion EUR)



Source: 24th Subsidy Report of the Federal Government. Available at: http://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Press_Room/Publications/Brochures/2013-10-10-24th-subsidy-report-summary-pdf.pdf?blob=publicationFile&v=8

Thus, the presence of substantial financial support from the budget allows Germany to conduct the necessary projects for the development of a low carbon economy and contribute to the goals of its sustainable development strategy.

3.3. Government project-oriented funding of sustainable development projects

The German Federal Government's project-oriented funding activities focused on sustainable development projects at the international and national levels. Internationally, in 2008 the Federal Ministry for the environment, nature conservation, building and Nuclear Safety of Germany (BMUB) launched the International Climate Protection Initiative (Internationale Klimaschutzinitiative, IKI), which aims to finance projects related to the struggle with change climate and biodiversity conservation in

²² 24th Subsidy Report of the Federal Government. Available at: http://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Press_Room/Publications/Brochures/2013-10-10-24th-subsidy-report-summary-pdf.pdf?blob=publicationFile&v=8

developing countries. The source of funding for this initiative during the first five years of its implementation were proceeds from the sale by auction emission allowances within the EU Emissions trading system EU (EU ETS). But today the financial basis for those initiatives is the budget of BMUB.

Defined the following main areas of funding under IKI:

- reducing greenhouse gas emissions;
- combating climate change;
- preservation of natural sinks of carbon dioxide;
- biodiversity conservation.

Under this initiative projects totaling 1,65 billion EUR were funded during the period 2008-2014. More than 50% of the funding was aimed at reducing greenhouse gas emissions (see Table 8).

Table 8. Structure of project financing under the International Climate Initiative (ICI), million Euro, %.

Funding direction	Million Euro	Share, %
Reducing greenhouse gas emissions	867	52
Combating climate change	273	16
Preservation of natural sinks of carbon dioxide	292	18
Biodiversity conservation	224	14

Source: Protecting the Climate, Conserving Biodiversity. The Federal Environmental Ministry's. International Climate Initiative. – Berlin: Federal Ministry for the Environmental, Nature Conservation, Building and Nuclear Safety, 2015. – P. 2.

Financing projects under this initiative focused on the following areas:

- communal projects;
- individual innovation projects;
- industrial air conditioning systems;
- mini-cogeneration settings;
- hybrid buses.

These projects are designed for implementation in enterprises, local communities, and educational institutions. This initiative provided financial resources to more than 19000 projects worth 421 million EUR. The realization of these projects will allow Germany to achieve its defined goals of reducing greenhouse gas emissions by 2020 by 40% and by 80-95% by 2050 compared to the 1990 levels.

Also, the introduced initiative encourages private investment. Thus, nearly 1 billion EUR of private investment was attracted into the projects aimed at providing communities with electricity, industrial air-conditioning and mini-cogeneration settings during 2008-2013 (see Table. 9).

Table 9. Structure of project funding under the National Climate Protection Initiative (NKI), million EUR.

Direction of funding	NKI resources, million EUR	Private investment, million EUR
Public projects	173,0	450,6
Industrial conditioning systems	65,6	303,5
Mini-cogeneration units	41,8	271,7

Source: built by the authors using the data of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)

Implementation of this initiative makes it possible to significantly reduce greenhouse gas emissions, to efficiently combat climate change and leads to budgetary savings by attracting private investors.

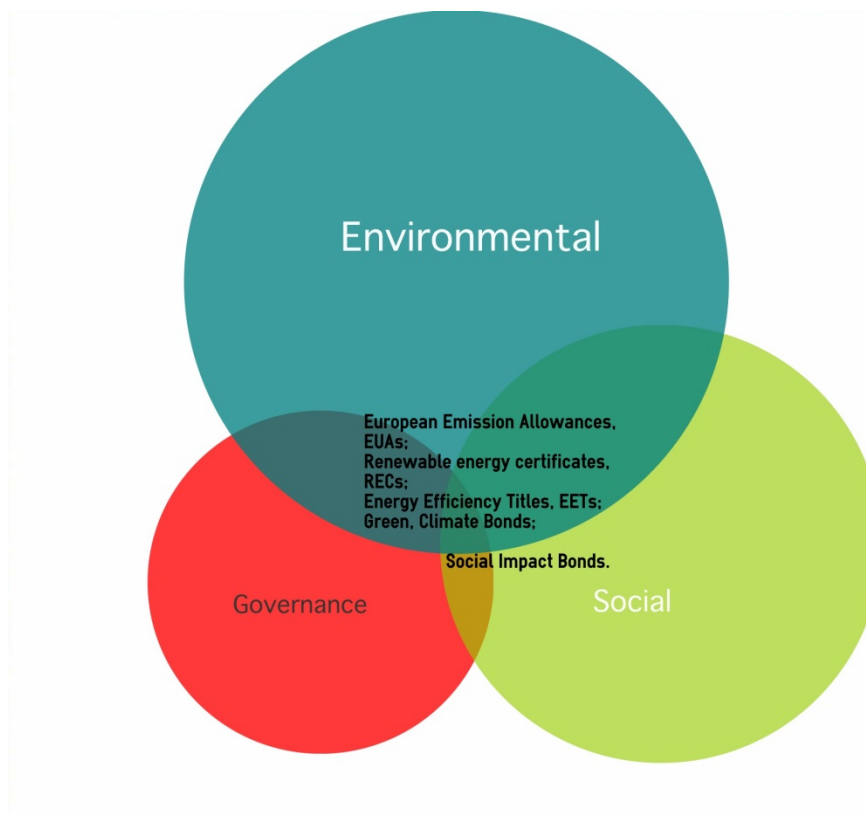
4. Market financial instruments of the National Strategy for Sustainable Development in Germany

4.1. Role and place of Germany in functioning of the EU Emission Trading System (EU ETS)

Implementation of sustainable development strategy and reducing greenhouse gas emissions is impossible when only using fiscal instruments that carry an element of compulsion. Developed by Ronald Coase (1910-2013), the idea of providing enterprises - polluters with property rights on emissions - was the basis for introducing market tools and mechanisms to promote the polluters' initiative to implement emission reduction projects at the lowest costs (see Figure 4).

The German government has come to understand the market instruments' effectiveness in the fight against climate change. According to the relevant German ministry, namely EU ETS forces the polluters to take into account emissions in their financial statement and to look for the most effective ways to minimize environmental risks²³.

Figure 4. Market financial instruments for sustainable development strategy



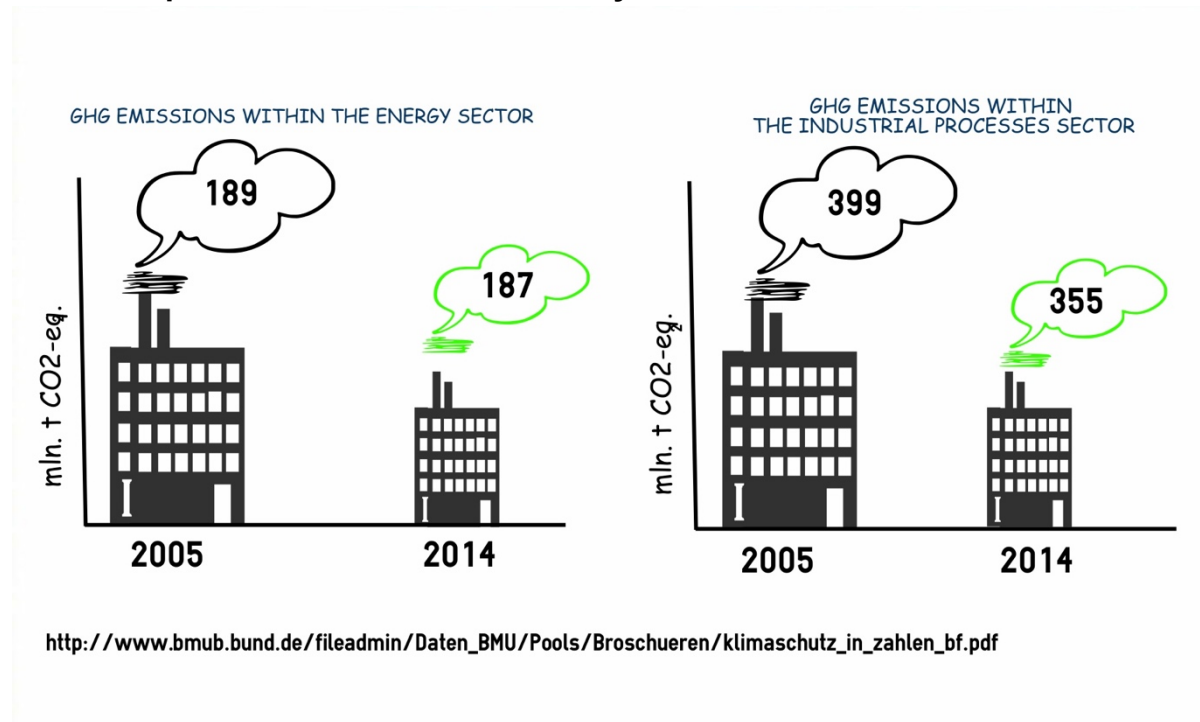
Source: built by the authors

²³ The Official website of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). Available at: <http://www.bmub.bund.de>

For instance, today Germany demonstrates to the whole world what should be done to implement the strategy of sustainable development (section “Equal opportunities for different generations”)²⁴:

- to increase the share of renewable energy in the structure of primary consumption to 4,2% and to 12,5% in the structure of the final energy consumption by 2020;
- to double the level of energy efficiency and the efficiency of using natural resources by 2020 (as compared with the 1990 level);
- reducing carbon dioxide emissions by 40% by 2020 (as compared with the 1990 level).

Figure 5. Dynamics of greenhouse gas emissions within the energy and industrial processes sectors in Germany.



Source: built by the authors

One of the key instruments which Germany uses in the fight with greenhouse gas emissions is the EU Emissions Trading System (EU ETS). The Emissions Trading System is used in many countries at different stages of its implementation, functioning on the principle of "CAP and TRADE" (limit and sell). The government of the country, or competent authority, sets limits for emissions (CAP) and then allocates a certain amount of free permits, which give the right to emit greenhouse gases as a result of their activities. If a company-participant of the system exceeds its limit, it must buy extra permits on the market, and the company, which on the contrary has reduced its emissions, has the opportunity to sell their permits (TRADE). In theory, the demand for permits in the trading system should increase, which will contribute to the growth

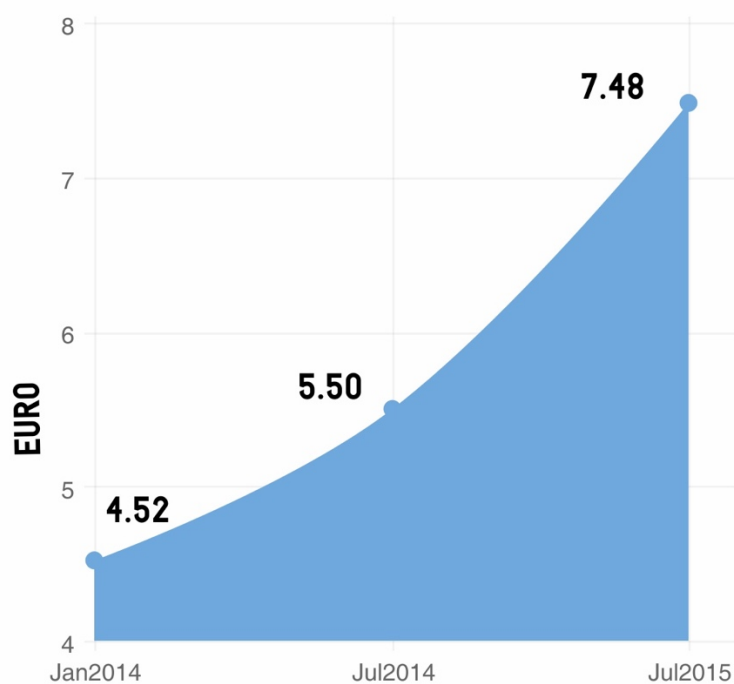
²⁴ Perspektiven für Deutschland. Unsere Strategie für eine nachhaltige Entwicklung. Available at: <http://www.bundesregierung.de/Content/DE/Anlagen/Nachhaltigkeit-wiederhergestellt/perspektiven-fuer-deutschland-langfassung.pdf;jsessionid=761EFD2BE1508DE32227577731CBAEC2.s4t1?blob=publicationFile&v=3>

of prices and will influence company decision-making at the expense of investment in projects aimed at decreasing greenhouse gas emissions.

In Germany, as in other parts of the EU, ETS was enacted in 2005. German Greenhouse Gas Emission Allowance Trading Act (TEHG) and EU Directive 2003/87 built a legal background for taking part in the EU ETS. ETS includes 3 sectors: energy, industrial and aviation.

In Germany ETS includes 1929 installations, which give near half of Greenhouse Gas Emissions in CO₂ equivalent and 26% of all EU ETS emission. The EU ETS is going through the 2nd phase, which started in 2013 and will last until 2020. Distinguishing features of the third phase are reduced limits for German company emissions, which emit 416 million tons in CO₂ equivalent, and reduced quantities of free allocated units (which was the main feature of the last trade periods). Companies from the energy sector will get few emission allowances within the free allocation up to 2020; almost all permissions will be sold at the auctions - the reform of the EU ETS is on the way. The reason for reform is that supply of the emission allowances is higher than the demand for it (see Figure 6).

Figure 6. Dynamics of the EUA prices in the EU ETS.



<https://www.eex.com/en/market-data/emission-allowances/spot-market/european-aviation-allowances/2016/04/19>

Source: built by the authors

Price changes between 4,48 and 6 Euro in 2014 and from 6.50 to 7.50 over 6 months in 2015 show us a little market volatility (according to European Energetic Exchange data, <http://eex.com>).

The first step to stop further price decline was the program to restart the EU ETS, according to which there would be a reduction of auctioned emission allowances of up

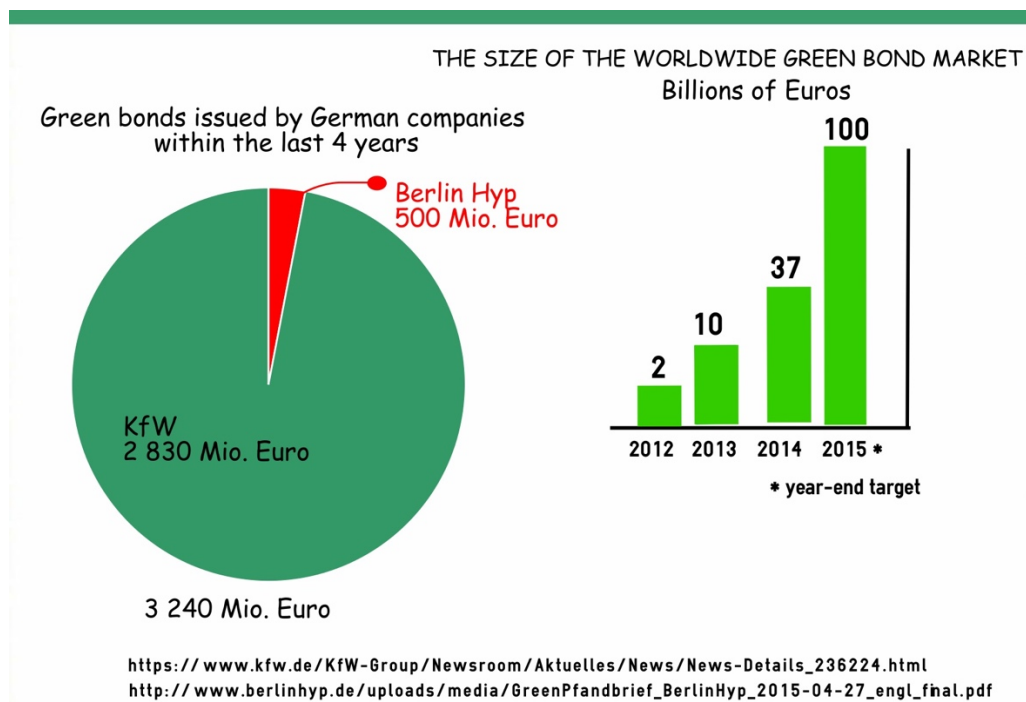
to 900 quotas (2014-2016). This surplus must be given back into the market after 2020. Now the EU (led by Germany) offers to start a Market Stability Reserve program, which will allow to create some reserve for a long-term period and depending on condition will regulate imbalances between demand and supply.

While the EU corrects mistakes in ETS for the GHG emission reduction purpose, Germany's companies and government don't wait for emissions prices to rise, they immediately install and invest in low-CO2 technologies to reduce financial and environmental risks in the future.

4.2. Using the opportunities of the debt securities market to combat environmental and social risks

In Germany, besides government financing programs and programs to support sustainable development, new financial instruments are becoming popular – the so called Green, Climate and Social Impact Bonds.

Figure 7. The size of the green bond market in the world and in Germany.



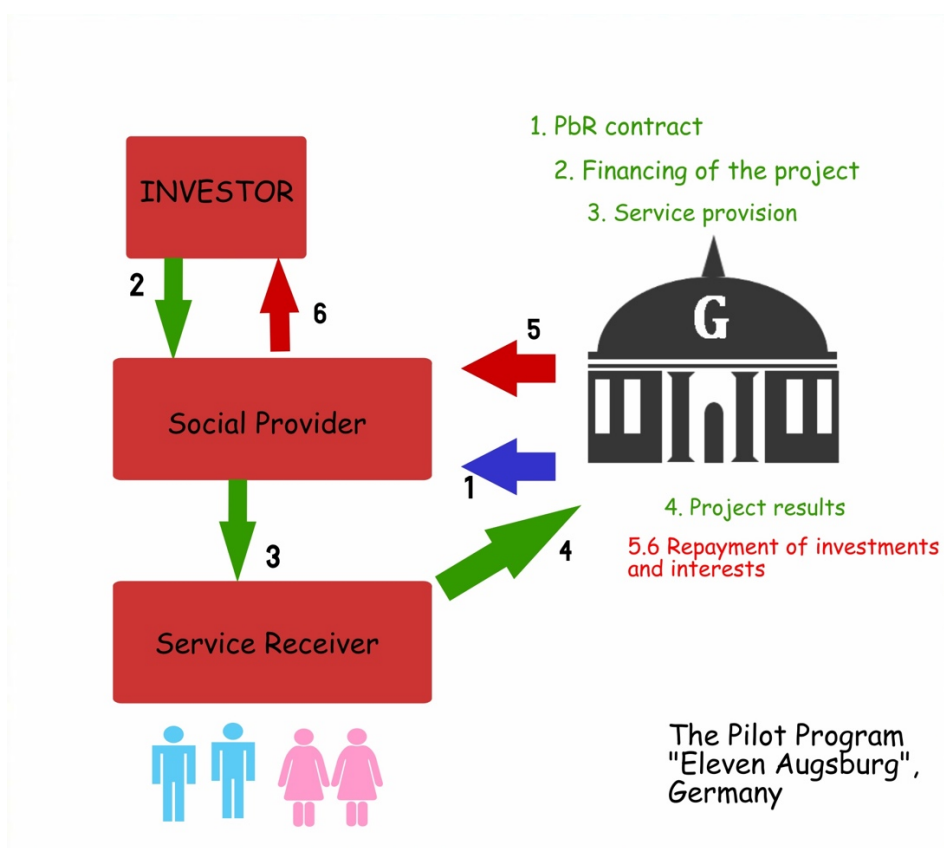
Source: built by the authors

Green, Climate Bonds don't differ from the ordinary bonds according to its financial structure – owners receive a coupon and the bonds are rated by the rating agencies (or third parties). The main difference between these bonds is that the use of borrowed money is defined and specified. Money received by an issuer must be used only on "green" projects which reduce carbon dioxide emissions (transport, energy sector, energy efficiency and energy savings projects, renewable energy production). The Issuer of such bonds can be private companies, banks, federal states or municipalities. Dynamic development of the market forces the German financial institutions to show record issuance volumes of such "Climate" or "Green" bonds (see Figure 7).

All the money received by KfW (Kreditanstalt für Wiederaufbau) through selling bonds as a part of the Renewable Energy Programme-Standard has been sent to the projects in the areas of wind and photovoltaic energy, biomass power generation and to the hydropower branch (75% of the projects will be conducted in Germany). The aim of the projects is to reduce CO2 emissions by up to 1.5 million tons of carbon dioxide equivalent. BerlinHyp is another financial institution with the issuance volumes of about EUR 500 million, receive the money and investments in green construction, in return giving a guarantee that all the projects will be environmentally friendly. Deutsche Bank also wants to add to its investment portfolio some high-quality green bonds for about 1 billion Euros. As a result of partial implementation of such a program Deutsche Bank has already invested 400 million pounds in green bonds, issued by the Transport for London. This money will be spent to reduce air pollution in London. Green bonds attract a lot of investors from all over the world, but the main problem stays the same – a lack of transparency and a weak control over the usage of money.

Social bonds or Social impacts bonds (see Figure 8) don't look like the ordinary bonds. These bonds are more structured financial products which entail huge risks, but are very important to finance the projects with the aim to solve social problems.

Figure 8. The mechanism of the social impact bond.



Source: built by the authors

When buying a social impact bond, the investor gives the money for social services such as: education, medical rehabilitation and treatment. If the project delivers the expected results in the quantitative dimension, the investor receives a return on the bonds, if not investments will not be repaid. Payments on such financial instruments are submitted by the country where the project has been conducted, or by its agents.

The payoffs include the entire amount of the borrowed money plus interest. In Germany the first pilot program financed with social of social impact bonds was launched in 2013 in Augsburg. The project "eleven Augsburg" was initiated by the Bavarian State Ministry of Labour, Social Affairs, Family and Women, where as a social provider acted the organization Juvat GmbH with financial participation from BHF-BANK, BMW Stiftung Herbert Quandt, BonVenture GmbH, Eberhard von Kuenheim Stiftung of BMW AG. The objective of this project was to select up to 20 people under 25 years of age who lack basic education and are unemployed. The aim of the project is to provide a basic education or education degree for selected people, or to employ them with all social services for a period not less than 9 months. The project ended in 2015. Social bonds are an essential step towards reducing the social problems in society. The German Government and companies understand the prospects of this financial instrument and are doing much to improve the conditions of conducting socially oriented business.

4.3. Influence of the renewable energy certificates (RECs) on Germany`s energy sector reform

The German Government outlined in its strategy, for sustainable development until 2020, the following goal: to increase the share of renewable energy sources in final consumption to 18 %. One of the mechanisms used to achieve this goal is the so-called REC Renewable Energy Certificate Market.

Taking into account Germany`s sustainable goals concerning reduction of GHG emissions, more and more companies want to consume clean energy. Furthermore, penalties, taxes and potential price increase for the allowances within the EU ETS create financial risks which companies want to minimize in their business activities. In Europe the idea of using certificates that prove the origin of the electricity (guarantees of origin) – certificates for businesses, appeared along with the Directive 2009/28/EC. To confirm the renewable energy production, the notion of Certificates or Guarantees of Origin (GO) was introduced. The GO contains information about the type of installation used to produce the electricity from renewable sources, its location, capacity, date of commissioning, country of issue and a unique certificate number. Such a Certificate confirms the production of electricity, which is equivalent to 1 MW.

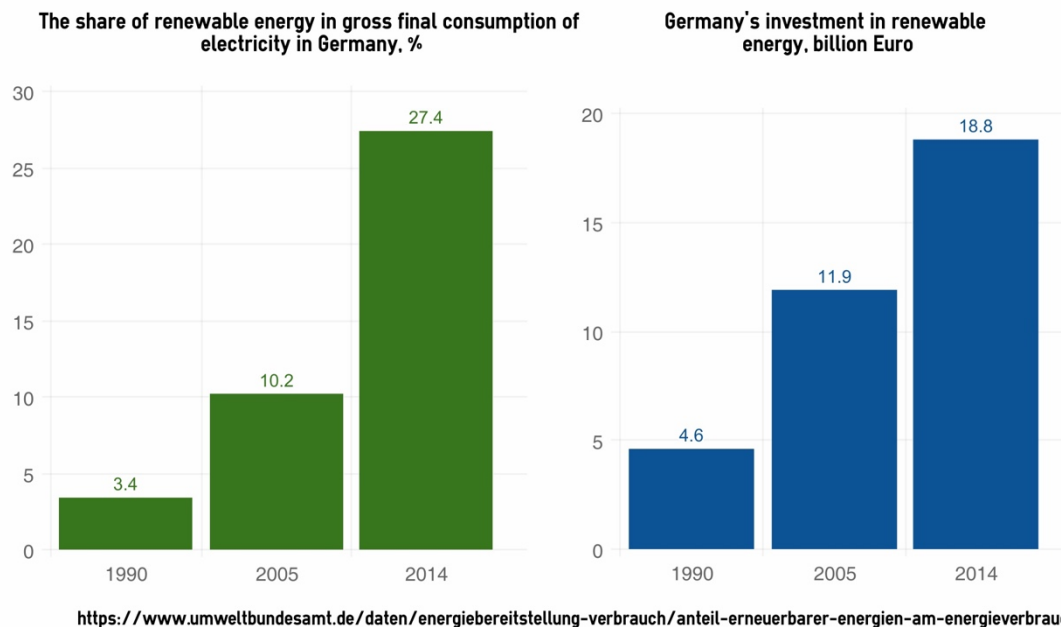
When determining the required amount of "green energy" in the balance of producers or intermediaries, the regulator of the market encourages firms to either produce more electricity or sell the GO if the company exceeded its goals. The buyers of such certificates are the companies which did not meet their obligations to produce a certain amount of "green energy" at some defined point in time. From this point of view, they are interested in buying these Certificates on the market.

On January 1, 2013, changes were made to the German Renewable Energy Act (Erneuerbare-Energien Gesetz, EEG). According to those changes the German Environment Agency (UBA) is responsible for the issuance and the transfer of GO. Also, since 2013 the registry of the GO began to function.

The GO are divided into certain types and may be accompanied by some standards that indicate the quality of "green energy" (OK-power standard, TÜV Süd HER, TÜV Süd EE). There are also other types of certificates: International REC exists since 2014 in Turkey and Taiwan, EI-Certificates are available in Sweden and Norway.

During the last three years, we have witnessed the decline of investment in the renewable energy sector in Germany, but in comparison with 2013, 2014 ended with a growth rate of 19 % (see Figure 9).

Figure 9. Renewable energy production and the level of investments in this branch in Germany.



Source: built by the authors

A distinguishing feature of sustainable development in Germany is the use of all modern financial tools. Not only the government chose the sustainable development strategy, but also each German company acts according to the principles of the "triple bottom line" concept, which grants a profit growth alongside the enhanced environmental and social performance. German companies do understand the need for accountability of their business results according to the principles of responsible investment (ESG Principles), because otherwise it's difficult to gain access to the world of international Finance (see Figure 4).

5. The Strategy for the Sustainable Development of Ukraine: current state and possible ways to use the German experience

A new stage of development in the Ukrainian economy started after the signing of the Association Agreement between Ukraine and the EU (further as the Agreement), since the document contains clear provisions for implementation of the principles of sustainable development in environmental, social and economic areas (see Section III, Annexes XXVII-XXX to the Section V of the Agreement).

Taking into account the numerous problems in the environmental, economic and social spheres of Ukraine, Germany's experience may provide the necessary answers to the pressing questions, helping them to develop their own sustainable development policy and implement effective tools that will allow them to achieve their objectives in the most effective way.

The unequal income distribution in society and the presence of socially unprotected groups requires introduction of the appropriate state support mechanisms. In Germany, this approach is evident in the case of the personal income tax, where income tax rates depend on the level of income received (progressive taxation).

Because the main burden in the social sphere falls on the state budget, it would be more appropriate to use Germany's experience with social impact bonds (SIB). These give an opportunity to mobilize resources from the corporate sector not only at national but also at international levels with more favorable conditions to solve national problems of education, health protection, unemployment etc.

Another important component of the Ukrainian sustainable development policy is protection of the environment, combating climate change and problems associated with high level energy consumption. The main approaches to solve these problems can be found in Section 5 (Annexes 26-36) of the Agreement, under which Ukraine is obligated to deepen its economic cooperation with the EU and move progressively to a low carbon economy (see Article 360 of the Agreement).

In the field of environmental protection in Ukraine there are a number of serious problems making it impossible to effectively counteract the ecological risks:

- lack of administrative (technical) and financial instruments, which give an opportunity to internalize costs associated with negative financial and environmental externalities
- flawed environment quality monitoring system
- inaccurate statistical information concerning the level of overall greenhouse gas emissions in Ukraine and in different industries in particular

To solve these problems, it's possible to use the experience of Germany in the use of administrative and financial tools that will allow achieving sustainable development goals:

- expand the tax base of environmental taxation
- implement the system of target subsidies and financial help for the projects aimed at reduction of the GHG emissions
- create the Emission Trading System which will be linked in the future with the EU ETS (European Union Emission Trading System)

- ensure effectiveness and transparency of the Emission Trading System and financial market
- stimulate the usage of green, climate, social impact bonds;
- improve the environmental monitoring system
- develop the system of certification and standardization according to the conditions of the European Union (consumption of natural resources, GHG emissions), taking into account achievements of the governmental and non-governmental German organizations
- create conditions for training the experts who will be able to support sustainable development strategy
- initiate an information campaign in order to find out threats and opportunities on the way to the Emission trading system

In 2010 an environmental tax was implemented in Ukraine according to the new Tax Code. Companies that pollute the most should pay this tax. But the level of such tax is not as big as the German companies should pay in the EU ETS. Therefore, applying different environmental taxation forms will be an important step before implementation of the ETS in Ukraine.

Due to the lack of financial recourses in the national budget, at local level and by companies we should draw attention to the advantages of environmental bonds (sustainable development bonds in general). These types of securities provide a chance to lower the costs of borrowed money in order to cover your liabilities in such branches as: energy efficiency, production of renewable energy and reducing the level of the GHG emissions.

Except fiscal instruments, it is really important to combat environmental risks and decrease the level of GHG emissions with market mechanisms, which are the most effective. In 2017 Ukraine should create national ETS, which is a prototype of the EU ETS²⁵.

The Annex XXX directly refers to the problem of climate change, protection of the ozone layer and is tightly connected with Directive 2003/87 EU, which regulates the functioning of the EU ETS. The ETS proved itself as an influential trading mechanism in combating climate change.

ETS implementation is a background for active usage of the new instruments on the finance market. We are talking about credits and investments for the projects that deal with developing a low carbon economy. That's why green bonds are being actively used all around the world. Due to the lack of budget resources, social impact bonds are getting more popular as they provide a chance to solve social problems through the involvement of private finance.

Functioning of the green and social impact bonds depends on the level of ETS implementation and the actual financial market infrastructure. That's why it's really important to create a legal framework, necessary for appropriate financial infrastructure. In this case we are talking about the implementation of the legal acts

²⁵ Annex XXX. ASSOCIATION AGREEMENT between the European Union and its Member States, of the one part, and Ukraine, of the other part. [Електронний ресурс]. – Електронний режим доступу: http://eeas.europa.eu/ukraine/pdf/10_ua_annexes_to_title_v_economic_and_sector_cooperation_en.pdf

and regulations on financial instruments markets²⁶²⁷ and regulations on OTC derivatives, central counterparties and trade repositories²⁸.

Another important aspect of the carbon and financial markets is the Market abuse Directive and Market abuse regulation²⁹³⁰.

An agreement signed between Ukraine and the EU will be a great sign of development for our country, implementing steady political development, and implementing effective instruments for reaching the goals. Additional to actions connected with reforms of the domestic energy sector and improvement of energy efficiency, chapter 5 of the Agreement contains important prescriptions for environmental protection and shows us how to combat climate change. Moreover, reinforcing cooperation is a significant starting point to combating the consequences of the Chernobyl catastrophe (Article 342).

Furthermore, article №357 says that the cooperation in statistics and especially environmental statistics should be strengthened. The question about environmental protection is described in Chapter 6 (Part 5 of the Agreement). Article 360 provides us with the main idea of cooperation – to build a green economy and to implement the main principles of the sustainable development strategy. The next article is dedicated to the main directions for the implementation of this strategy, where not only environmental issues are revealed but also the reforms in education, with the aim to prepare new specialists and introduce new methods of management.

But for implementation of this strategy a lot of problems in Ukraine should be solved. The fact that the President of Ukraine signed the Order №5/2015 “About the strategy of sustainable development in Ukraine till 2020” at the beginning of 2015 is only the first step to achieve the sustainable development goals. However, without proper GHG emissions monitoring and reporting it’s really hard to evaluate the parameters of the system and to provide a transparent process of putting a price on carbon³¹.

German and European companies, which are part of the EU ETS, report in accordance with the ESG principles, which give them a chance to combine financial, social and environmental activities in order to form an integral account. Such accounts are very important for organized trading places on financial market and let companies to get a lot of money.

Buildings and communal utilities are the biggest emitters of the GHG gases and consumers of energy. Hence, certification of buildings could be the most effective instrument, which can attract the needed financial resources in order to decrease the level of energy consumption and GHG emissions. If the price of energy and GHG

²⁶ Directive 2014/65/EU on markets in financial instruments. Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0065&from=EN>

²⁷ Regulation (EU) No 600/2014 on markets in financial instruments. Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R0600>

²⁸ Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories. Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012R0648>

²⁹ Directive 2014/57/EU on market abuse (market abuse regulation). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0057>

³⁰ Regulation 596/2014 on market abuse (market abuse regulation). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32014R0596>

³¹ Commission Regulation (EU) No 601/2012. on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council. Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32012R0601&from=EN>

emissions will rise then ordinary citizens will be forced to employ some technology and more active actions that could decrease municipal expenditures revive the market for construction materials.

Without the clear goals of sustainable development and steps toward a “green economy”, investors and companies won’t be able to prepare their financial plans and forecast returns on their investments aimed at reduction of the GHG emissions, improvement in energy efficiency, renewable energy production or selling/buying of emission allowances.

The inability of the educational institutions to provide specialists in the area of “green economy” makes it impossible to prepare an effective strategy, achieve the goals or just use fiscal or market instruments. The first steps in this direction were made at Kyiv National Economic University named after Vadym Hetman, where the Center for BLENDED VALUE Studies started working at the beginning of 2016. It prepares specialists who are able to create a “green economy” in Ukraine and to use the newest financial instruments on carbon and finance markets.

Ukraine has already had a chance to use environment investments from Kyoto protocol mechanisms. As a result Ukrainian companies have sold more than 500 million Emission Reduction Units (ERUs). It gave them a chance to receive a lot of investments and use them to modernize the economy. Nowadays, Ukrainian companies have no opportunities to sell ERU. Not only demand but also prices for ERUs have fallen because of their surplus on the European market. Implementation of the national ETS will allow Ukraine to meet the obligations under the new climate agreement (Kyoto Protocol – 2).

Moreover, if the national ETS will not be created companies in Ukraine would face huge economic and environmental risks. While the majority of Ukrainian companies do not realize these risks yet, domestic exporters have already experienced some of them, namely:

- need for emission allowances portfolio, which attest reduction of the required amount of GHG emissions as a result of their relevant projects
- electricity producers must have not only the emission allowances, but also certificates that prove production of the renewable energy by the company
- necessity for certification of both production and management processes

If Ukraine will be unable to create the ETS in time, accompanied by an appropriate system of allocation and auctioning, Ukrainian exporters will be forced to buy emission allowances on the European market – this would lead to a rapid increase of the prices for domestic products and respectively and reduction in competition.

In fact, signing the Association Agreement with the EU significantly accelerated the pace of reforms in Ukraine. Among them of the most importance are reforms in the area of environmental improvement and implementing fiscal and market-based instruments to stimulate sustainable development, which affect the further development of the whole economy and its modernization.

6. Summary and recommendation

New approaches in elaboration of the state economic and financial policy enable sustainable economic growth, improve the quality of the environment and solve many social problems. A given trend is a serious challenge for Ukraine, and a few years ago we had huge doubts about its prospects, so after the signing of the Association Agreement with the EU we will see real opportunities to build a low carbon economy and reform the financial system.

For this purpose, new areas of the public policy should consider current issues and provide conditions for a long-term economic growth. Ukraine is no exception and realizing the need for structural changes, the state tries to take into account all the necessary elements present in the public policy of developed countries.

Since the basis of modern public policy is the concept of sustainable development, there is a need not only for the elaboration of effective policies and their goals, but also for the development of the mechanisms, tools and instruments to achieve them.

Overall, Germany's experience along with the EU has demonstrated the need for several groups of tools that allow us to move quickly towards achieving the sustainable development goals. Along with the administrative tools its possible to use fiscal and market financial instruments.

If the fiscal instruments have been already used in Ukraine, the question of implementing market and administrative tools still remains unresolved. This makes it impossible to ensure the conditions for sustainable development and to take the advantages of European integration.

Introducing the certification and standardization system in accordance with European and German rules is urgent in the view of the growth in foreign trade of Ukrainian companies with their contractors from Germany and the EU. In fact, it is not only about the certification and standardization of goods and services but also about the certification of production processes and management systems at the corporate level.

Creating an ETS is an important prerequisite for the use of all the advantages in free trade with the EU, because, along with solving the environmental problems, this system will allow Ukrainian producers to collect the needed portfolios of emission allowances and sell these products on the EU market. The national system of trading greenhouse gas ETS will be aimed at internalizing the environmental protection costs in the most effective way.

Due to the lack of the necessary credit and investment resources for solving social and environmental problems Ukraine should establish the appropriate financial market infrastructure, not only for the normal functioning of the ETS, but also for the purpose of introducing "green" and social impact bonds – get an access to the international financial market and facilitate the process of Ukraine's integration with Europe.

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