Sumy State University (Ukraine)
Karaganda Economy University of Kazpotrebsoyuz (Kazakhstan)

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GREEN MARKETING

Workbook

Karaganda 2016

UDC 339.1
BBC 65.290-2
P93

Recommended to be published by the Academic Council
of Karaganda Economy University of Kazpotrebsoyuz
(Protocol #9 from May 26, 2015)

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P93 **Prokopenko O.V., Ossik Yu.I.**
Green marketing: Workbook. — Karaganda: KarSU publ., 2016. — 111 p.

ISBN 978-9965-859-26-7

The given edition is a workbook to the teaching manual by Prokopenko O.V. and Ossik Yu.I. «Green marketing» (Karaganda, KSU Publishing House, 2015). In the teaching and practical aid they cover practical aspects of introduction of the green marketing concept in practice of activity of manufacturing enterprises and commercial facilities in close interrelation with themes of the lectures.

Recommended for teachers, undergraduate and post graduate students of economic majors at institutes of higher education as well as for students of business schools, heads of the enterprises, employees of marketing and environmental divisions, other experts whose activity deals with green marketing.

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TABLE OF CONTENTS

Introduction

The human being has been influencing the environment for a long time, but this influence never was as intensive as over the last century. Natural resources are now being used on so large scale and so rapidly that at the same time the natural reproduction of used surroundings is not ensured. As a result of it versatile centuries-old activity of the person has left deep traces on a current soil and plant cover, air and water, fauna.

Within many decades in Kazakhstan there has been formed nature management system mainly dealing with raw materials and extremely high anthropogenic loads on landscape. In spite of the fact that the idea of green management becomes widespread, nature protection measures are introduced unpardonably slowly. Therefore a decided improvement of the situation is still to come, and it is characterized as before by natural systems degradation that causes biosphere destabilization, loss of its ability to support the environmental quality necessary for sustainable harmonious life activity of both nature and a society. In a number of regions of the RK situation is not just unfavourable, but disastrous.

In such situation a skilful organization of green marketing will promote spreading of new, ecologically balanced types of manufacturing and distribution of new environmental needs. With this aim in view, we in 2015 in Kazakhstan prepared the teaching manual «Green marketing» that was published in three languages (Kazakh, Russian and English). Its source was the book by O.V. Prokopenko «Екологічний маркетинг» (Київ, видавництво «Знання», 2012. – 319 p.).

The given workbook is closely connected – as for structure, topics and references – with the above-mentioned manual, its logical completion and makes together with it a single scientific and educational set. The authors hope that the given set will be not only and not so much propagandist of theoretical and experimental practical groundworks in the green marketing area, and will serve as a guide to its wide introduction at certain enterprises and organizations in social and economic sphere of the Republic of Kazakhstan and other countries.

Preface

(preconditions of green orientation of Kazakhstan economy development)

Green marketing originates from the socially-focused marketing which should take account of interests of a society as a whole. According to the stakeholder theory, when determining goals and strategy of an enterprise it is necessary to take into account interests of everybody who will be affected by its activity. This point of view has led to intensification of the trend towards «virescence» of enterprises. By having edited a little and supplemented K. Peattie's definition, «green marketing» can be defined as company management process directed on identification, prediction and satisfaction of requirements of both clients and a society and at the same time ensuring the unity of company profitability and sustainable balanced development of the nature and a society.

The USA is believed to be the home of «green marketing» and it is traced back to the '70s to the environmental movement which at that time very few people took seriously. In less than half a century, according to the survey by Information Resources, half of Americans when buying products already pay attention at least to one of the characteristics of their ecological compatibility, whether it is ecological compatibility of a product proper, its packing, manufacturing enterprise or even a store where it is sold.

Today green marketing popularity is growing all over the world. This has to do with the fact that:

- people became more informed, they learnt more about ecology;
- consumers influence corporations and governments in the area of manufacturing;
- quality of green products has been improved, the branch has become more attractive and competitive (today there is no need to choose between a quality and an ecological product – it is possible to get both features in one product;
- eco-friendly products became more competitive in terms of price and reached the availability level.

Ecological and social impact of a company is defined by its three dimensions: technology, influence on economy and managerial style.

The used technology can be non-resource-saving and is capable to cause environmental pollution, but these drawbacks can be reduced by modernization. The influence of a firm on economy is related to such issues as employment, acquisition of raw materials and clients' expectations, which it may turn out to be difficult to satisfy. The economic forces can also influence ability of the company to become more environmentally compatible. The managerial style is the factor with which it is better to begin «virescence» of a company: it often happens that a firm is able to improve its nature-conservation image easily, without incurring additional costs and even (by reducing amount of waste) by saving resources. It is important for companies to avoid pipe end solutions when, for example, pollution emissions are filtered at final stages of manufacturing process instead of not producing them at all. It is almost always more cheaply to control the process in such a way that there is no pollution, than later to spend money to reduce it.

There are some sources of pressure aiming to reform regarding these issues.

1. Clientele. According to the aforementioned researches, about half of buyers of the developed countries are guided by some ecological criteria when making decision to purchase. It is a clear signal that it is necessary to take account of environmental issues.

2. Environment protection societies and groups. The activity of such groups as Greenpeace includes three directions: an information activity consisting in attraction of attention of the public to nature-conservation problems; direct action like protests; creation of associations and advisory companies, in which lobbyists are invited to take part in discussions together with representatives of companies to reduce the environmental damage as much as possible.

3. Employees of companies. Employees of large firms exert more and more pressure on the management and/or proprietors so that they adhere to eco-friendly policy.

4. Legislation. Environmentally minded voters force to adopt corresponding legislative acts. In several countries (Germany, the Netherlands) Green Parties are powerful parliamentary groups.

5. Mass media. Wrecks of oil ships and other ecological disasters are breaking news. But even more obscure issues like extinction of species are covered in news programs of leading channels.

6. Ethical investments. Some banks do not invest money in environmentally unfriendly projects. Banks can use this commitment in their advertisements, thereby attracting «greener» clients.

In the conditions, established in Kazakhstan the tendencies defining ecological nature of economic management weakly manifest themselves. Attempts, undertaken in Kazakhstan for a long time to solve environmental problems by means of administrative and legal and economic methods of state regulation still have not brought a noticeable environmental condition improvement. For protection of the environment to become one of the leading purposes of current domestic marketing, it must entail profit growth. Only in this case the manufacturer and the entrepreneur will be interested in solution of environmental issues and will accept eco-friendly philosophy of making business.

On the whole the complex system of environmental marketing in relation to the enterprise should include the following elements.

1. Government and legal regulation.

2. Environmental monitoring – constant tracing of environmental condition, conformity to certain parameters and indexes (maximum permissible level and maximum allowable concentration), gathering of data on quantitative and qualitative characteristics of pollutants emitted at all stages of product life cycle. The results of such monitoring should be accessible not only to state control bodies, but to the consumer as well;

3. Environmental accounting - account of ecology costs, control over target use of funds allocated for ecology. Here it is also necessary to include «value of nature»

concept in all economic calculations. This characteristic has well-developed criteria, easily formalized and can be estimated.

4. Quality control - quality management of manufactured items according to the international standards.

5. Marketing communications - complex of communications used to perform actions directed on sale promotion and giving the consumer the necessary information supporting and forming «green» image of the organization and its products.

6. Ecological education - complex of measures to integrate ecological knowledge into collective and individual consciousness of human resources of an enterprise, creation of ecological culture.

It may seem that «green marketing» is in the conflict with the traditional one as marketing thinking is directed on expansion of business of a firm and growth of consumption of its products, and «green marketing» is directed on restriction of growth and reduction in consumption. However the conflict is not always real.

Marketing is actually directed on satisfaction of clients and is not environment-unfriendly in itself though this feature is inherent in some products. If client's needs become «greener», then marketing experts will take it into account and, in turn, will «become green». Broader needs of clients (in a clean and cosy world), apparently, can be better satisfied by means of a truly social marketing approach. Thus, it is possible to assert that marketing experts (who have already got used to assign primary importance of activity of a firm to clients) are the people capable, best of all, to implement «green policy».

The implementation of «green marketing policy» begins with marketing audit. But in this case a firm should not narrow its range of interests only to itself, clients and competition and to take a wider approach like the analysis of answers to the following questions.

1. Social factors - do demographic issues influence «green thinking»?

2. Cultural factors - is there a process of integration of «green values» in the system of cultural values?

3. Economic forces - will «virescence» of a company cost a pretty penny? Or will it allow us to save some money?

4. Physical factors of environment - do stocks of natural resources and raw materials grow scanty?

5. Technological factors - are there environmentally safe technologies?

6. The international factors - is it possible that companies from other countries, using environmentally safer technologies will become our competitors? Do we create environmental problems in other parts of the world, using some raw materials?

7. Communication and infrastructural factors - is it possible to use communication and transport networks in safer way from the environmental point of view?

8. Administrative and institutional factors - is it probable that government ecological monitoring bodies and other departments will exert pressure on a firm?

9. Legal and political factors - will «green legislation» influence our company?

«Green clients» can be segmented by «green tint» criterion. «Green activists» are members of environmental organizations or people supporting them. Those who think «green», look for «green products» and try to adhere to «green life style». «Green clients» are those who have already changed their behavior in a certain way and having become «greener». At last, «conscious people» are those who assert that worry about environmental condition (for example, it is believed that 90% of the population of Great Britain belongs to this group).

Though social marketing is not a synonym of «green marketing», in public atmosphere existing nowadays they are closely connected with each other. Finally a real «green marketing» approach leads to that that the concept of social marketing gets into all areas of activity of a firm - selection of sources of raw materials and production decisions to pricing and sales.

Known Harward marketer Ted Levitt once said: «People do not want to buy a quarter-inch drill, they want a quarter-inch hole». The similar thought was expressed by one of the pioneers of energy efficiency, Amory Lovins: «People do not want to buy a cooler or fuel for heating; people want some cold beer and a hot shower». In other words, they are not so much interested in a product as in those advantages which it provides.

When promoting eco-friendly products many professional marketers consider «saving of planet» as a sufficient argument for the buyer. And buyers, in the meantime, are interested in the same things: comfort, safety, aesthetics, availability, status and pleasure. But many marketers continue to sell a product proper, instead of that benefit it can bring. They explain in detail:

- why the world needs this product;
- advantages of this product proper;
- technical peculiarities of a product;
- what their product does not contain;
- why their product is better than the one of competitors;
- what will happen, if everyone buys their product instead of competitors' products.

But eco-marketers pass over in silence how a product solves customer's problems whether to have a clean house, carry a passenger from point «A» to point «B» or satisfy one's hunger. That is why the ecological strategy and green marketing can lose touch with real life.

It is quite easy to sell a quality eco-friendly product to those who already use energy efficient lamps, water meters and phosphate-free detergents. The product eco-status is already of special importance to them so many listed arguments will be really important and useful. But the ultimate priority of eco-marketer is to win an ordinary person over to one's side - and one needs the same marketing tools for this purpose, as when promoting any other products.

Kazakhstan so far only begins to follow «green» road of development as a result of which a sustainable effective model of economy should be created by 2050. It is planned to create «green» infrastructure, to optimize the use of resources and to raise efficiency of nature-conservation activity by 2020. The volume of investment

necessary for transition to green economy will make on the order of 1% of the GDP annually that is equivalent to $3-4 bln a year. For comparison: South Korea already invests annually 2% of the GDP in «green» sector, and investments of China were of about 2% in 2015.

«Green» construction is the practice of erection and use of buildings, aimed to reduce consumption level of material and energy resources at simultaneous preservation or improvement of quality of constructions and comfort of their internal environment. At present in Kazakhstan «green» construction trend is in the making: one prepares the ground for drafting bills, replenish scientific and information databases, lays the foundation of core governmental and nongovernmental organizations.

In October, 2013 the Kazakhstan Green Building Council (KazGBC) was officially started, one of the main bodies heading the process of introduction and spreading of the given concept. One of the first to aspire to receive «green» certification by world standards LEED and BREEAM in the RK is a business center building Park View Office Tower located in Almaty that has already virtually completed a relative process. At the same time they have developed and are implementing the first Kazakhstan green projects, among which a cottage town Greenville, a new educational building of KBTU and straw houses Ergo Group in Almaty as well as a multifunctional complex Talan Towers and «Green quarter EXPO Village» in Astana.

The government actively supports the given direction within the frameworks of country development program «Energy Saving-2020» and the initiative of the President of the RK - «Green Bridge» partnership program. The given program was initiated by the Republic of Kazakhstan at the 66th session of the General Assembly of the UN and approved by all states at United Nations Conference on sustainable development as an inter-regional sustainable development initiative which is voluntary and open to participation by all partners. The program assumes close interaction of the countries of Central Asia to ensure sustainable development at support by key international institutes and a private sector. The Green Bridge Partnership Program is implemented in two directions: towards «green technologies» and towards «green products» made by using these technologies and ecosystem services.

On July 1, 2014 a Kazakhstan brand of paints and varnishes Alina Paint launched a large-scale action to restore vegetation of the country with the aid of partial Kazakhstan residents which covered 18 cities of Kazakhstan: 1 KZT ($ 0.003) per each kilogram (2.20 pounds) of any production of Alina Paint brand is transfered to a special Fund of landscaping of Kazakhstan.

At the basis of Alina Paint philosophy is the idea of a magic and harmonious surrounding world alteration. The connection of environment topic and paints and varnishes of Alina Paint is simple - ecological compatibility of paints of Alina Paint, health safety is confirmed by the decision of SES of the Republic of Kazakhstan and meet «Uniform Sanitary Epidemiological and Hygienic Requirements for the Goods Subject to Sanitary and Epidemiological Supervision (Control) of the Customs

Union. All actions of the enterprise: formulation of production of brands, design of packing, measures in which it participated is only small contribution to environmental health of Kazakhstan.

EcoNCO «Greenspace» (Temirtau) - example of a successful implementation of marketing action at an enterprise, operating under conditions of a small industrial city with extremely limited resources. Greenspace actively occupy itself with conduct of public examinations, environmental condition monitoring, environmental training of school students, and also creation of technologies to process industrial production waste. Nowadays «Greenspace» is ready to rollout a number of developments concerning production techniques: abrasive powders from converter dump slags; mineral wool from flaming blast-furnace slags; agloperite from coal-dressing waste. The work on creation of technology of metallurgical production waste processing comes to an end.

They search for new outlets of Kazakhstan eco-friendly products both within the country and abroad. This activity of «Greenspace» is supported by other environmental organizations of Kazakhstan, first of all, Karaganda Ecological Center having more powerful resource base, connections with foreign experts, including in the area of development and application of treatment technologies as well as wide contacts within the country. The information about «Greenspace» products is placed on a server of organizations «Ecoline» (Moscow) and the Social Ecological Union International.

In recent years in Kazakhstan various organizations begin to use «green» technologies and «green» marketing in their activities. It gives hope that Kazakhstan business managers will learn and will more actively use eco-friendly components in their business, taking care of environment and population, thereby to contribute their mite to the care of our planet health. With this hope in view the given workbook is presented to students, instructors, employees of spheres of production and trade, all persons and organizations concerned. It successfully supplements and completes a teaching manual «Green marketing» by O.V. Prokopenko and Yu.I. Ossik, published in 2015 in the Republic of Kazakhstan. In the given literature they have considered a series of unconventional approaches to the solution of both global strategic and topical current issues of carrying out eco-friendly economical activity in modern conditions, and its value is in it. I would like to welcome this first «swallow» of educational literature on environmental marketing in our country and to express hope to see in the near future this discipline in higher school curricula of preparation of bachelors and masters in economics majors.

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Workbook

Graphical and analytical exercises

1. To complete the names of concepts of development of economic management subjects missing in fig. 1, and to fill in omitted words in the names.

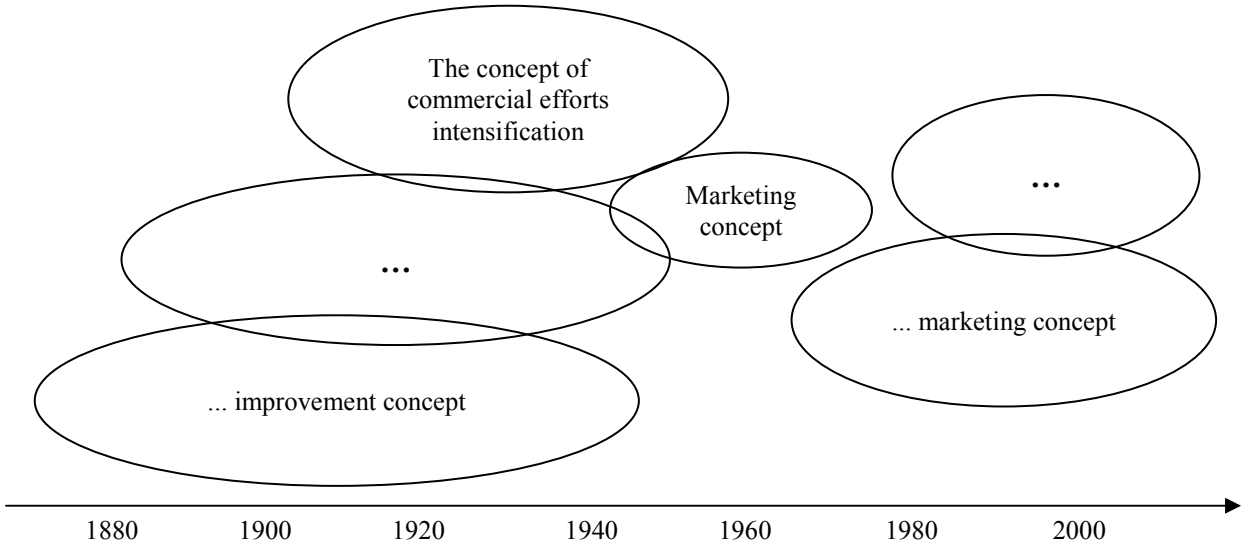


Fig. 1. **Time dynamics of widespread concepts of development of economic management subjects**

2. In fig. 2 to write the levels of environmental safety on a vertical axis; to mark a modern condition of environmental safety of Kazakhstan as a point on the curve.

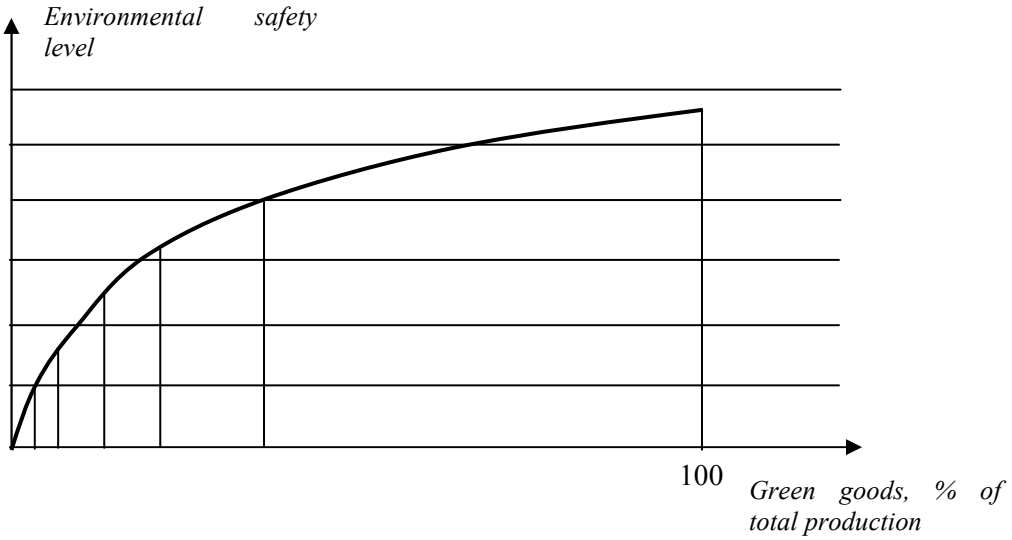


Fig. 2 **Dependence of environmental safety level of the country on a share of green goods in total volume of production and consumption**

3. In fig. 3 to indicate by arrows functional relations between green marketing kinds.

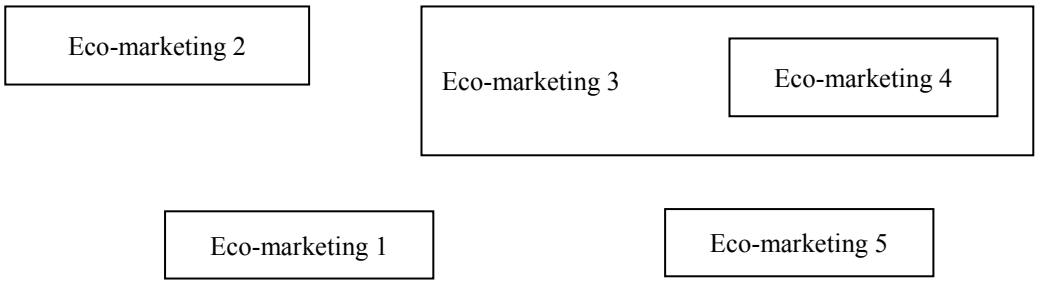


Fig. 3. **Green marketing system**

4. To fill in the names of environmental marketing development directions missing in table 1. and explanations to them.

Table 1

Directions of environmental marketing development

Consumption costs	Product environmental advantages	
	individual	socially important
Lower than that of analogous conventional products	**Table field 1. Initial position of environmental marketing:** ⟶ protective competitive advantages ↓	**Table field 2. … :**
Higher than that of analogous conventional products	**Table field 3. Removal of competitive barriers:**	**Table field 4. … :** state stimulation of greening by taxes, environmental fees and fines etc.

5. In fig. 4 to fill in omitted names of the stages of environmental needs.

6. In column 1 of table 2 to fill in the names of types of environmental needs to which products shown in column 2 of the given table correspond.

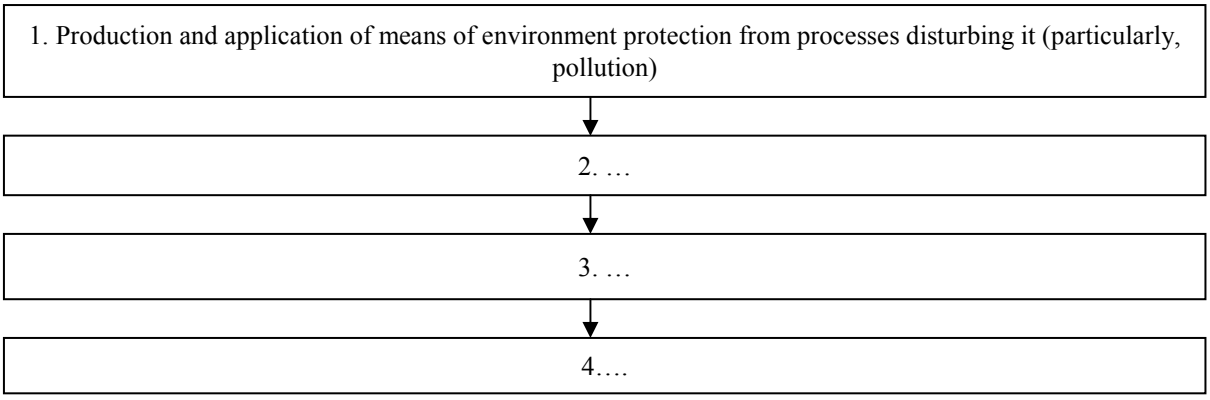


Fig. 4. **Stages of environmental needs evolution**

Table 2

The content of products corresponding to types of environmental needs, singled out according to evolution stages

Type of environmental needs	Content of the product
1. …	1.1. Means to prevent eco destructive impact (treatment equipment, soil-protective technologies and so on). 1.2. Means to eliminate environmental disturbance consequences (means for deactivation of soils, technology of lands reclamation, etc.). 1.3. Means for protection of the person, technological and natural systems against harmful influence of eco-destruction (water filtration before use, conditioners, protective coverings and so on). 1.4. Means to increase human immunity or to enhance stability of ecosystem against negative influence of eco-destructive factors
2. …	2.1. Environmentally perfect elements of techological systems. 2.2. Works and services promoting ecological improvement of technological systems (research, R&D, consulting services, modernization works, etc.)
3. …	3.1. Products (including information service), allowing to replace "dirty" products and processes with “clean". 3.2. Products promoting saving of material and energy resources. 3.3. The technologies providing decrease of resource capacity of the goods. 3.4. Means favoring waste recycling.
4. …	4.1. Education and information service (ecological training, consulting etc.). 4.2. Means to support biodiversity and stability of ecosystems. 4.3. Means promoting increase of information contact of the person with natural systems (creation of national parks, green zones, ecoturism, etc.). 4.4. Means favoring spiritual and physical development of the individual

7. To write elements of the classification of factors of environmental needs development missing in fig. 5.

8. In table 3 to fill in names of groups of green products use results and economical content of effect components there where they omitted or not completed.

9. To fill in product life stages and basic components of inputs and output of production at stages missing in fig. 6.

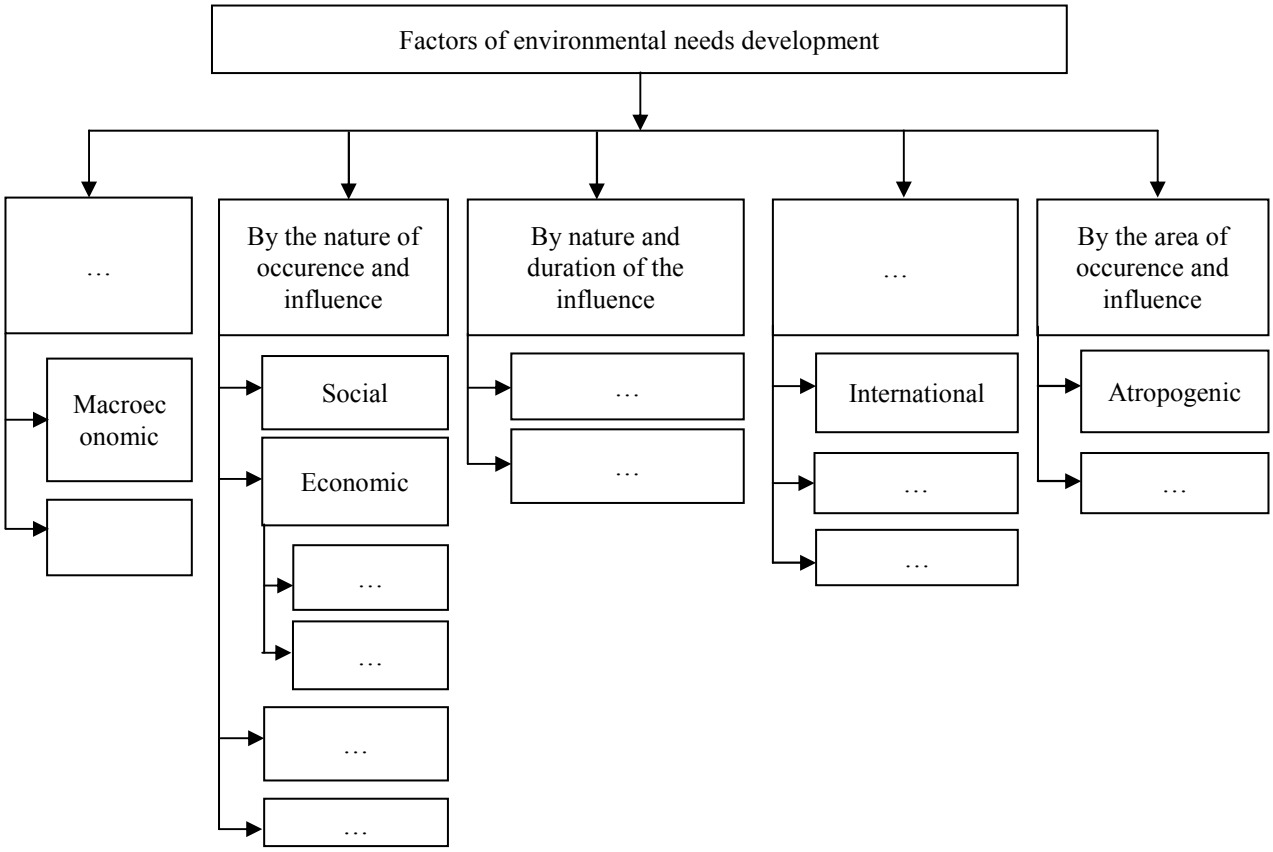


Fig. 5. **Classification of factors of environmental needs development**

Table 3

Results of green products use

Results of green products use	Economical content of effect component
1. Decrease of energy intensity	1.1. Decline in maintenance cost for energy consumption 1.2. Reduction of capital expenses for energy complex objects. 1.3. Improvement of monetary balance owing to reduction in energy carriers import. 1.4. Additional economic gains due to ...
2. Reduction ...	2.1. Decrease of costs for material resources. 2.2. Reduction of capital expenses for acquisition and processing of material resources. 2.3. … 2.4. …
3. Replacement of energy carriers or structure of material resources	3.1. Decline in current expenses due to ... 3.2. Reduction of an economic damage owing to ... 3.3. Reduction of an economic damage due to ...
4. …	4.1. … 4.2. Decline in expenses due to saving of primary energy/material resources
5. Change ... in comparison with analogues	5.1. Reduction of economic losses owing to ... 5.2. Reduction of economic losses owing to ...
6. Replacement of environmentally dangerous kinds of production by ...	6.1. Reduction of an economic damage owing to ... 6.2. Reduction in costs for prevention of negative influence of unsafe environmental factors

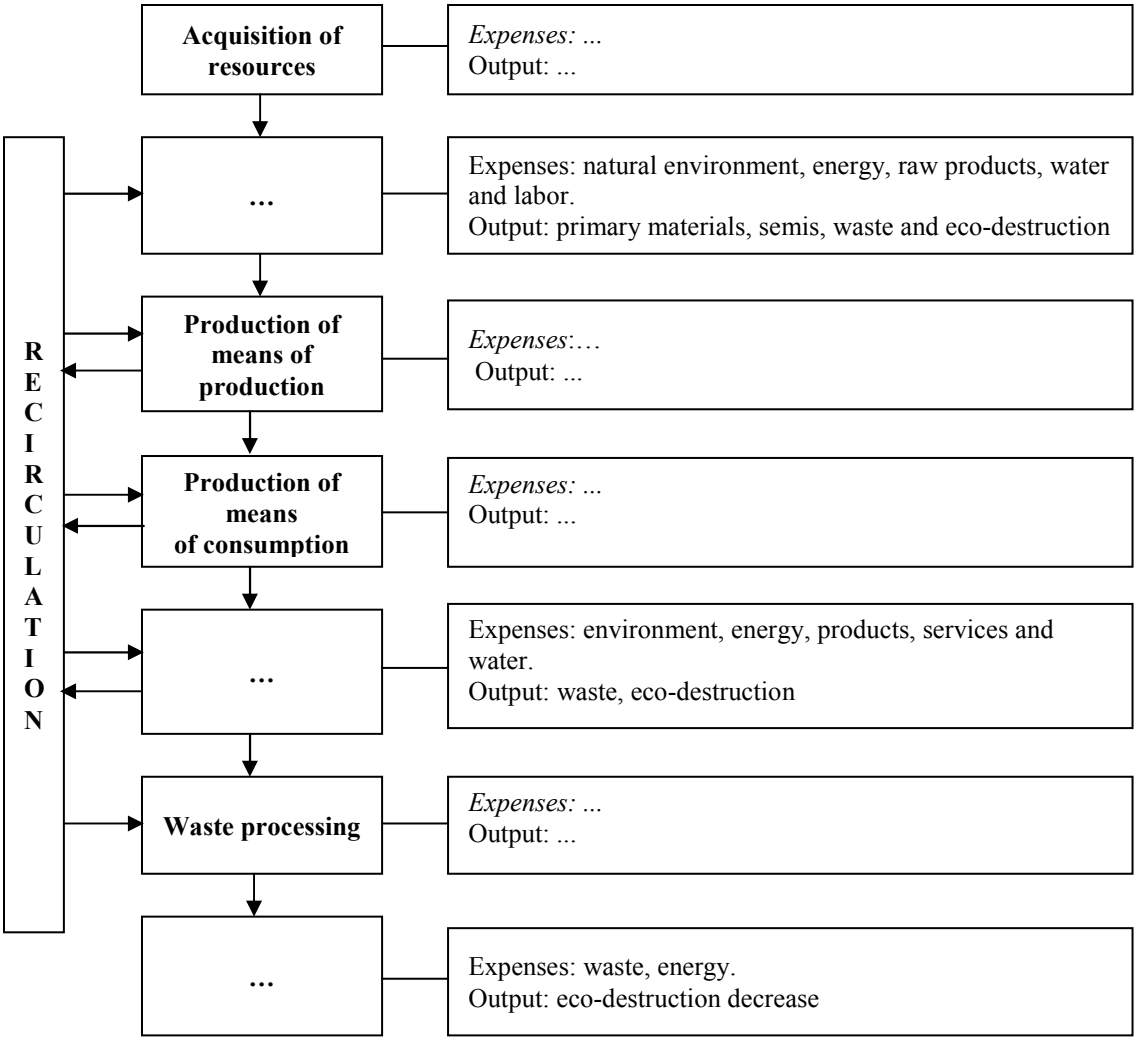


Fig. 6. **The basic components of inputs and production output at stages of product existence**

10. To rank the strength of influence on the recipient shown in fig. 7.

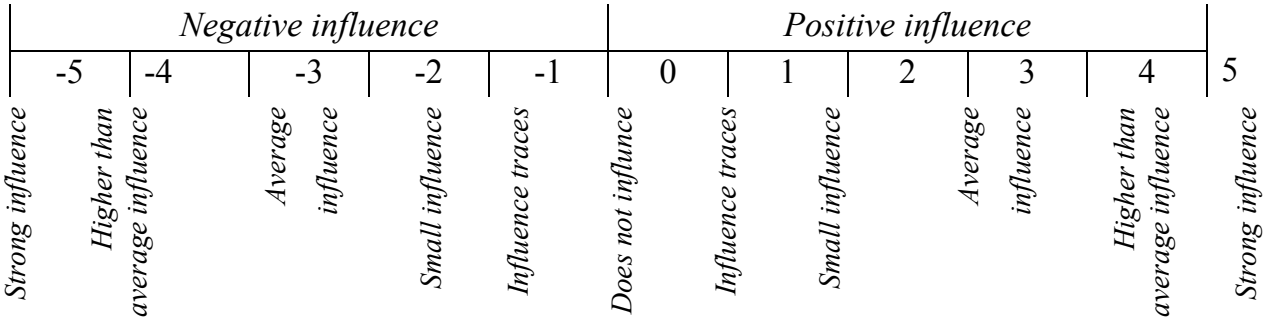


Fig. 7. **The scale of points characterizing the strength of influence on the recipient**

11. To write in empty cells in table 4 groups of products singled out by the level of their ecological compatibility as well as marginal integral estimates of ecological compatibility of products, differentiating ecological compatibility levels.

Table 4

Division of products into groups by their ecological compatibility level

Group of products	Ecological compatibility level
…	… ≤ Э ≤ +175
…	-35 < Э < …
…	… < Э ≤ -35
Environmentally ... products	-175 ≤ Э ≤ …

12. To define in fig. 8 to what types of consumers according to ecological compatibility of their behavior do the utility functions shown by numbered curves correspond. To write names of the curves by the types of customers whose utility functions they show.

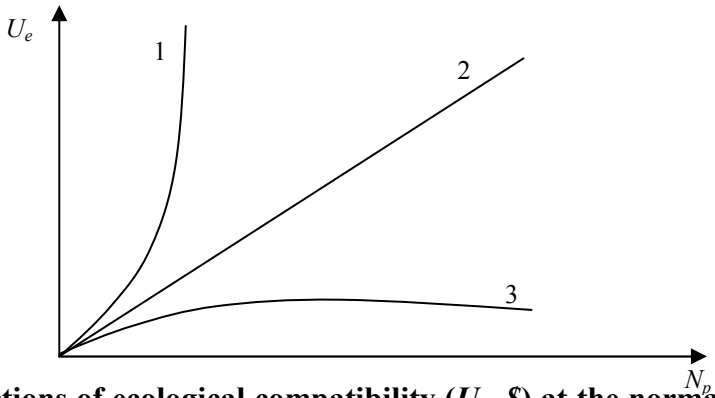
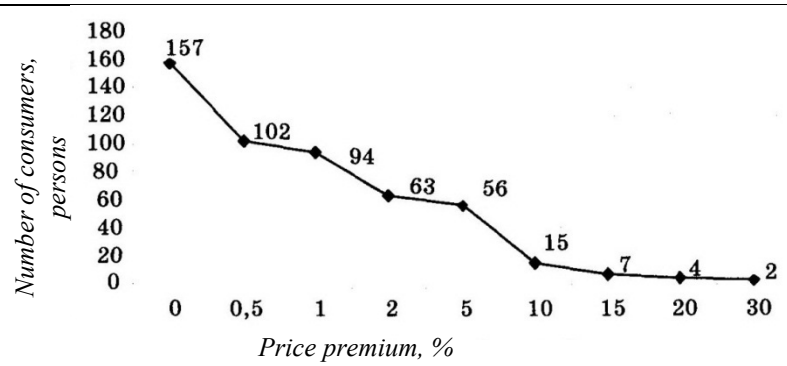
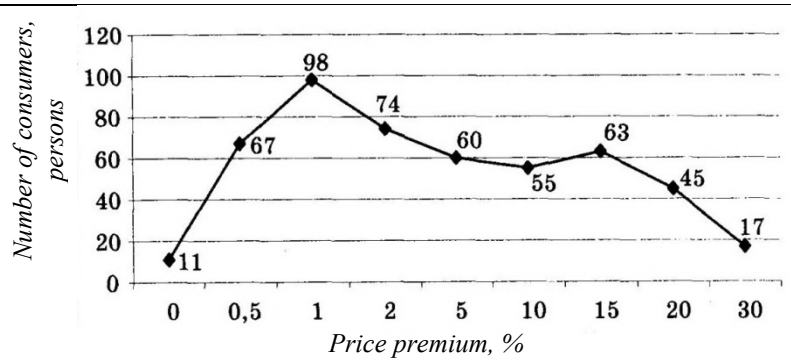
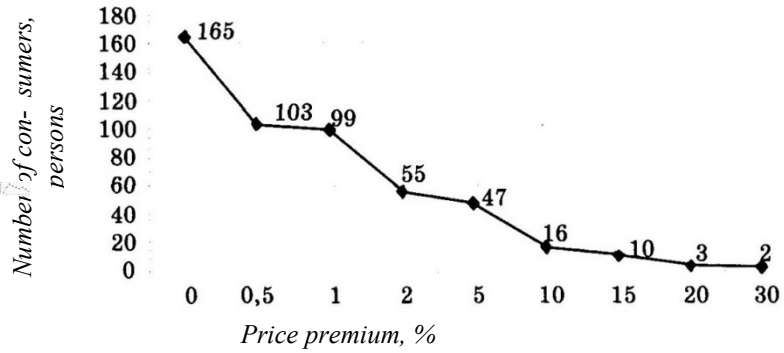
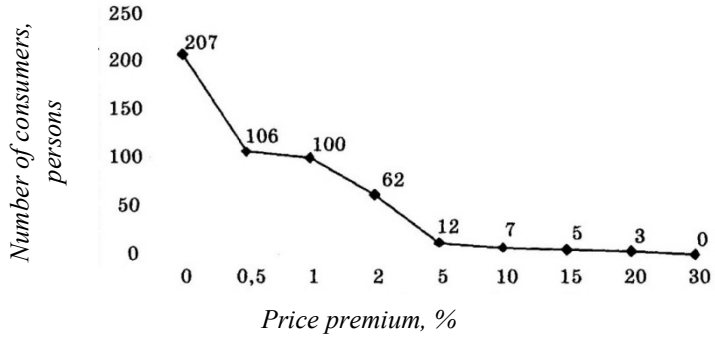


Fig. 8. **Utility functions of ecological compatibility (U_e, $) at the normal premium (N_p, $) for different types of customers**

Table 5

Readiness of consumers to pay a premium for various types of green product

Green product type	A curve shgowing the readiness of consumers to pay a premium for ecological compatibility
…	

…	
…	
…	

13. By the curves shown in column 2 of table 5 to define types of products singled out by eco-friendly advantages, willingness to pay a premium for them is shown by them. To write certain types of goods in column 1 of table 5.

14. To break motivation of consumption down into components according to the scheme offered in fig. 9.

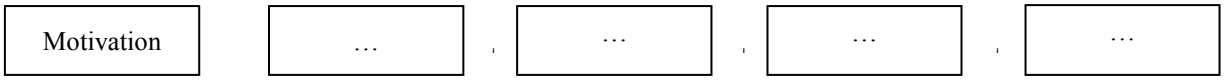


Fig. 9. **Components of consumption motivation**

15. To fill in the column “Motivation type” in table 6.

Table 6

Types of motives of green goods consumption

Motivation type	Consumption motives example
…	Quality
	Effectivity
	Operating parameters
	…
…	Unique properties (for example, the highest processing accuracy of a metal-cutting machine)
	Life style (to consume only natural products)
	Feeling of fear (for example if not to buy a drinking water filter then kidney stones may be formed)
	Sense of guilt (for example, acquisition of the goods which are made by handicapped people)
	…
…	Natural environment conservation (product ecological compatibility)
	Feeling of involvement ("buy the domestic")
	…

16. To complete in table 7 separate groups of needs similarly to ones shown in this table.

Table 7

Classification of motives by Maslow according to the hierarchical model

Levels of needs	Groups of needs
Primary requirements (needs) ↕ Highest requirements (growth requirements)	1. The physiological requirements necessary for survival: food, water, sex and recreation. 2. … 3. … 4. Esteem needs: in personal achievements, recognition by people around. 5. …

17. To fill in fig. 10 what motives direct the need for food to different consumer choices.

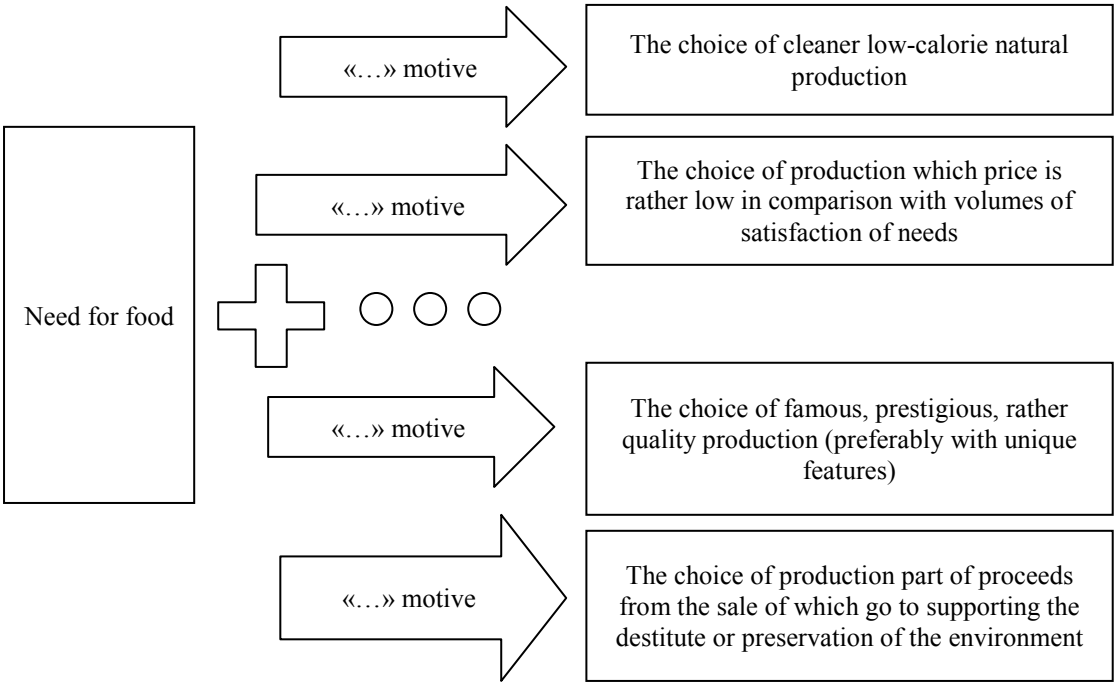


Fig. 10. **Dependence of consumer choice on a motivational need orientation**

18. In fig. 11 to fill in the blanks with eco attributes of goods.

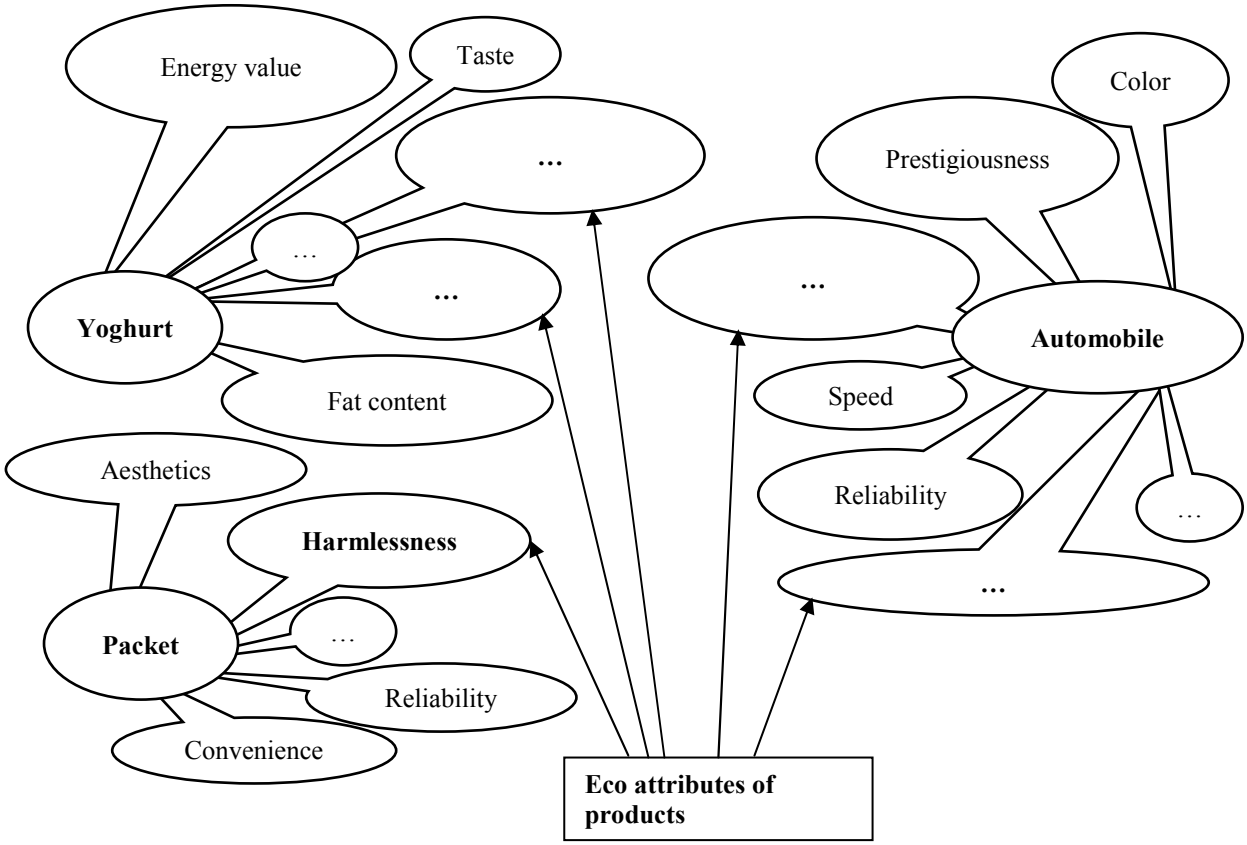


Fig. 11. **The basic diagram to distinguish eco attributes of the products**

19. To fill in empty squares of table 8.

Table 8

The basic types of motivation according to consumption costs and advantages of green products (in decreasing order of their importance)

Consumption costs	Product environmental advantages	
	individual	socially important
Lower than those for analogues conventional products	…, …	…, …
Higher than those for analogues conventional products	…, …	…

20. To define in fig. 12, which of the curves (fig. 12*a* and fig. 12*b*) characterizes the change of absolute value of communication influence factor as time passes when it occurs during psychologically favorable and unfavourable moments.

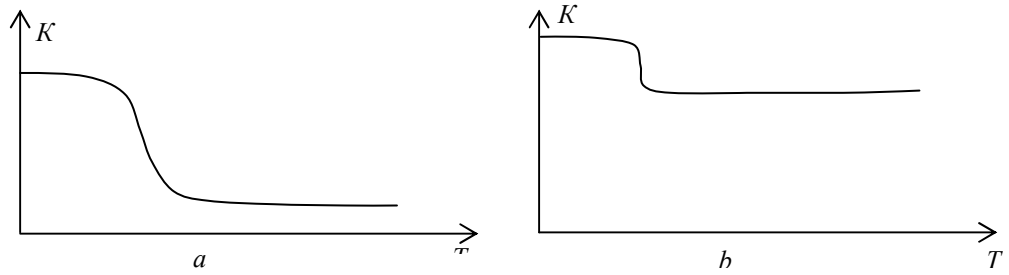


Fig. 12. **The general view of the change of absolute value of communication influence factor as time passes when it occurs during psychologically favorable and unfavourable (from the point of view of human psychology) moments**

21. To fill in the classification of consumer choice types by motivational directions shown in fig. 13.

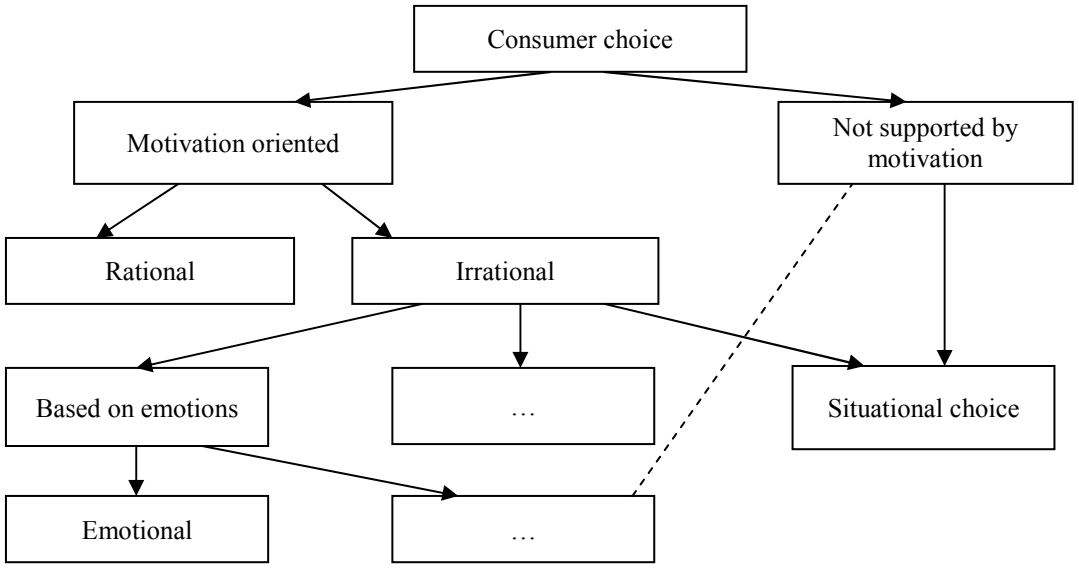


Fig. 13. **The classification of consumer choice types by motivational directions**

22. To complete the chart of systematization of the most significant in respect of increase of environmental safety and cost efficiency of achievements in the current world market of green products made according to the report of the Roman club presented in fig. 14.

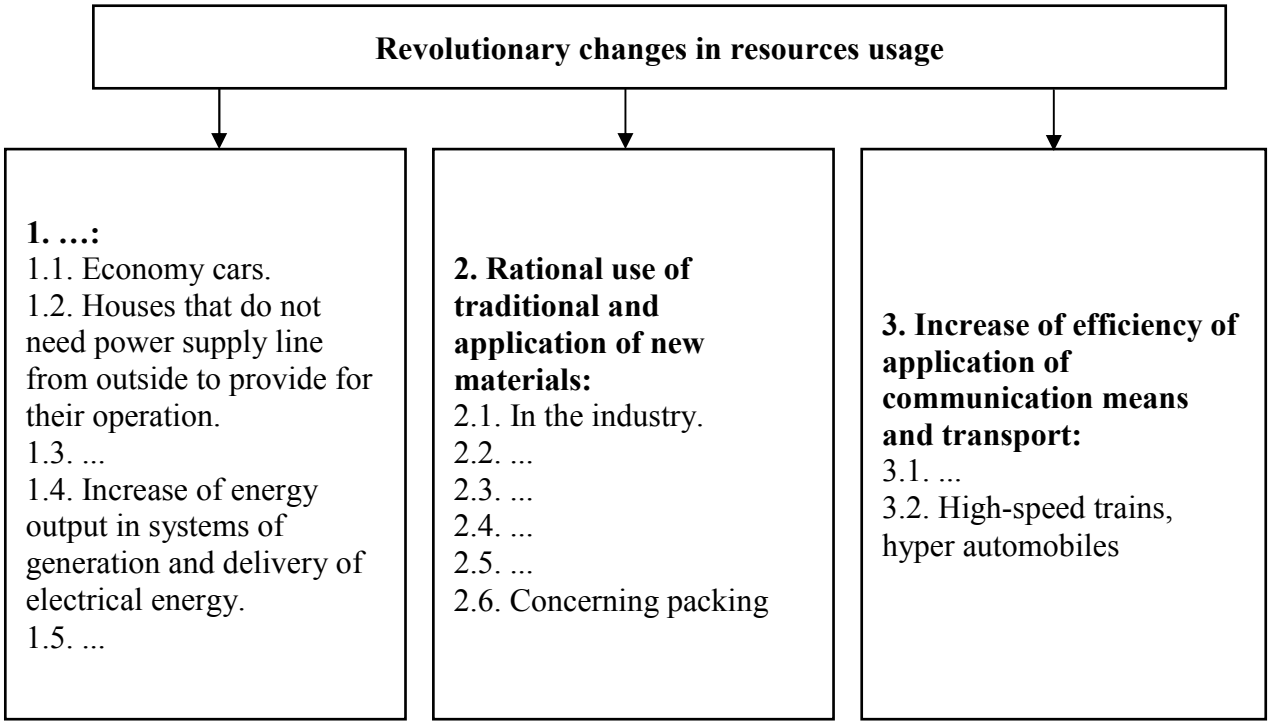


Fig. 14. **Long-range directions of global market development of green products**

23. To complete the diagram, shown in fig. 15.

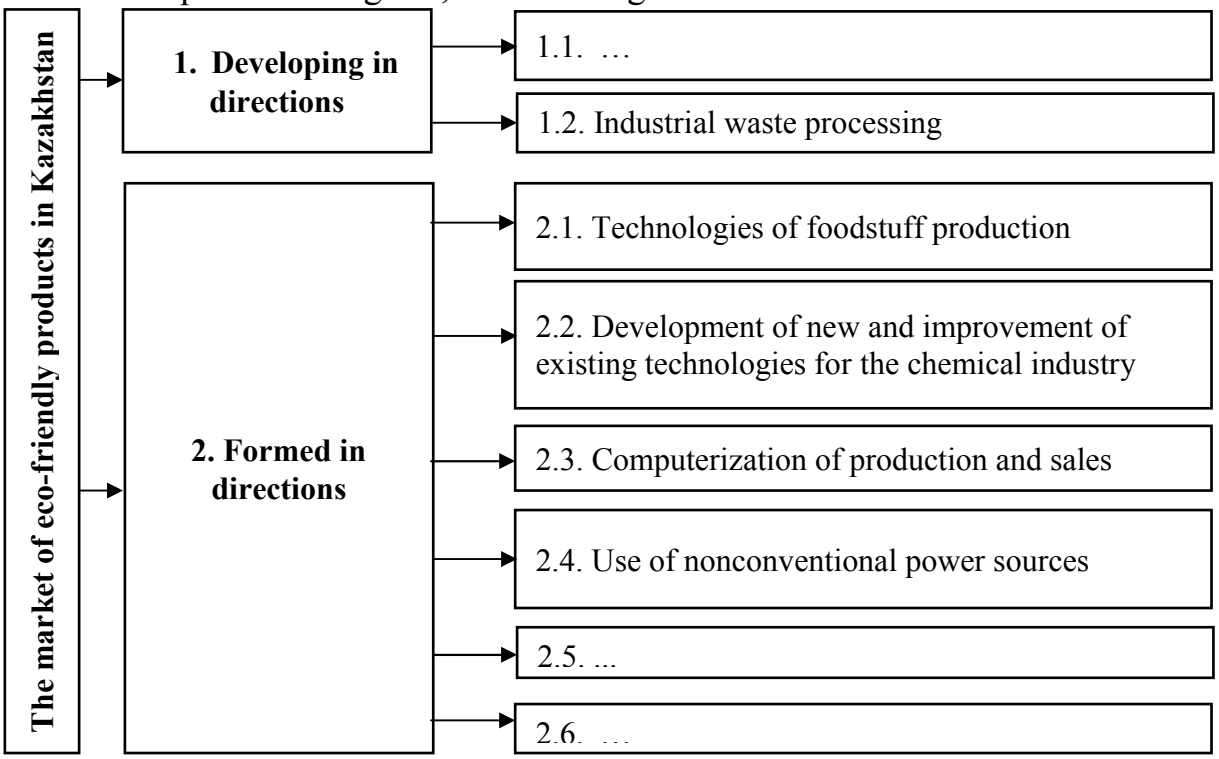


Fig. 15. **Directions of eco-friendly products market development in Kazakhstan**

24. To fill in the blanks in the flow chart of algorithm of formation of eco attributive consumer behavior (fig. 16).

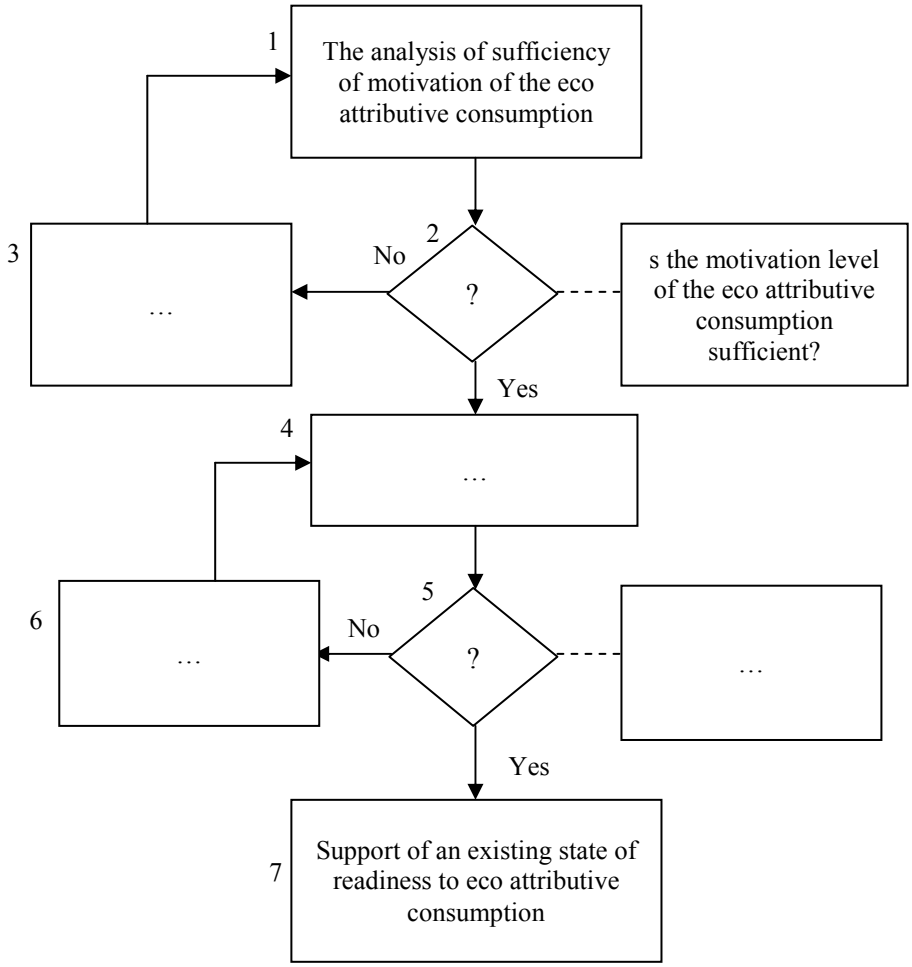


Fig. 16. **The flow chart of algorithm of formation of eco attributive consumer behavior**

25. To fill in the data about environmental labeling signs of the first group (applied to mark ecological compatibility of products on the whole, certain stages of their existence or their individual properties), presented in table 9.

Table 9

Environmental labeling signs of the first group

#	Ecolabel kind	The name of an ecolabel and a country where it is applied	#	Ecolabel kind	The name of an ecolabel and a country where it is applied
1		…	7		…

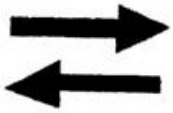
2		…	8		…
3		…	9		…
4		…	10		…
5		…	11		…
6		…			…

26. To fill in the data about environmental labeling signs of the second group (calling for preservation of the environment, in particular taking materials and waste for recycling), presented in table 10.

Table 10

Environmental labeling signs of the second group

#	Ecolabel kind	The name of an ecolabel and a country where it is applied	#	Ecolabel kind	The name of an ecolabel and a country where it is applied
1		…	5		
2		…	6		…

3		…	7		…
4		…	8		…

27. To fill in the data about environmental labeling signs of the third group (warning about danger of things to the person and environment), presented in table 11.

Table 11

Environmental labeling signs of the third group

To show an ecolabel			
Contents	…	…	…

28. To fill in the stages of substantiation of the choice of optimal variant of formation of green goods market, missing in fig. 17.

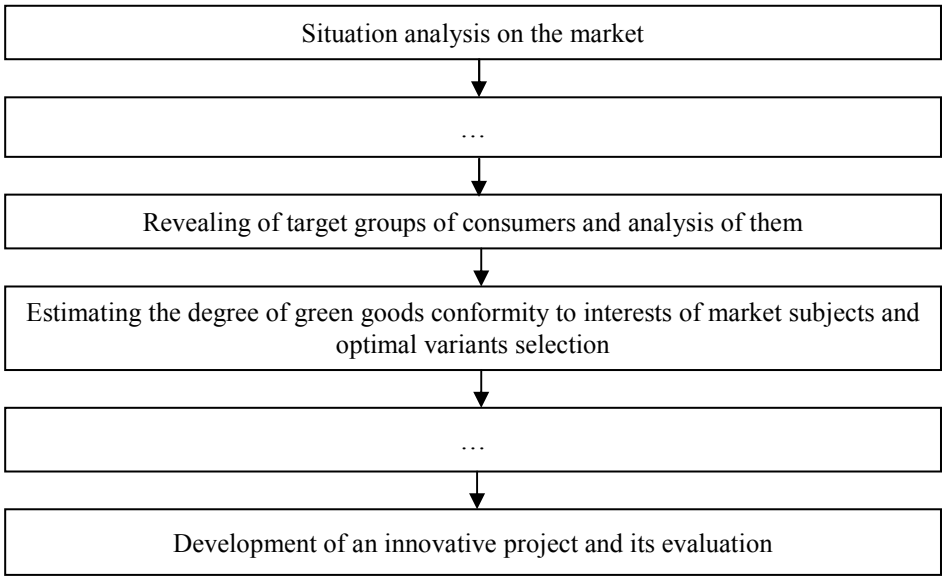


Fig. 17. **Stages of substantiation of the choice of optimal variant of green goods market formation**

29. To fill in the flow chart of the algorithm of substantiation of the choice of optimal variant of green goods market formation, shown in fig. 18.

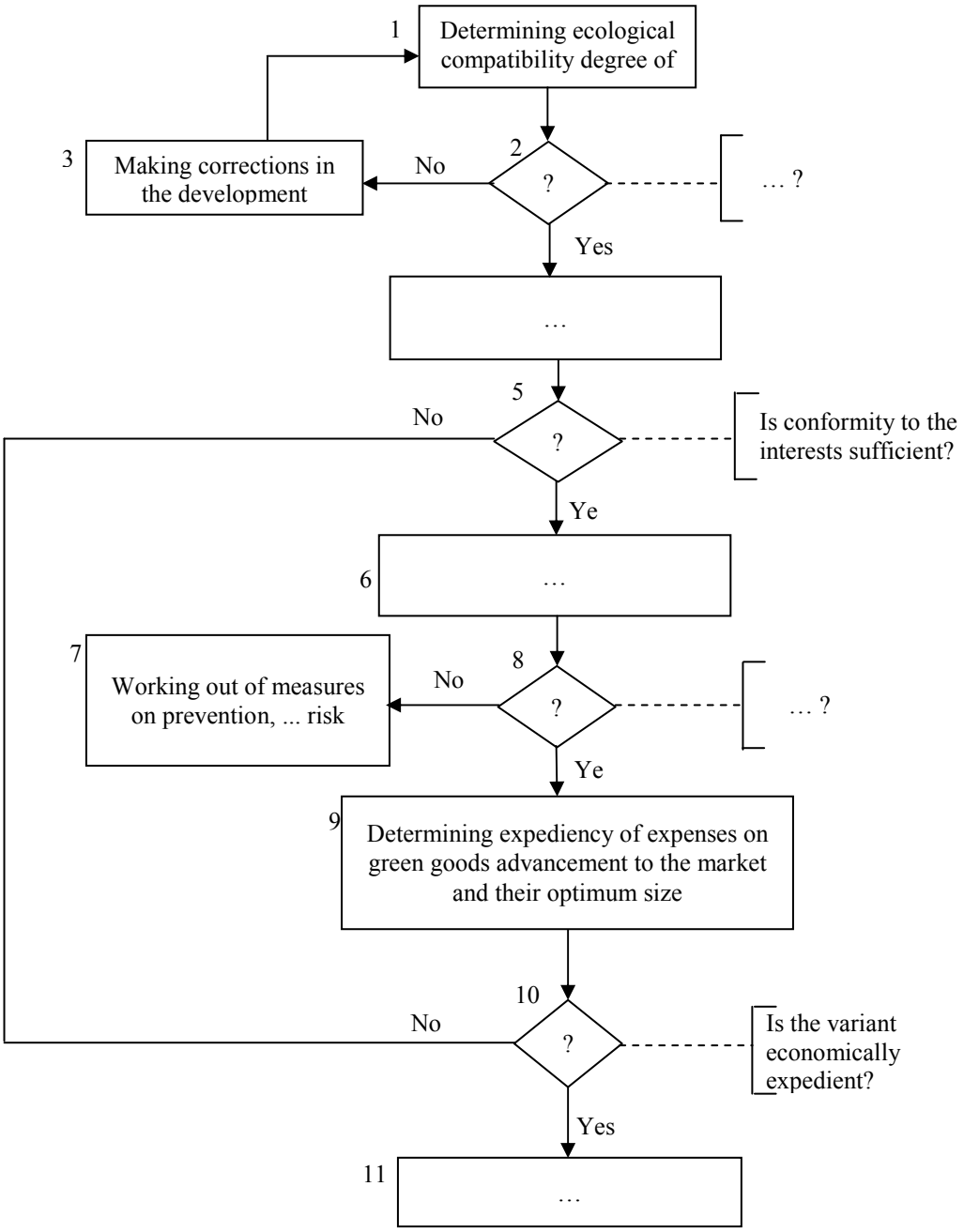


Fig. 18. **The flow chart of the algorithm of substantiation of the choice of optimal variant of green goods market formation**

30. In the overlapping circles diagram of interests of various market subjects (fig. 19) to mark areas where eco-friendly products:

1) meet all but interests of a society;
2) do not meet interests of customers and a society;
3) meet only interests of manufacturers;
4) meet interests of manufacturers and customers;
5) meet market interests as much as possible.

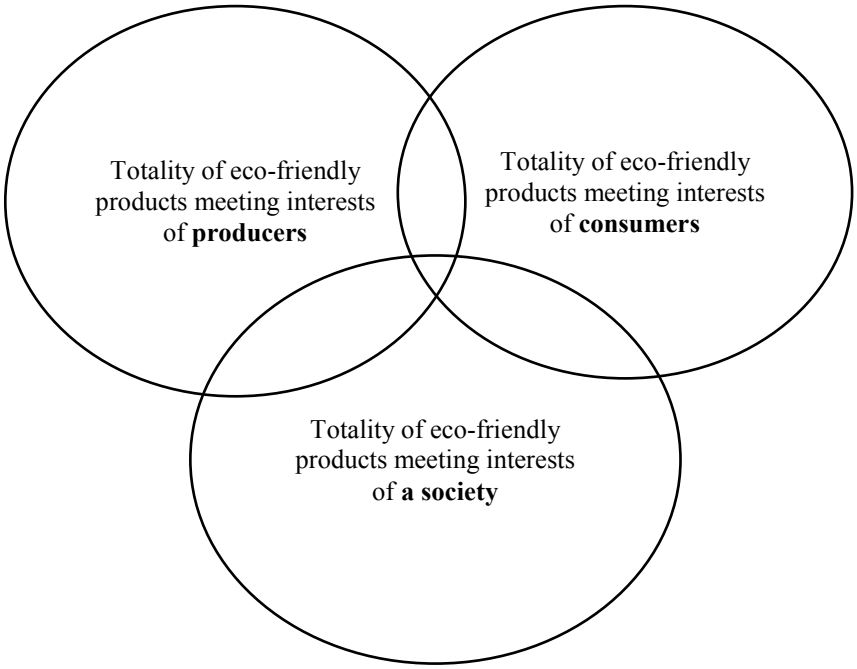


Fig. 19. **Green products of various degree of conformity to interests of market subjects**

31. Fill in blank squares of the decision-making table on selection of acceptable variants of the enterprise development based on evaluation of conformity of a green product with interests of market subjects (table 12).

32. On the cyclogram of comparison of conformity degree of products with interests of market subject (fig. 20) to mark eco-friendly goods with a larger degree of conformity with interests of market subject.

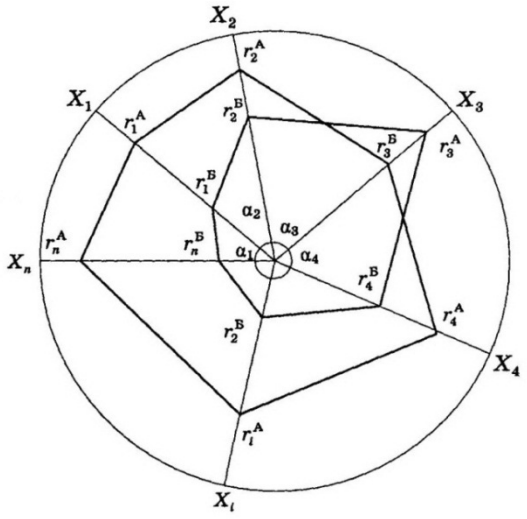


Fig. 20. **The cyclogram of comparison of conformity degree of products with interests of market subject**

Table 12

The decision-making table on selection of acceptable variants of the enterprise development

Estimate	Conformity with interests of market subjects	Probability of product perception by the market	Probability of product nonperception by the market	Level of expected aggregate expenditures	Level of expected total achievements	Risk level	Decision
E = 4	…	...	$I_н = 1$	…	…	…	To accept the variant
3.8 ≤ E <4	Almost full	…	$0 \leq I_н < 0.25$			Minimal	
…	…	$0.5 \leq I_c < 0.75$	…	Moderate	Moderate	…	…
…	Rather sufficient	…	$0.5 \leq I_н < 0.75$	…	…	Critical	…
2 ≤ E < 2.6	…	$0.15 \leq I_c < 0.25$	…			…	
…	Unsatisfactory	…	$0.85 \leq I_н < 1$				Unacceptable variant

33. Fill in blank squares of table 13 by using the following symbols:

"+" - the method is quite applicable to estimate the risk caused by market subject actions;

"±" - applicable in part;

"-" - useless to estimate the risk caused by this market subject.

Table 13

Recommendations about application of methods of the quantitative analysis of those risks of green products manufacturer that may be caused by actions of other market subjects

Method of risk analysis	Subject of the process of green goods market formation					
	Consu-mer	Inves-tor	Intermi-diary	Supplier	Developer	Public and state institutes
Mathematical-statistical						
Analytical						
Financial stability evaluation						
Decision tree use						
Scenario method						
Expert						
Normative						
Sensitivity analysis						
Analogy						
Simulation modeling						

34. Correct the errors on the identification scheme of risk area of producer interaction with green goods market subjects (fig. 21) based on calculation of reliability index of one's interaction with subjects of eco-friendly products market.

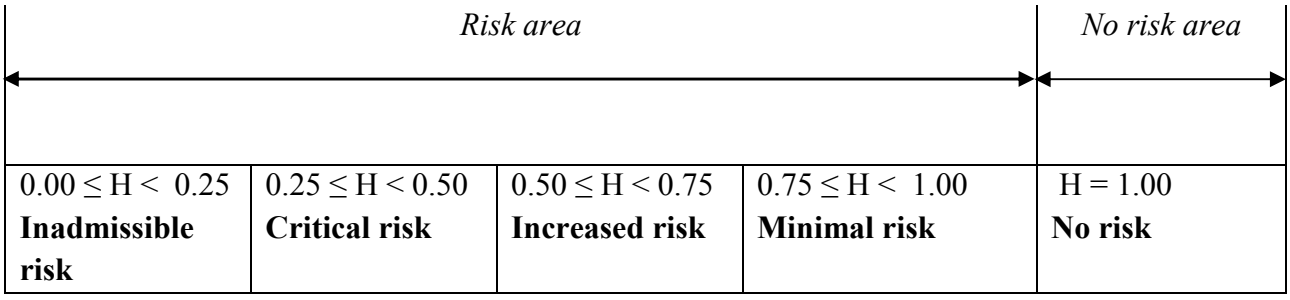


Fig. 21. **The identification scheme of risk area of producer interaction with green goods market subjects**

35. Mark on fig. 22 where the 3rd and 4th groups of consumers are situated, singled out by their attitude towards green products.

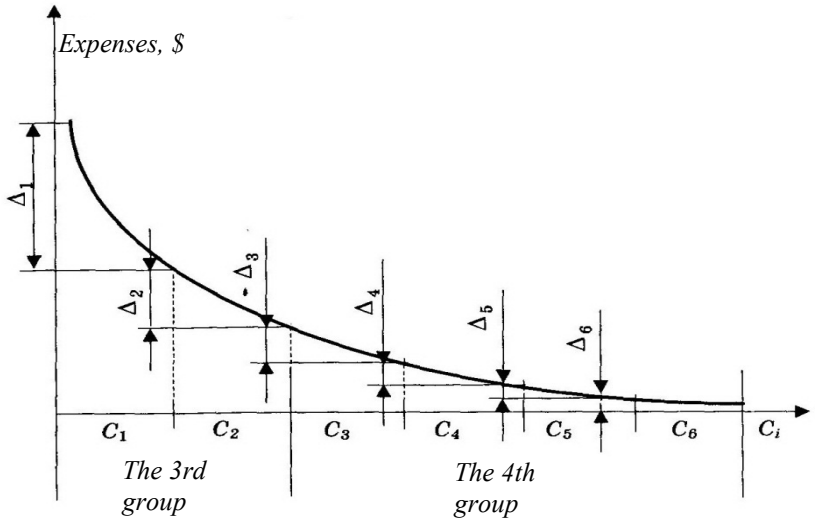


Fig. 22. **The dependence of costs, directed on attraction of as many customers as possible on state of their purchasing readiness C_i:**

Δ_i - reduction in expenses for attraction of consumers at which carrying out a maximal quantity of consumers will buy a green product, depending on state of their purchasing readiness

36. Fill in the matrix of economy development possibilities shown in fig. 23.

		The level of motivated state of enterprise innovation development	
		Low	High
The motivated state level of production greening	High		
	Low		

Fig. 23. **The matrix of economy development possibilities**

37. Fill in the blanks in the diagram of redistribution of means for benefit of manufacturers of eco-friendly products, presented in fig. 24.

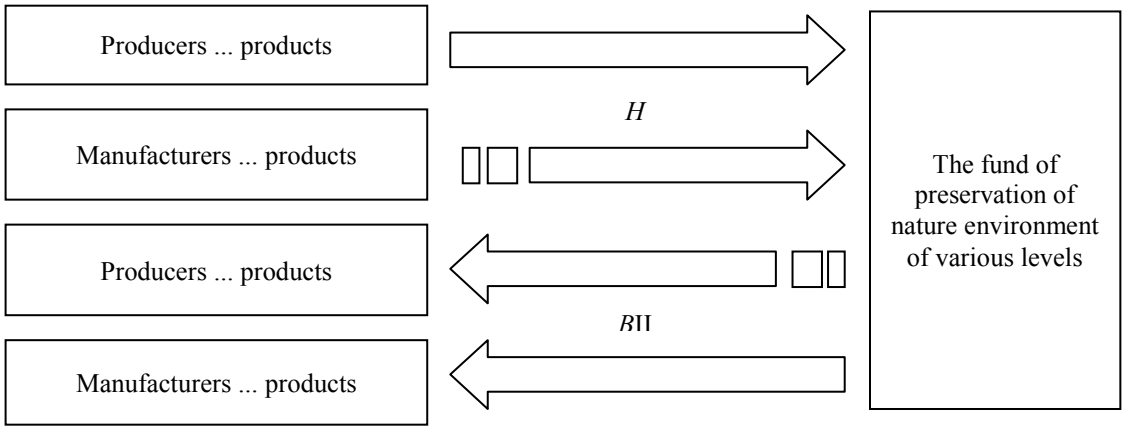


Fig. 24. **The diagram of redistribution of means for benefit of manufacturers of eco-friendly products:**

H - receipt of funds owing to the application of compulsory motivation tools; B - costs on application of incentive motivation tools

38. Fill in the blanks in the diagram of redistribution of the fees and payments collected from nature environment polluters and users of resources shown in fig. 25.

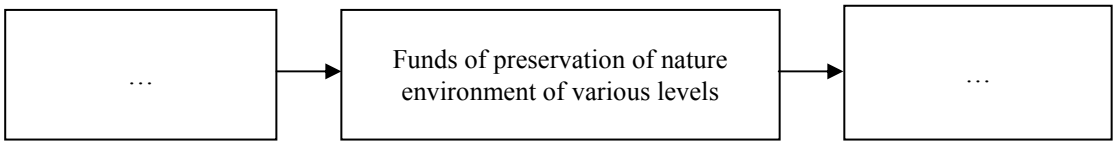


Fig. 25. **The diagram of redistribution of the fees and payments collected from nature environment polluters and users of resources**

39. On the graph of change of revenues from environmental fees and payments at increase in environmentally focused tax pressure (fig. 26) to mark by point K the point of the optimum size of environmentally focused pressure from the point of view of increase in revenues from its application to state budget.

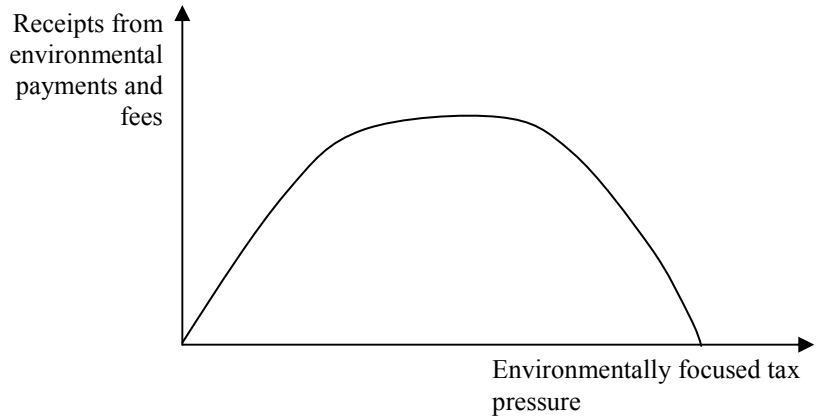


Fig. 26. **The graph of change of revenues from environmental fees and payments at increase in environmentally focused tax pressure**

40. To show in fig. 27, illustrating supply and demand in green products market, the change of equilibrium volume of the market when this product is VAT exempted. To set off the volume of non-received VAT in a shaded square.

41. To show in fig. 27, illustrating supply and demand in green products market, the change of equilibrium volume of the market when their prices are subsidized. To set off the volume of granted subventions in a shaded square.

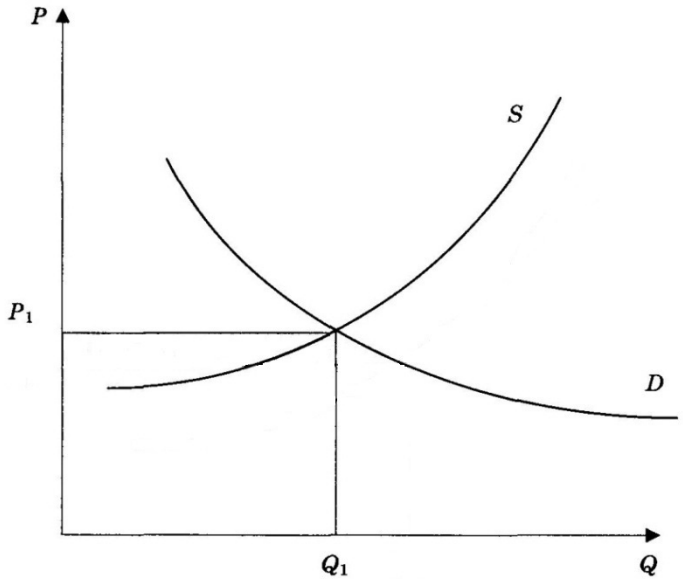


Fig. 27. **The equilibrium volume of green goods market:**
P - product price; *Q* - volumes of product sales

Tests

1. Green marketing concept is developing in direction of such concepts of conducting business as:

a) commercial efforts intensification;
b) socially-ethical marketing;
c) marketing of relations;
d) improvement of production.

2. A consumer protection movement is called:

a) consumerism;
b) environmentalism;
c) green consumerism;
d) consumer environmentalism.

3. The purpose of environmental marketing is:

a) to reveal and satisfy environmental needs;
b) to reveal and satisfy needs as well as greening of them;
c) to receive profit without causing harm to the environment.

4. What of the product kinds listed below are included in the second type of environmental needs:

a) means to increase human immunity or to enhance stability of ecosystem against negative influence of eco-destructive factors;
b) environmentally perfect elements of techological systems;
c) means favoring waste recycling;
d) means to support biodiversity and stability of ecosystems.

5. What are the reasons that traditional methods of market researches are not applied to reveal demand for essentially new eco-friendly products:

a) consumer requirements and needs for which satisfaction they are intended, were met in a different way;
b) existing methods of research do not allow revealing consumers' attitude towards product environmental properties;
c) requirements, for which satisfaction they are intended, did not exist earlier.

6. Environmentally neutral products are those that:

a) do not cause harm to the environment.
b) do not have purely environmental properties;
c) consumed by those who do not pay attention to their environmental properties.

7. Certain products are called environmentally neutral because of the absence of:

a) environmental features;

b) environmental impact;
c) data on their ecological compatibility;
d) data on their environmental influence.

8. Close to the green are consumers who:
a) take part in environmentally focused actions, but do not make environmentally focused purchases;
b) concerned about environmental problems however do not perform environmentally focused actions;
c) ready to pay only a small premium for ecological compatibility of products;
d) ready to pay a premium only for particular types of eco-friendly products.

9. Share of customers refusing to pay a price premium for ecological compatibility of products is the largest in the market of eco-friendly products, ...
a) which production is harmless to the environment;
b) which use is harmless to human health;
c) which use is harmless to the environment;
d) which disposal is harmless to the environment;

10. Which of groups of motives can promote giving some andvantage to a green product over its ordinary analogs:
a) rational;
b) emotional;
c) moral;
d) all the mentioned above.

11. The ecopsychologic disposition which essence consists in support of the nature and cooperation with it, is called:
a) subjugation;
b) collaborative;
c) spoilage;
d) indifference;
e) submission;
f) necessitty.

12. If the consumer has chosen a product with high expenses of consumption and socially significant eco-friendly advantage she induced to make this choice by ... type of motivation:
a) rational;
b) moral;
c) emotional;
d) affective;
e) situational.

13. Directions of an intensive development of eco-friendly products market in Kazakhstan are:

a) production of cleaner foodstuff;
b) computerization of production and sales;
c) waste processing;
d) industrial waste processing;
e) production of green household goods.

14. The stages of eco attributive consumer behavior formation are:

a) analysis of green product availability;
b) analysis of sufficiency of eco attributive behavior motivation;
c) evaluation of product ecological compatibility level;
d) analysis of sufficiency of knowledge of advantages of certain green product;
e) analysis of methods of eco attributive consumer behavior support.

15. "Environmentally clean and safe" environmental label is related to:

a) environmental labeling signs of the first group;
b) environmental labeling signs of the first and second groups;
c) environmental labeling signs of the second group;
d) environmental labeling signs of the third group;

16. Evaluation of green product compatibility to interests of market subjects is made for:

a) purposeful alteration of interests of market subjects;
b) estimation of expediency of market promotion of an eco-friendly product;
c) estimated probability of product perception by the market.

17. The estimate of conformity of green goods A, B, C to interests of market subjects makes: of consumers – 2; 2.8; 3.9; of manufacturers - 3.8; 3; 3.2; of a society on the whole - 3.4; 3.5; 2.1.

Which of the products will be perceived by the market first of all?

a) A; b) B; c) C?

18. The estimate of conformity of green goods A, B, C to interests of market subjects makes: of consumers – 1.8; 2.8; 3; of manufacturers - 3.8; 2; 3.2; of a society on the whole - 3.4; 3.2; 2.1.

For what green goods is it inexpedient to calculate the integral estimate?

a) A; b) B; c) C?

19. The purpose of estimation of reliability of interaction of producer with green goods market subjects is:

a) risk identification of market promotion of a green product;
b) selection of direction of eco-friendly products market development related with the least risk level;

c) selection of the most reliable market subjects for cooperation.

20. The curve of dependence of costs, directed on attraction of as many customers as possible on state of their purchasing readiness:

a) shows reduction in expenses for attraction of consumers depending on state of their purchasing readiness;

b) allows choosing groups of consumers, eco attributive behavior formation of whom will make the maximum profit;

c) meant for definition of the optimum level of expenses for attraction of consumers depending on their purchasing readiness.

21. Which of groups of consumers can an enterprise consider as potential buyers?

a) those who do not want to buy a product;

b) those who can not use it;

c) those who have no attitude towards it;

d) those who are ready to purchase it under certain conditions.

22. The economic regulation of enterprise environmental activity:

a) aims to increase economy development possibilities;

b) based on redistribution of means for benefit of manufacturers of eco-friendly products;

c) promotes environmental marketing development.

23. Critical tax pressure is characterized by a point where:

a) maximum revenues from green taxes;

b) enterprise abandons an ecologically destructive manufacture for an environmentally appropriate production;

c) its further increase is economically useless;

d) its further increase does not favor production greening.

24. The purpose of economic motivation of production greening is:

a) state budget replenishment by collecting green taxes;

b) green production share growth;

c) environmental cleanliness increase of manufactured products.

Practical tasks

Task 1. **The definition of product ecological compatibility level**

To define ecological compatibility level of three products which are intended for satisfaction of one group of requirements by using the expert method. To draw graphs of environmental impact accumulation of the products at stages of their existence. To draw conclusions.

Methodological recommendations to perform the task

It is necessary to know topic 7 of the teaching manual "Green marketing" to perform this task. Inclusion of product/s transfer in the groups distinguished by ecological compatibility level (eco-friendly products: environmentally neutral and environmentally focused; non-green products: environmentally dangerous and environmentally appropriate), done by estimation of product influence on each of recipients while filling in estimation tables like table 14. In these tables experts estimate environmental influence which is classified by the following signs:

• by product existence stages at which there is an influence, main of which are: acquisition of resources, processing of resources, production of means of production, production of means of consumption, consumption, waste processing, elimination and burial of waste;

• by kind of influence: mechanical; chemical; physical including thermal, photic, noise, electromagnetic; radiation; biological, including biotic and microbiological;

• by its recipients, main of which are: population health, housing and communal services, forestry, agriculture, fishery and industry.

The table is filled by giving grades which characterize both direction and power of a specific kind of influence during a certain stage of existence of a product. The grades vary "-5" to "+5". The sign in front of a figure indicates influence direction.

Table 14

Evaluation table of product ecological compatibility (simulated example)

Product life stage - consumption							
Kind of influence	Recipient						
	Population health	Housing and communal services	Forestry	Agriculture	Fishery	Industry	Total
Mechanical							
Chemical							
Physical							
Radiation							
Biological							
Total							

That is, if a product influences negatively (in eco-destructive way) (at product life stage being considered it adds to environment a certain kind of pollution which influences the recipient) then «-» sign is put down. If the product positively influences the recipient (i.e. at a specific stage of product existence it counteracts a certain kind of pollution, occurrence of its consequences or eliminates this kind of

pollution, prevents it or occurrence of its consequences) then «+» sign is put down. The figure means the strength of influence (either negative or positive). When there is none then «0» is put down. The point scale of product influence on the recipient which should be used to fill in estimation tables is shown in fig. 28.

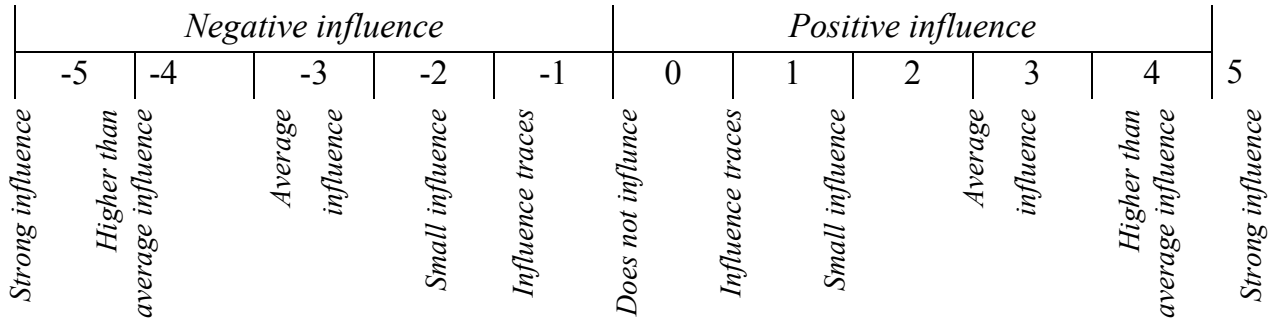


Fig. 28. **The scale of points characterizing the strength of influence on the recipient**

Summation of the points within rows in the table 14 allows determining directions of the most sensitive influences (either negative or positive) by its kinds, and their summation within columns - determine and compare strength of influence on each of the recipients.

The sum of all points put down in the estimation table (the right bottom cell of table 14), gives overall evaluation of influence of a product on a recipient. In theory it is within the range of "-150" to "+150".

The integral point of product influence on the environment is calculated as arithmetic mean of received total points of product influence at each of the stages of its existence.

Ecological compatibility level (E) is calculated by averaging of integral points given by the experts. Depending on the received ecological compatibility level the product can be put into one of the groups distinguished by the ecological compatibility degree (table 15).

Table 15

Putting products into groups by their ecological compatibility level

Group of products	Ecological compatibility level
Environmentally focused products	$+30 \leq Э \leq +150$
Environmentally neutral products	$-30 < Э < +30$
Environmentally appropriate products	$-60 < Э \leq -30$
Environmentally unsafe products	$-150 \leq Э \leq -60$

To draw graphs of environmental impact accumulation of products at stages of their existence they consecutively transfer to a graph from each table total estimations of product environmental impact at every of the stages of its existence (that is the numbers received in the right bottom cells of each of the estimated tables). As a result for each of three products being considered it is possible to draw graphs of environmental impact of the products at stages of their existence similar to those shown in fig. 29.

Calculations and graphical plotting are necessary to complete with conclusions in which to give a comparative description of environmental influence of three products under consideration.

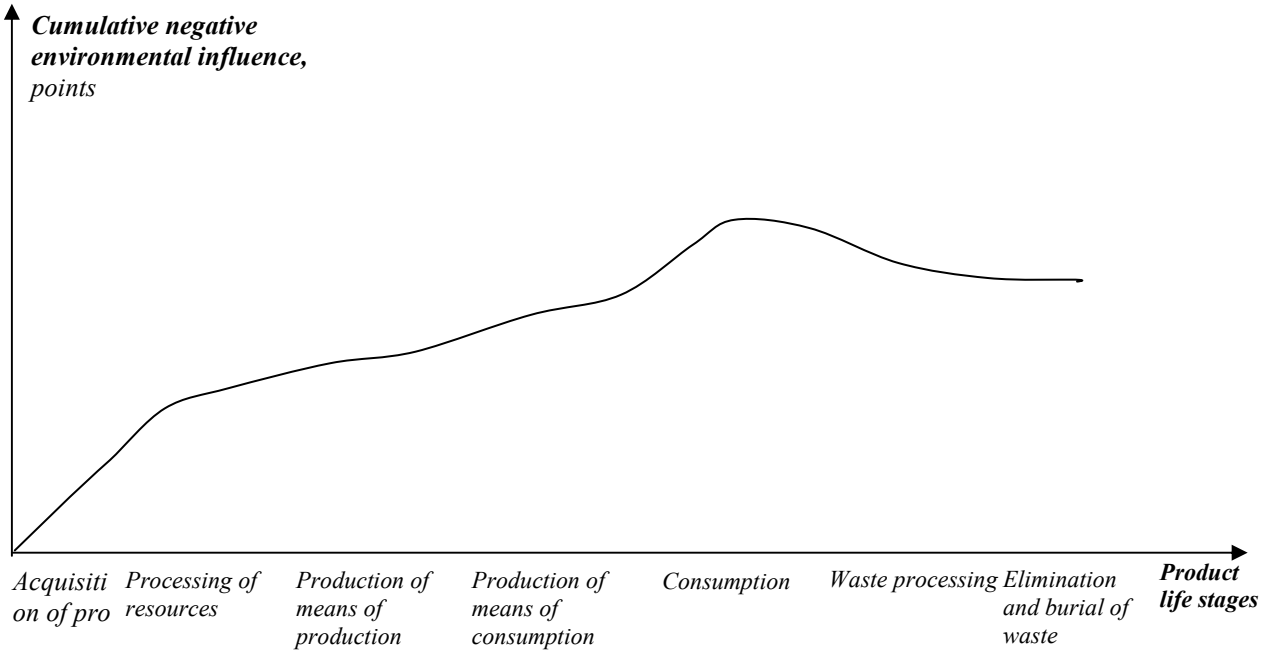


Fig. 29. **Accumulation of product environmental impact**

Task 2. **The investigation of consumers' readiness to pay a premium for ecological compatibility of various types of products**

By using surveys to find out potential consumers' attitude towards payment of a premium for ecological compatibility of various types of products as well as investigate an actual readiness to make an environmentally focused choice connected with larger purchasing costs. To draw conclusions regarding differences in both stated and actual willingness to pay a premium for ecological compatibility of various types of products by different market segments and market on the whole. To define, what type of consumers as for motivation of environmentally focused behavior include the respondents.

Methodological recommendations to perform the task

The guarantee of successful fulfilment of this task is to know topics 8-9 of the teaching manual "Green marketing" and a properly made questionnaire to make a survey. In a questionnaire it is necessary first of all to provide for definition of statement of consumers' readiness to pay a premium for ecological compatibility of various types of products by ecological compatibility. That is, first, those which production does not harm the environment. Second, which use does not damage human health. Thirdly, which use does not harm the environment. Fourthly, which disposal does not harm the environment. After these questions it is recommended to

simulate a consumer choice that assumes the description of several products of each type by ecological compatibility and proposals to choose them. After the poll has been held it is necessary to make a decision-making matrix (table 16).

By means of the matrix to make an analysis of the results of survey, in particular to draw graphs of actual readiness to pay a price premium for ecological compatibility of each of the types of products grouped by the degree of ecological compatibility (fig. 30). In conclusions to reflect main differences of both stated and actual willingness to pay a premium for ecological compatibility of various type of products by different market segments and in the market on the whole. To define, what type of consumers as for motivation of environmentally focused behavior include the respondents.

Task 3. **The investigation of green products consumption motivation**

To study incentive components of motivation of consumers' choice of a specific eco-friendly product for the market on the whole and for its individual segments. To reveal the structure of consumer motivation for the market on the whole and distinguished market segments. To correlate requirements which are satisfied by investigated product consumption, according to Maslow's hierarchy. To draw conclusions.

Table 16

Decision-making matrix (fragment)

Number of questionnaire	Number of question and answer options															
	1				2				…				15			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
1	×					×			×				×			
2			×					×	×							×
3		×						×		×			×			
…																
20				×		×				×					×	
How many times this answer was chosen	7	5	6	2	…											
In percentage to total amount	35	25	30	10	…											

Methodological recommendations to perform the task

When performing this task one should, by using theoretical statements of topic 10 of the teaching manual «Green marketing» and the survey method, to investigate, what motivation components proper induced the consumer to choose a particular eco-friendly goods:

a) motives (cognitive, of prestige, utilitarian and so on);

b) needs and interests (slake one's thirst/satisfy one's hunger, gift, collecting and so on);

c) stimuli (events, price discount, ad etc.);

d) situational factors (casual purchase, attractive appearance, no alternatives and so on).

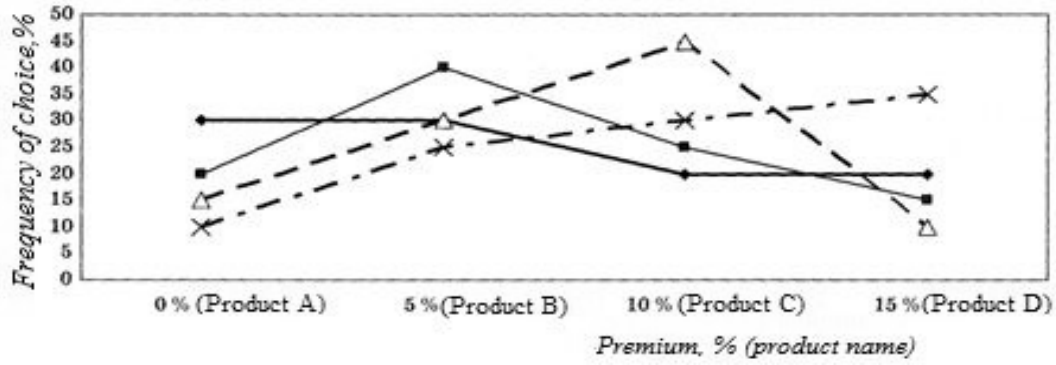


Fig. 30. **Graph of actual readiness to pay a price premium for ecological compatibility of one of the types of products grouped by ecological compatibility** (simulated example)

Such analysis should be made both for the market on the whole and for its individual segments. To use table 17 to present the results of research of consumer motivation of individual segments. At that groups of consumers can be distinguished by age, sex, economic standing, income or other factors depending on specificity of a product which motivation of consumption is investigated (for example, in the hair dye market such factor can be one's hair color. These groups should be the most significant groups of consumers of specific goods. For each group of consumers it is necessary to emphasize the importance of certain components of motivation which have been revealed during the poll.

Table 17

The analysis of importance of components of motivation for different market segments (simulated example)

Components of motivation		Groups of consumers					
		Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6
Motives	Motive 1	***	**	**	*	***	***
	Motive 2	**	*	***	**	**	*
	Motive 3	*	***	***	*	***	***
	Motive 4	**	**	**	***	*	*
Needs	Need 1	**	**	**	**	*	**
	Need 2	***	***	**	**	***	**
	Need 3	*	**	***	*	**	**
	Need 4	***	*	**	***	*	*
Stimuli	Stimulus 1	**	*	*	*	***	***
	Stimulus 2	*	**	*	*	**	*
	Stimulus 3	***	*	*	***	***	*
	Stimulus 4	*	**	**	***	*	**
Situational factors	Factor 1	*	*	*	***	**	**
	Factor 2	*	***	***	**	**	*
	Factor 3	**	**	**	*	*	*
	Factor 4	*	***	*	**	**	**

*** - pretty important component of motivation;
** - important component of motivation;
* - less important component of motivation.

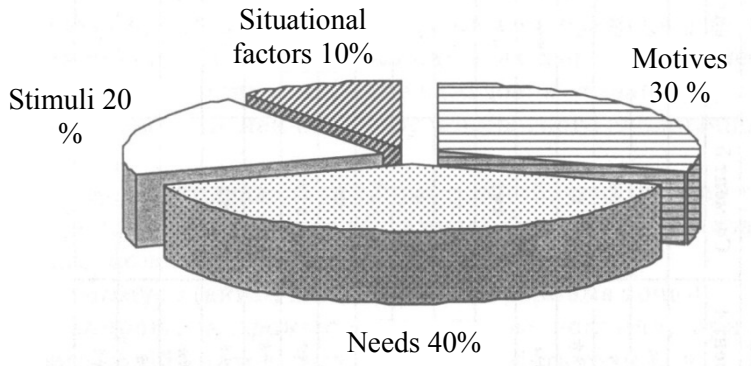


Fig. 31. **Structure of green product consumption motivation** (simulated example)

The performance of the task assumes also to reveal by the results of the poll the structure of consumer motivation for the market on the whole and its market segments distinguished like those in table 17. By results of the made analysis of the structure of motivation one draws diagrams similar to the one shown in fig. 31.

The following stage of performance of the task is correlation of the requirements singled out at the previous research stages satisfied by the considered eco-friendly goods, with Maslow's hierarchy of needs with indication of that what share of the respondents satisfies each group of requirements by purchasing the considered product.

The results of a similar research for the market on the whole are shown in table 18. Similarly one should add columns on the right of the table where to show similar results of research for individual market segments.

Table 18

Correlating requirements which are satisfied by consumption of cleaner vegetables and fruits, with Maslow's hierarchy of needs

(made with the aid of results of Russian scientists' researches [22])

Groups of needs	Needs satisfied by consumption of cleaner vegetables and fruits	Percentage of needs inducing to choose cleaner	
		vegetables	fruits
1. Physiological requirements necessary for survival	Nutritional (biological) value;	4.7	5.5
2. Needs for safety and confidence in the future	Necessity caused by different diseases	34.1	27.4
	Guaranteed safety and harmlessness	28.0	30.1
3. Social needs	Environmental protection of kids	33.2	37.0
4. Self-esteem needs	-	-	-
5. Self-actualization (self-expression) requirements	-	-	-

In conclusions to the task one should to give a general description of motivation of studied green product consumption by the market on the whole and by each market segment.

Task 4. **Preparation of recommendations for market promotion of an eco-friendly goods**

To work out recommendations for market promotion of a specific green product.

Methodological recommendations to perform the task

When performing this task one should, using theoretical statements of topic 13 of the teaching manual «Green marketing», to develop a trade mark of the real or imagined enterprise which produces it. Then to make up the legend of green product, work out recommendation to inform customers about peculiarities of eco-friendly goods, offer sources of information of consumers about the product and to give other recommendations to increase efficiency of market promotion of the green goods under consideration.

Task 5. **Determining green product compatibility to interests of market subjects**

To choose a specific green product for research. By the means of the expert method to define characteristics by which it is necessary to estimate conformity with interests of consumers, manufacturers and a society at large. To determine eco-friendly product compatibility with interests of the mentioned market subjects as well as market as a whole. To plot cyclograms of green product compatibility with interests of each market subjects as well as market as a whole. By results of estimation to draw conclusions concerning expediency of market promotion of the product under consideration.

Methodological recommendations to perform the task

To perform the task one should know the theoretical statements of topic 15 of the teaching manual «Green marketing». To facilitate the work on this problem the model solution is given below.

Task performance example

Let us make the analysis of competitiveness of eco-friendly products of MPE “Udacha” (Luck) (services and gathering of herbal medicines) for the purpose of substantiation of expediency of expansion of their production and sales in one of the cities of the Sumy Oblast and attraction of investments for it.

Under current environmental and economic conditions more and more green goods of medical group emerge in the domestic market. Owing to traditional medicine cost growth because of advance in medical services prices more and more consumers turn to alternative treatment modes, in particular to herbal treatment.

MPE “Udacha" owns age-old recipes of preparation of medicinal mixtures (namely: mixtures of minerals, seeds and herbs) and alternative treatment ways which

ensure quick recovery and stable effect. These recipes and alternative treatment ways help to use reasonably healing natural forces, they restore one's health, treat not only body but also one's spirit.

They have made the analysis of expediency of expansion of green products market production of MPE "Udacha", for example a set of medicinal plants and nerve-point massage services for treatment of joint diseases. At the moment of the research, these eco-friendly goods of MPE "Udacha" were consumed by 15,000 people that accounts for about 23% of population of the analyzed region.

In MPE "Udacha" there are competitors making and selling medicines for treatment of such diseases. These are MPE "Krasota" (Beauty) and traditional medicine. In the given market there is "Yunost" (Youth) company as well, but it is not a competitor as deals with consumers with a high income level, uses expensive import medicines and devices, but does not use herbal mixtures.

The success in the market of medical services is defined first of all by effective work of research laboratories and marketing departments.

Let us estimate a green product (a set of medicinal plants and nerve-point massage services for treatment of joints) which is made by MPE "Udacha" and similar products made by MPE "Krasota" and traditional medicine.

The experts involved from among the consumers have clarified groups of estimated characteristics on the ground of estimation forms. The forms contained: tentative sets of groups of characteristics of the goods which can interest market subjects; characteristics of eco-friendly products market subjects involved in its formation; characteristics of green goods (development options).

The result was completed estimation forms for definition of conformity to interests of each of the market subjects.

Then using the completed forms as well as estimation criteria of conformity of groups of characteristics of goods with interests of each of the market subjects and their weights, techniques of conversion of quality estimates in quantitative they have got estimates of conformity of eco-friendly goods under consideration to interests of the market subjects.

The intermediate and final findings are shown below. The calculation of weight of groups of characteristics for evaluation of conformity of green products with interests of consumers according to one of the experts are given in table 19 (weight of groups of characteristics is calculated by the method of pairwise comparison).

The averaged estimates of the weights, received as a result of evaluation by all involved experts, are: reliability (efficiency) of recovery - 26%, availability and small financial expenditure - 19%, fast response to treatment - 20%, environmental cleanliness - 10%, no adverse effects - 20%, approval by others - 5%.

Table 19

Definition of weight of groups of estimation characteristics of green goods with interests of consumers according to one of the experts

Groups of products characteristics	X_1	X_2	X_3	X_4	X_5	X_6	Total	Weight
1. Reliability (efficiency) of recovery		1	0	1	1	1	4	0.26
2. Availability and small financial expenditure	0		0	1	1	1	3	0.20
3. Fast response to treatment	1	1		0	0	1	3	0.20
4. Environmental cleanliness	0	0	1		0	0	1	0.07
5. No adverse effects	0	0	1	1		1	3	0.20
6. Approval by others	0	0	0	1	0		1	0.07

The estimates of conformity of groups of green product characteristics to consumers' interests received by means of generalisation of all experts' estimates are given in table 20.

Table 20

The conformity of groups of green product characteristics to consumers' interests

Eco-friendly product producer	MPE "Udacha"	MPE "Krasota"	Traditional medicine
Reliability (duration) of recovery	3.81	3.63	2.95
Availability and small financial expenditure	3.72	3.70	3.71
Fast response to treatment	3.83	3.62	3.93
Environmental cleanliness	3.99	3.94	1.22
No adverse effects	4.00	4.00	2.54
Approval by others	3.52	3.51	3.50

Using the received weights of groups of characteristics of eco-friendly goods and data in table 20 they have calculated estimates of conformity of green goods with interests of consumers which make: for herbal mixtures and services of MPE "Udacha" - 3.84; MPE "Krasota" - 3.74; for traditional medicine - 3.03. That is, the estimation of all producers of herbal mixtures and services proves the production acceptability, but the highest estimates have been given to MPE "Udacha".

The results of evaluation of conformity of eco-friendly product with consumers' interests by separate groups of characteristics are presented in fig. 32.

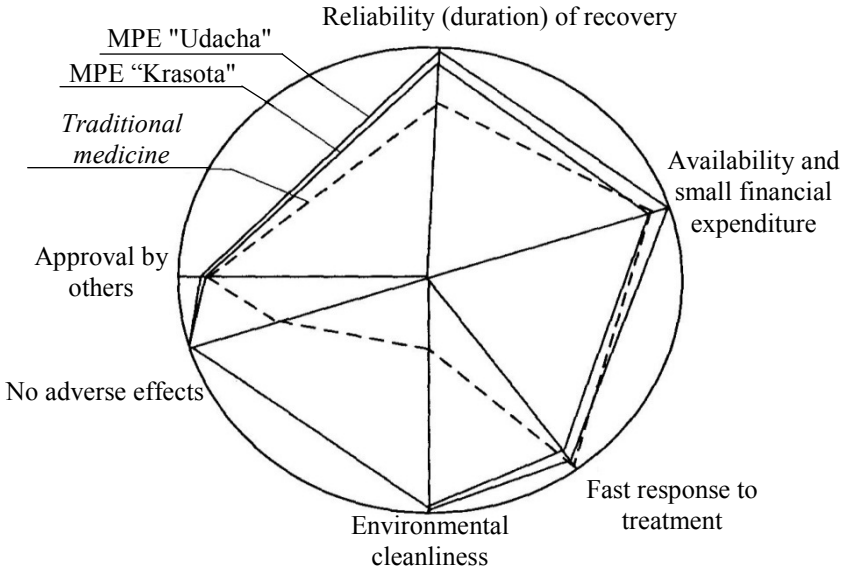


Fig. 32. **The cyclogram of comparison of conformity of green products with consumers' interests.**

By means of the same procedure they estimated the conformity of analyzed eco-friendly product to interests of manufacturers and region as a whole.

The calculation of weight of groups of characteristics for evaluation of conformity of green product with producers' interests as a result of one of the experts' estimation are given in table 21.

Averaging the results of estimations of all involved experts has allowed receiving such weights of groups of estimation characteristics: low cost of manufacture - 9%, profit earning - 27%, safety of production - 18%, expandability of existing and winning of new outlets - 16%, employees' health provision - 18%, increase in producer's status - 12%.

The estimates, received as a result of processing of expert data on conformity of groups of green product characteristics to producers' interests are given in table 22.

Table 21

Calculation example of weight of groups of estimation characteristics of green product to producers' interests

Groups of characteristics	X_1	X_2	X_3	X_4	X_5	X_6	Total	Weight
1. Low cost of manufacture		0	0	0	1	0	1	0.07
2. Profit earning	1		0	1	1	1	4	0.27
3. Safety of production	1	1		1	1	0	4	0.27
4. Expandability of existing and winning of new outlets	1	0	0		0	1	2	0.13
5. Employees' health provision	0	0	0	1		1	2	0.13
6. Increase in producer's status	1	0	1	0	0		2	0.13

Based on the defined weights and data given in table 22 the calculated estimates of conformity of green goods with interests of manufacturers, are: for herbal mixtures and services of MPE "Udacha" - 3.68; of MPE "Krasota" - 3.39; for traditional medicine - 3.68. The estimates of all producers of herbal mixtures and services prove acceptability of this production. MPE "Udacha" and the traditional medicine got similar estimates, MPE "Krasota" received a lower estimate.

Table 22

The estimates of conformity of groups of green product characteristics to producers' interests

Eco-friendly product producer	MPE "Udacha"	MPE "Krasota"	Traditional medicine
Low cost of manufacture	3.75	3.74	3.68
Profit earning	3.50	3.15	3.99
Safety of production	3.59	3.45	3.98
Expandability of existing and seizure of new outlets	3.95	3.21	3.72
Employees' health provision	3.89	3.81	3.48
Increase in producer's status	3.49	3.22	2.76

The results of evaluation of conformity of eco-friendly product with producers' interests by separate groups of characteristics are presented in fig. 33.

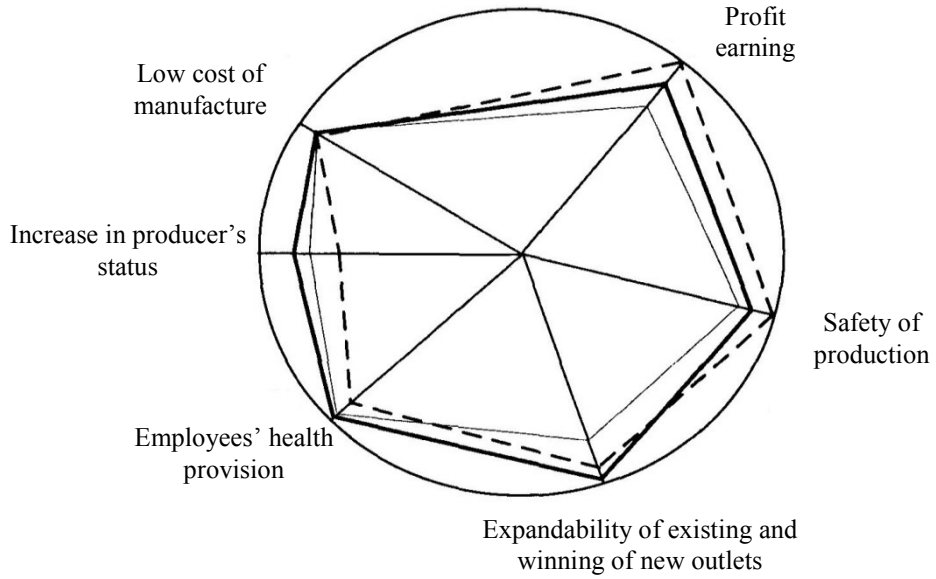


Fig. 33. **The cyclogram of comparison of conformity of eco-friendly products to producers' interests** (legend of the lines in fig. 33 as well as in fig. 34-35 coincide with that of fig. 32)

The calculation of estimate of conformity of green goods with regional interests is shown in table 23.

Table 23

Definition of weight of groups of estimation characteristics of green products with interests of region (Sumy Oblast area)

Groups of characteristics	X_1	X_2	X_3	X_4	X_5	Total	Weight
1. Increase in region environmental safety level		1	1	1	1	4	0.40
2. Local economy upsurge	0		1	0	1	2	0.20
3. Region competitive ability provision	0	0		0	0	0	0.00
4. Population health provision	0	1	1		1	3	0.30
5. Local budget replenishment	0	0	1	0		1	0.10

Averaging the results of experts' estimations allowed getting the following weights of estimation groups of characteristics: increase in region environmental safety level - 22%, local economy upsurge - 19%, region competitive ability provision - 18%, population health provision - 21%, local budget replenishment - 20%.

Generalization of expert data has also allowed calculating estimates of conformity of groups of characteristics of green product under consideration to regional interests (table 24).

Table 24

The estimates of conformity of groups of green product characteristics to interests of region (Sumy Oblast area)

Eco-friendly product producer	Increase in region environmental safety level	Local economy upsurge	Region competitiveness provision	Population health provision	Local budget replenishment
MPE "Udacha"	3.33	3.25	3.87	3.94	3.11
MPE «Krasota»	2.94	2.70	2.44	3.61	2.96
Traditional medicine	1.80	3.88	3.68	2.92	3.98

Based on the defined weights and data given in table 24 they have calculated estimates of conformity of eco-friendly products with interests of region, which are: for herbal mixtures and services of MPE "Udacha" - 3.50; of MPE "Krasota" - 2.95; for traditional medicine - 3.20. All estimates of conformity with region interests prove production acceptability. MPE "Udacha" once again got the highest grade.

The results of evaluation of conformity of eco-friendly product with region interests by separate groups of characteristics are presented in fig. 34.

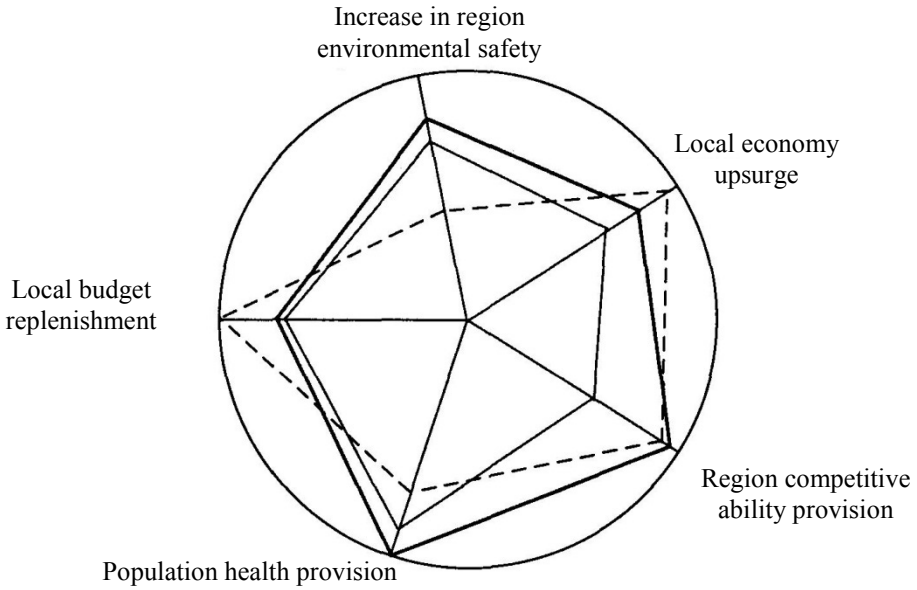


Fig. 34. **The cyclogram of comparison of conformity of eco-friendly products with interests of public and government institutes**

Using the data of tables 19-24 they have calculated an integral estimate of degree of satisfaction of interests of the subjects involved in formation of the market of eco-friendly goods which makes 11.01 for MPE "Udacha"; for MPE "Krasota" - 10.08; for similar green goods of traditional medicine - 9.95 (table 25).

Table 25

Estimates of green product compatibility to interests of market subjects

Eco-friendly product producer	Market subject, conformity with interests of which is evaluated			
	Consumer	Producer	Region	Integral estimate
MPE "Udacha"	3.83	3.73	3.50	3.67
MPE "Krasota"	3.74	3.46	2.95	3.36
Traditional medicine	3.06	3.62	3.20	3.32

The comparative estimation of conformity of the goods of competitive producers to interests of the subjects involved in formation of green product market, is given in fig. 35.

After the comparison of received results of estimation of conformity of eco-friendly products with interests of market subjects and the table of approval of decisions on selection of acceptable variants of enterprise development, one can draw the following conclusions:

1. The level of conformity of green goods of analyzed enterprises to interests of market subjects is sufficient.
2. Probability of product perception by the market is within the range of 50% to 75%.

3. Probability of product rejection by the market is within the range of 25% to 50%.
4. The level of expected aggregate expenditures is moderate.
5. The level of expected total achievements is moderate.
6. Risk level is increased.

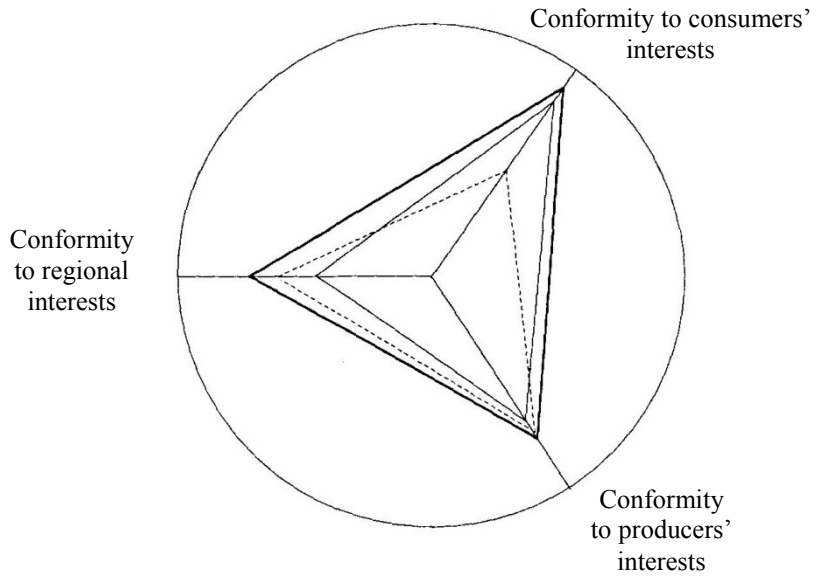


Fig. 35. **The cyclogram of comparison of conformity of green goods of different producers with interests of market subjects**

Accordingly it is necessary to make the decision to make an additional analysis to specify acceptability of market promotion of green products of the analyzed enterprises. Considering that the highest estimates were given to green goods of MPE "Udacha", one should give preferance to the analyzed production of this enterprise.

Note

When fixing time to perform the task (insufficient for attraction of experts, their mastering of estimation procedure of product conformity with interests of market subjects) it is possible to do it on the basis of one expert's estimates, and this expert will be the performer of the task as well. Certainly, the results of such evaluation will be pretty subjective, however performing the task this way will have created practical skills to receive estimates that can be easily repeated, if required, in practice with attraction of necessary quantity of experts.

Task 6. **The definition of risk of producer interaction with green products market subjects**

To choose a specific green product for research. By using the expert method to define degree of reliability of interaction of the producer of a product under investigation with individual market subjects, and also with the market on the whole. To draw cyclograms of reliability of interaction with each market subject and sum total of them. After the estimation to identify the risk area of market promotion of eco-friendly goods under consideration, to draw conclusions on expediency of its market promotion.

Methodological recommendations to perform the task

It is necessary to know theoretical statements of topic 16 of the teaching manual «Green marketing» to perform this task. To facilitate the work on the problem its model solution is given below.

Task performance example

Before one starts to carry out the work it is necessary to analyze both urgency and expediency of task performance as it has been made in the beginning of the previous task. The results of further analysis are given below.

Next they calculate risk estimate of interaction with subjects of green products market for each of the competitors - producers of a set of medicinal plants and nerve-point massage services for treatment of joint diseases, namely: MPE "Udacha", MPE "Krasota" and traditional medicine.

The involved experts on the basis of estimation forms containing tentative estimation criteria of reliability of subjects of eco-friendly goods market and characteristics of market subjects, used in certain version of development, define estimated criteria of subjects of green products market and their weights. Using them they make forms to evaluate reliability of subjects of eco-friendly goods market. The qualitative estimates, received as a result of filling in these forms by experts, are converted into semiquantitative.

One of the subjects involved in establishing green products market are intermediaries. MPE "Udacha" sells herbal mixtures for joints diseases through single level marketing, i.e. goods are sold directly by retailers. Services of joint diseases treatment are rendered in the place of enterprise location, as well as at home for an extra charge. Both MPE "Krasota" and traditional medicine sell a product via two-level marketing. That is the producer sells a product to wholesalers, wholesalers sell it to retailers who in turn sell the product to customers. MPE "Krasota" and traditional medicine render their services where their producers are located. The results of estimation of reliability of intermediaries, with whom producers interact, are presented in table 26.

Table 26.

The results of estimation of degree of reliability of intermediaries

Producer	Activity experience	Image	Financial condition	Personnel potential	Productive potential
MPE "Udacha"	2.8	4.0	2.4	3.0	2.6
MPE "Krasota"	3.7	3.2	2.5	2.1	2.3
Traditional medicine	4.0	3.9	2.9	3.8	2.9
Criterion weight	0.21	0.3	0.2	0.24	0.05

The integral estimate of degree of reliability of intermediaries of MPE "Udacha" calculated according to the data of table 26 makes 0.78 that indicates a minimum level of risk of its interaction with intermediaries. The integral estimate of degree of reliability of intermediaries of MPE "Krasota" makes 0.71 (increased risk level),

traditional medicine - 0.91 (minimum risk). That is one should give preference to the traditional medicine by the risk level of interaction with intermediaries.

To show graphically the results of estimation we will draw a cyclogram of comparison of reliability of interaction of green products producers with intermediaries (fig. 36).

The results of estimation of reliability of suppliers are given in table 27.

The integral estimate of degree of reliability of suppliers of MPE "Udacha" calculated according to the data of table 27 makes 0.79 that indicates a minimum level of risk. The integral estimate of degree of reliability of suppliers of MPE "Krasota" makes 0.74 (increased risk), of traditional medicine - 0.90 (minimum risk). Traditional medicine is safer by the risk level of interaction with suppliers.

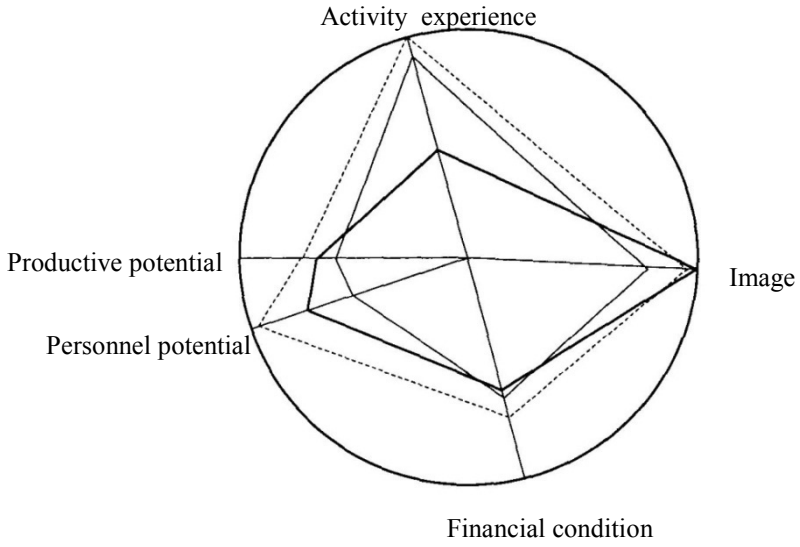


Fig. 36. **The cyclogram of comparison of reliability of interaction with intermediaries** (legend of the lines in fig. 36 as well as in fig. 37-41 coincide with that of fig. 32)

Table 27

The results of estimation of degree of reliability of suppliers

Producer	Activity experience	Image	Financial condition	Personnel potential	Productive potential
MPE "Udacha"	2.1	3.9	3.1	3.9	3.3
MPE "Krasota"	2.6	3.0	2.8	3.7	2.9
Traditional medicine	3.9	3.3	3.8	3.2	3.5
Criterion weight	0.18	0.05	0.22	0.16	0.39

To show graphically the results of estimation we will draw a cyclogram of comparison of reliability of interaction of green products producers with suppliers (fig. 37).

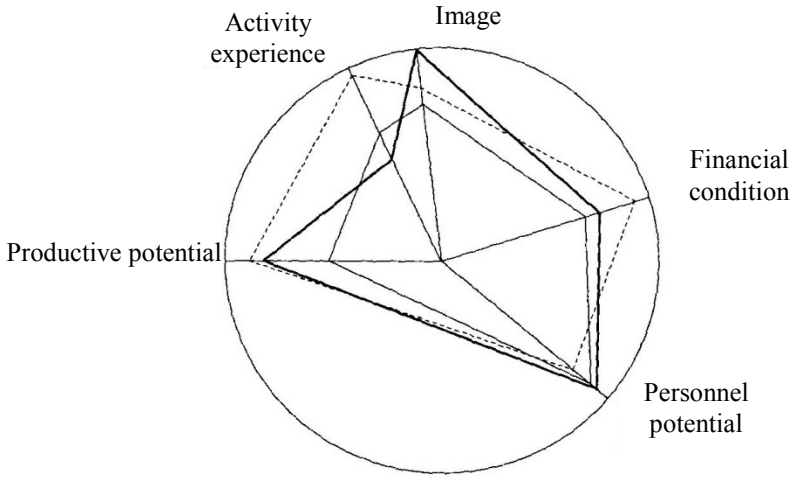


Fig. 37. **The cyclogram of comparison of reliability of interaction with suppliers**

Producers do not interact with subjects of green products market - developers - at the given variant of formation of the market, since an eco-friendly product, market of which one provides for expansion, is already developed.

One more subject of green products market, with whom producers interact, is investors. It has been calculated that investments of $6500 are necessary for expansion of range of consumers of production of MPE "Udacha" from 23% of the population of the area under consideration to 35-36%. It is assumed to borrow this sum from an investor who remains anonymous to maintain confidentiality. The source of investments for MPE "Krasota" is similar. The main funding source of traditional medicine is the state budget. The results of estimation of reliability of investors are given in table 28.

Table 28

The results of estimation of degree of reliability of investors

Producer	Activity experience	Image	Financial condition	Personnel potential
MPE "Udacha"	2.8	4.0	2.4	3.0
MPE "Krasota"	3.7	3.2	2.5	2.1
Traditional medicine	4.0	3.9	2.9	3.8
Criterion weight	0.21	0.3	0.2	0.24

The integral estimates of degree of reliability of investors of MPE "Udacha" and MPE "Krasota" calculated according to the data of table 28 makes the same value - 0.92, that indicates a minimum level of risk of their interaction with investors. The integral estimate of reliability of investors of traditional medicine makes 0.68 that indicates an increased risk. Thus, by the risk level of interaction with investors formation of green goods market by means of traditional medicine is the most risky.

To show graphically the results of estimation we will draw a cyclogram of comparison of reliability of interaction of green products producers with investors (fig. 38).

The results of estimation of reliability of consumers are given in table 29.

The integral estimates of degree of reliability of consumers, calculated according to the data of table 29, are: for MPE "Udacha" - 0.80; for MPE "Krasota" - 0.77; for traditional medicine - 0.78. That is the risk of interaction of all analyzed eco-friendly products producers with consumers is low. MPE "Udacha" has the least risk level of interaction with consumers.

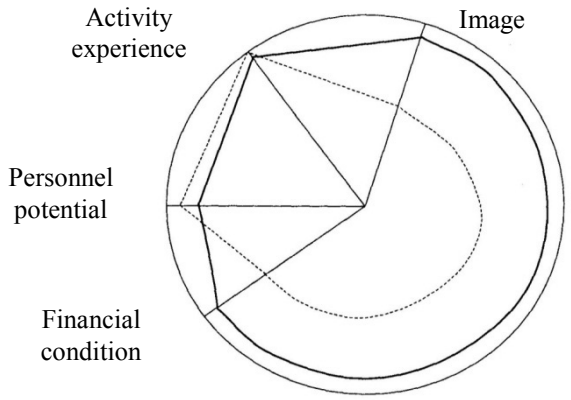


Fig. 38. **The cyclogram of comparison of reliability of interaction with investors** (construction for MPE "Krasota" coincides with that for MPE "Udacha")

Table 29

The results of estimation of degree of reliability of consumers

Producer	Degree of interest in a product	Degree of need for a product	Paying capacity	Degree of strength of needs
MPE "Udacha"	3.0	3.4	3.4	3.0
MPE "Krasota"	2.9	3.1	3.4	3.0
Traditional medicine	2.8	3.3	3.4	3.0
Criterion weight	0.23	0.3	0.22	0.25

To show graphically the results of estimation we will draw a cyclogram of comparison of reliability of interaction of green products producers with consumers (fig. 39).

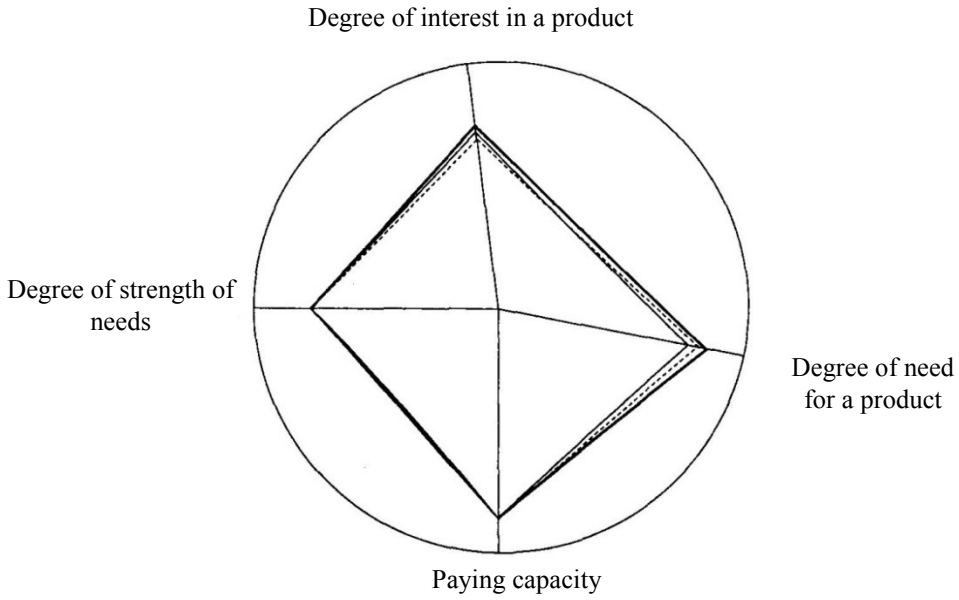


Fig. 39. **The cyclogram of comparison of reliability of interaction with consumers**

The results of estimation of reliability of public and government institutes are given in table 30.

The integral estimates of degree of reliability of public and government institutes, calculated according to the data of table 30, are: for MPE "Udacha" - 0.74 (increased risk level); for MPE "Krasota" - 0.72 (increased risk level); for traditional medicine - 0.77 (minimal risk level). Traditional medecine has the minimal risk level of interaction with public and government institutes.

Table 30

The results of estimation of reliability degree of public and government institutes

Producer	Degree of interest in a product and possible results of its production and consumption	The attitude of various sociopolitical groupings tow-s a product and its producer	Consistency of interests of sociopolitical groupings, as well as of state institutes	Degree of state institutes stability
MPE "Udacha"	2.9	3.6	3.1	2.0
MPE "Krasota"	2.8	3.4	3.1	2.0
Traditional medicine	3.8	3.1	3.1	2.0
Criterion weight	0.3	0.24	0.26	0.2

To show graphically the results of estimation we will draw a cyclogram of comparison of reliability of interaction of green products producers with government and public institutes (fig. 40).

Using tables 26-30, integrated estimates of reliability of market subjects in each of the alternative variants have been calculated. They are: for MPE "Udacha" - 0.82; for MPE "Krasota" - 0.77; for traditional medicine - 0.82 (table 31).

The comparison of the received integrated estimates of reliability of interaction of green goods producers with market subjects, shown in table 31 with the scheme of correlation of reliability and risk indicates that interaction of all competing producers under consideration with all subjects of eco-friendly products market is connected with minimum risk. However the risk is a bit higher for MPE "Krasota", than for MPE "Udacha" and traditional medicine.

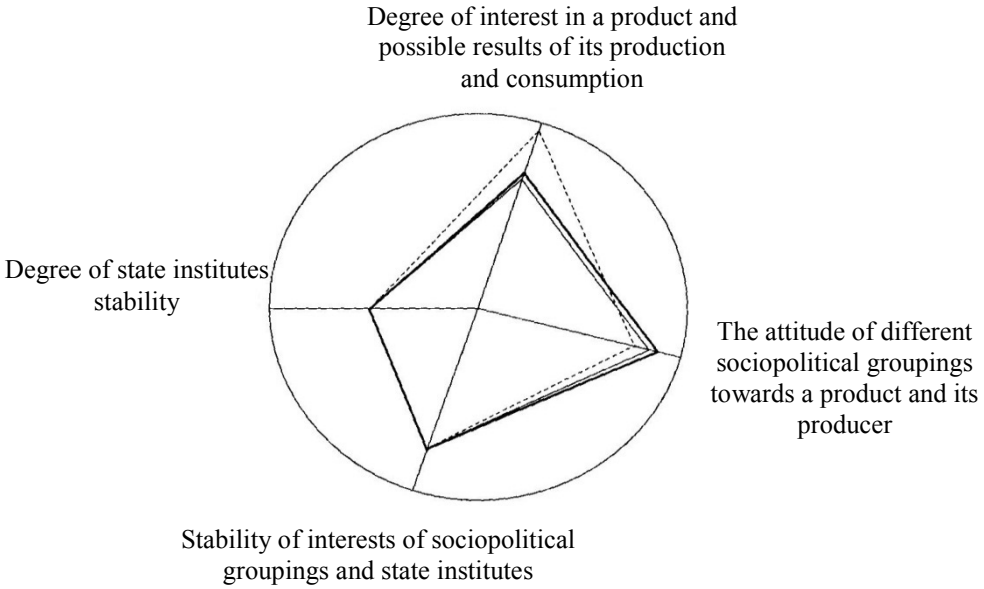


Fig. 40. **The cyclogram of comparison of reliability of interaction with public and government institutes**

Table 31

The results of estimation of reliability of interaction of green products producers with market subjects

Eco-friendly product producer	Estimates of reliability of subjects of eco-friendly products market					
	Intermidi-aries	Suppliers	Inves-tors	Consu-mers	Public and government institutes	Integral estimate
MPE "Udacha"	0.78	0.79	0.92	0.80	0.74	0.81
MPE "Krasota"	0.71	0.74	0.92	0.77	0.72	0.77
Traditional medicine	0.91	0.90	0.68	0.78	0.77	0.81

To show graphically the results of estimation we will draw a cyclogram of comparison of reliability of interaction of eco-friendly products producers with all market subjects on the whole (fig. 41).

In conclusions using the received results of risk estimation of interaction with market subjects it is necessary to give the description (substantiation) of acceptable variants of development from the point of view of risk of their implementation.

Note

As during the previous task it is possible to do it on the basis of one expert's estimates, and this expert will be the Performer of the task as well. The results of such evaluation will be pretty subjective, however performing the task this way will allow creating practical skills of estimation that can be easily repeated, if required, in practice with attraction of necessary experts.

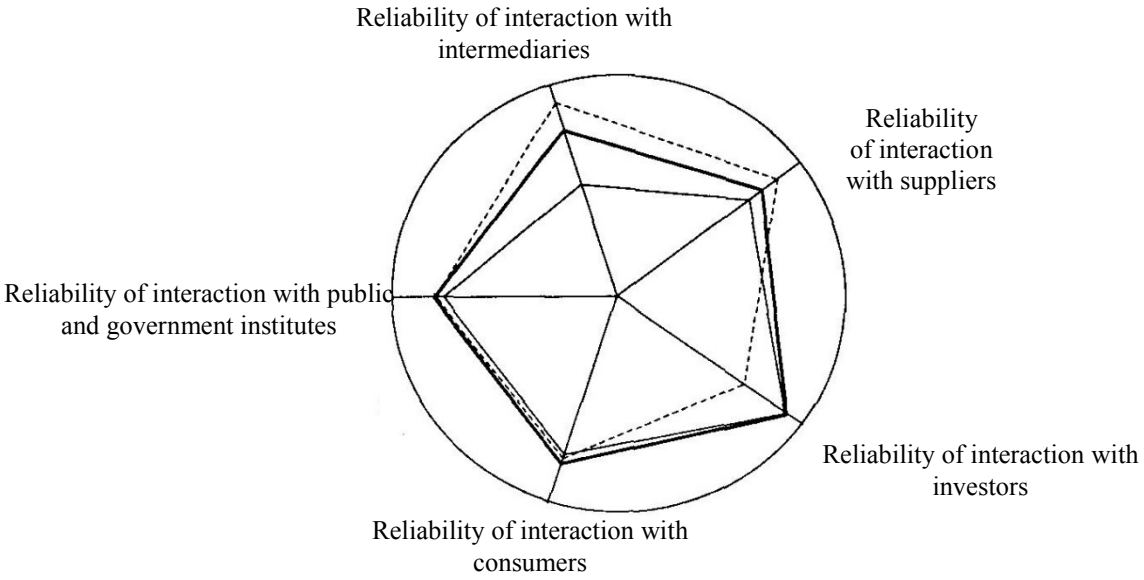


Fig. 41. **The cyclogram of comparison of reliability of interaction of producers with green goods market subjects**

Task 7. **Defining economic expediency of greening of activity of an enterprise**

An enterprise has defined the optimum production volume of one of the production kinds for next three years with account of the situation developed in the market. In so doing the enterprise chooses a production alternative when the amount of payments for environmental pollution and costs for measures of production greening will be minimal.

Some results of the activity at certain production changes are given in table 32. It is necessary to define the expediency of introduction of measures of production greening by using these data. To define pay-off period of measures (rapid design method and with account of time factor) for alternatives with expedient greening. Then to calculate a net aggregate profit received from greening, internal rate of return and the profitability index of environmentally focused changes for all alternatives of production changes.

Table 32

Output data

Alterna-tive's number	Alternative of production changes	Cost of measures of production greening productions, $ tsd			Expected reduction in payments for environmental pollution, $ tsd.			Rate of convergence of costs and returns
		1st year	2nd year	3rd year	4th year	5th year	6th year	
1	A	30	35	5	35	25	38	0.10
	B	50	10	2	40	42	10	
2	A	24	15	10	25	15	31	0.11
	B	43	13	9	30	40	32	
3	A	41	32	17	55	55	22	0.12
	B	24	31	10	49	37	26	
4	A	11	12	15	45	6	35	0.13
	B	23	5	19	11	57	33	
5	A	110	98	25	90	140	110	0.14
	B	45	35	15	145	25	58	
6	A	12	25	12	28	20	64	0.15
	B	100	12	9	90	62	62	
7	A	24	26	11	21	49	70	0.16
	B	44	21	24	62	60	42	
8	A	90	20	21	40	80	70	0.10
	B	45	12	19	50	35	25	
9	A	88	32	15	60	70	80	0.11
	B	40	21	9	49	23	35	
10	A	28	36	55	150	20	30	0.12
	B	45	63	42	50	145	40	
11	A	30	45	14	55	50	90	0.13
	B	25	60	22	80	73	70	
12	A	90	10	5	45	55	85	0.14
	B	30	50	3	43	45	40	
13	A	24	52	12	35	80	50	0.15
	B	34	67	9	99	53	50	
14	A	22	90	15	95	65	50	0.16
	B	12	35	12	85	35	25	
15	A	50	40	23	90	42	60	0.17
	B	30	60	21	60	39	90	
16	A	104	12	7	85	60	45	0.10
	B	34	40	54	110	40	25	
17	A	82	23	10	44	87	56	0.11
	B	67	21	20	80	35	39	
18	A	102	10	5	59	70	50	0.12
	B	22	90	8	75	70	45	
20	A	34	98	8	58	89	52	0.14
	B	50	80	15	90	50	70	
21	A	111	22	10	94	76	67	0.15
	B	30	10	20	65	15	45	
22	A	12	36	50	83	12	126	0.16
	B	24	23	35	72	78	16	

23	A	45	98	15	86	109	81	0.17
	B	33	29	23	46	102	16	
24	A	13	67	83	41	182	29	0.18
	B	16	81	12	104	34	47	
25	A	119	21	34	48	99	72	0.11
	B	22	53	23	51	74	37	
26	A	102	31	15	70	81	88	0.12
	B	90	46	60	75	131	93	
27	A	32	65	12	79	32	47	0.13
	B	36	54	15	54	65	47	
28	A	32	34	24	92	46	25	0.14
	B	29	38	18	41	72	52	
29	A	12	45	20	26	86	28	0.15
	B	43	10	35	52	67	35	
30	A	81	23	5	51	45	61	0.10
	B	21	35	12	25	29	43	

Model solution of the problem

In order to simplify further calculations in table 33 we will give discounting of cash flows from enterprise activity greening.

Table 33

Outputs

Investments: «-« costs, «+» gains	Project A, $ tsd.		Project B, $ tsd.	
	Absolute cost	Cost after discounting	Absolute cost	Cost after discounting
Expenses: 1st year	-100	-90.09	-150	-135.14
2nd year	-135	-109.60	-110	-89.28
3rd year	-10	-7.31	-20	-14.62
Total expenses:	-245	-207	-280	-239.04
Income flow: 4th year	130	85.64	140	92.22
5th year	205	121.66	142	84.27
6th year	218	116.55	310	165.74
Total gains	553	323.85	592	342.23

We will determine the internal rate of return by having solved the following equation:

$$\sum_{i=1}^{n} \frac{I_i}{(1+Q)^i} = 0, \qquad (1.1)$$

where I_i - expenses (-) and income (+) in *i*-year; Q - internal rate of return; i - ordinal number of a year; n - number of years to implement a project.

For projects A and B the equation will be in the following form:

1) $-100 : (1 + Q_A) - 135 : (1 + Q_A)^2 - 10 : (1 + Q_A)^3 + 130 : (1 + Q_A)^4 + 205 : (1 + Q_A)^5 + 218 : (1 + Q_A)^6 = 0$;

2) -150 : $(1 + Q_Б)$ – 110 : $(1 + Q_Б)^2$ – 20 : $(1 + Q_Б)^3$ + 140 : $(1 + Q_Б)^4$ +142 : $(1 + Q_Б)^5$ + 310: $(1 + Q_Б)^6 = 0$.

To get an approximate result it is possible to use the method of proportional parts to solve the equation. However in view of the fact that in this case receipts and expenses are uneven, the result will have a significant error.

Therefore to solve the equation it is advisable to use Exel. In so doing one should enter in a purpose cell (for example, A1) the left part of the formula, replacing the unknown with the name of a variable cell (for example, A3). In our example the expression in cell A1 for the project A will be as follows:

= -100/(1 + A3) - 135/POWER (1 + A3;2) - 10/POWER (1 + A3;3) + 130/ POWER (1 + A3;4) + 205/POWER(1 + A3;5) + 218/POWER(1 + A3;6).

Having selected from "Tools" menu the command “Solution search...", we define purpose cell A1 equal to zero, and we make solution search. If there is no such a command in the Tools menu, it should be activated by having chosen the command "Customizations..." and by having selected “Solution search".

Having solved the equation we will get $Q_A = 0{,}263$; $Q_Б = 0{,}223$.

The profitability index is determined as the ratio of amount of gains after discounting to the amount of expenses after discounting. For the project A it makes 323.85 ÷ 207 = 1.564; for the project B 342.23 ÷ 239.04 = 1.431.

A simplified payback period is determined by using the formula

$$T = \frac{\sum_{i=1}^{k} B_i - \sum_{j=1}^{n-1} G_i}{G_n} + (n - 1), \qquad (1.2)$$

where B_i - absolute size of expenses in *i*-year; G_i, G_n - absolute size of income in *i* and *n* years respectively; *i*, *j* - ordinal numbers of years before expenses are incurred and before investment project is carried out respectively; *k* - number of years, during which expenses are incurred; *n* - ordinal number of a year, when a project is repaid.

Let’s determine a simplified payback period for the projects:

$T_A = (245 - 130) \div 205 + 4 = 4.56$ (y),

$T_B = (280 - 140) \div 142 + 4 = 4.99$ (y).

A payback period with account of time factor is determined by using the formula

$$T_G = \frac{\sum_{i=1}^{k} B_{G_i} - \sum_{j=1}^{n-1} G_{G_j}}{G_{G_n}} + (n - 1), \qquad (1.3)$$

where B_{G_i} - size of expenses in *i*-year after discounting; G_{G_j}, G_{G_n} - income size in *i* and n - years respectively after discounting; *i*, *j* - ordinal numbers of years before expenses are incurred and before investment project is carried out respectively; *k* - number of years, during which expenses are incurred; n - ordinal number of a year, when a project is repaid.

A payback period with account of risk factor is determined for the projects:

$$T_{ДА} = (207 - 85.64) \div 121.66 + 4 \approx 5.00 \text{ (y)},$$

$$T_{ДА} = (239.04 - (92.22 + 84.27)) \div 165.74 + 5 = 5.38 \text{ (y)}.$$

The outputs are entered in table 34.

Table 34

Outputs

The indicator of cost-effectiveness of production greening	Project A	Project B
Net aggregate profit, $ tsd.	116.85	103.19
Internal rate of return,%	26.3	22.3
Profitability index,%	156.4	143.1
Simplified payback period, years	4.56	4.99
Payback period with account of time factor, years	5.00	5.38

It is possible to conclude that the project A is the best by all calculated indicators on the grounds of the analysis.

Task 8. **Determining market changes when an eco-friendly product is exempted from VAT**

In the market of one green product the demand curve can be described by the equation presented in column 1 of table 35, and the supply curve - the equation shown in column of 2 of the given table (x - price, $; $в$ - volume of demand or supply of a product, pcs.). On the ground of these data it is necessary: a) to calculate the equilibrium market volume and the price of eco-friendly goods; b) to describe displacement of the curves of supply and demand after product price is exempted from VAT, to write their equations; c) to define how the equilibrium market volume and the price will change when product price is exempted from VAT; d) to compare the amount of non-received VAT by the state with the effect received by society from increase of consumption (use, application) of additional volume of green goods (to calculate by using the data of column 4 of table 35). To draw conclusions.

Task 9. **Determining market changes when green products prices are backed**

In the market of one green product the demand curve can be described by the equation presented in column 1 of table 36, and the supply curve - the equation shown in column 2 of the given table (x - price, $; y - volume of demand or supply of a product, pcs.). To calculate the equilibrium market volume and the price of green goods before they are subsidized and after that in amounts shown in column 3 as well as volumes of consumption change. To compare costs for backing with the effect received by society from increase of consumption (use, application) of additional volume of eco-friendly products (column 4 of table 36). To describe the displacement of curves of demand and supply after backing, to write their equations. To draw conclusions.

Table 35

Input data

Alterna-tive's number	Demand curve equation	Supply curve equation	Social benefits from product unit consumption, $
1	$y = 56.4x^{-1}$	$y = 1.9e^{0.3x}$	41
2	$y = -3x + 30.6$	$y = 17.3Ln(x) - 8$	40
3	$y = 71.4e^{-0.3x}$	$y = 0.4x^2 + 0.6x + 1.6$	39
4	$y = -17.3Ln(x) + 40.7$	$y = x^{1.7}$	38
5	$y = 0.3x^2 - 6.6x + 42.2$	$y = 3.6x - 3$	37
6	$y = 67.3x^{-1.2}$	$y = 2e^{0.3x}$	36
7	$y = -1.8x + 22$	$y = 16.5Ln(x) - 6.3$	35
8	$y = 82e^{-0.4x}$	$y = 0.5x^2 - 0.2x + 2.6$	34
9	$y = -17.9Ln(x) + 44$	$y = 1.4x^{1.4}$	33
10	$y = 0.2x^2 - 5.1x + 39.2$	$y = 4.8x - 4$	32
11	$y = 80.7x^{-1.3}$	$y = 1.8e^{0.3x}$	31
12	$y = 3.3x + 32.8$	$y = 18.5Ln(x) - 9.2$	29
13	$y = 73.2e^{-0.4x}$	$y = 0.4x^2 + 1.1x + 0.4$	28
14	$y = -16.1Ln(x) + 41.2$	$y = 1.5x^{1.4}$	27
15	$y = 0.1x^2 - 4.6x + 38.7$	$y = 4.5x - 3.5$	26
16	$y = 56x^{-1.1}$	$y = 1.5e^{0.4x}$	25
17	$y = -3x + 31.9$	$y = 9.3Ln(x) - 9.8$	24
18	$y = 70.2e^{-0.4x}$	$y = 0.3x^2 + 1.5x$	23
19	$y = -15.2Ln(x) + 39.3$	$y = 1.2x^{1.6}$	22
20	$y = 0.2x^2 - 1.6x + 35.3$	$y = 4.8x - 2.4$	21
21	$y = 47.6x^{-0.9}$	$y = 1.4e^{0.4x}$	20
22	$y = -3.6x + 35.9$	$y = 18.3Ln(x) - 8.6$	19
23	$y = 75.4e^{-0.4x}$	$y = 0.2x^2 + 3.1x - 4.1$	18
24	$y = -14.2Ln(x) + 38.5$	$y = 1.2x^{1.5}$	17
25	$y = 0.1x^2 - 4.7x + 42.8$	$y = 5.7x^{-4.3}$	16
26	$y = 42.3x^{-1}$	$y = 1.7e^{0.4x}$	15
27	$y = -4.7x + 41.5$	$y = 16.8Ln(x) - 6.5$	14
28	$y = 86.6e^{-0.4x}$	$y = 0.2x^2 + 2.6x - 2$	13
29	$y = -14.4Ln(x) + 38.6$	$y = 1.7x^{1.4}$	12
30	$y = 0.1x^2 - 4x + 42$	$y = 4.4x - 3.8$	11

Table 36

Input data

Alterna-tive's number	Demand curve equation	Supply curve equation	Price reduction when backed, $	Social benefits from product unit consumpti-on, $
1	$y = 0.1x^2 - 4x + 42$	$y = 4.4x - 3.8$	1	11
2	$y = -14.4Ln(x) + 38.6$	$y = 1.7x^{1.4}$	2	12
3	$y = 86.6e^{-0.4x}$	$u = 0.2x^2 + 2.6x - 2$	3	13

4	$y = -4.7x + 41.5$	$y = 16.8Ln(x) - 6.5$	4	14
5	$y = 42.3x^{-1}$	$y = 1.7e^{0.4x}$	5	15
6	$y = 0.1x^2 - 4.7x + 42.8$	$y = 5.7x - 4.3$	6	16
7	$y = -14.2Ln(x) + 38.5$	$y = 1.2x^{1.5}$	7	17
8	$y = 75.6e^{-0.4x}$	$y = 0.2x^2 + 3.1x - 4.1$	8	18
9	$y = -3.6x + 35.9$	$y = 18.3Ln(x) - 8.6$	9	19
10	$y = 47.6x^{-1}$	$y = 1.4e^{-0.4x}$	10	20
11	$y = 0.2x^2 - 1.6x + 35.3$	$y = 4.8x - 2.4$	11	21
12	$y = -15.2Ln(x) + 39.3$	$y = 1.2x^{1.6}$	12	22
13	$y = 70.2e^{-0.4x}$	$y = 0.3x^2 + 1.5x$	13	23
14	$y = -3x + 31.9$	$y = 19.3Ln(x) - 9.8$	14	24
15	$y = 56x^{-1}$	$y = 1.5e^{-0.4x}$	15	25
16	$y = 0.1x^2 - 4.6x + 38.7$	$y = 4.5x - 3.5$	16	26
17	$y = -16.1Ln(x) + 41.2$	$y = 1.5x^{1.4}$	17	27
18	$y = 73.2e^{-0.4x}$	$y = 0.4x^2 - 1.1x + 0.4$	18	28
19	$y = -3.3x + 32.8$	$y = 18.5Ln(x) - 9.2$	19	29
20	$y = 80.7x^{-1}$	$y = 1.8e^{-0.4x}$	20	31
21	$y = 0.2x^2 - 5.1x + 39.2$	$y = 4.8x - 4$	21	32
22	$y = -17.9Ln(x) + 44$	$y = 1.4x^{1.4}$	22	33
23	$y = 82e^{-0.4x}$	$y = 0.5x^2 - 0.2x + 2.6$	23	34
24	$y = -1.8x + 22$	$y = 16.5Ln(x) - 6.3$	24	35
25	$y = 67.3x^{-1}$	$y = 2e^{-0.4x}$	25	36
26	$y = 0.3x^2 - 6.6x + 42.2$	$y = 3.6x - 3$	26	37
27	$y = -17.3Ln(x) + 40.7$	$y = x^{1.7}$	27	38
28	$y = 71.4e^{-0.4x}$	$y - 0.4x^2 - 0.6x + 1.6$	28	39
29	$y = -3x + 30.6$	$y = 17.3Ln(x) - 8$	29	40
30	$y = 56.4x^{-1}$	$y = 1.9e^{-0.4x}$	30	41

Task 10. **Comparing the effects of green products prices backing at different stages of their promotion in the market**

To calculate the alteration of eco-friendly product retail price if there is a fixed rate of profit and if the product is VAT-taxed, - volumes of non-received VAT by the state under initial conditions presented in table 37. To show the outputs in table 38.

Table 37

The indices describing conditions of introduction of green goods prices backing, $

Number of alternative	Enterprise's release price before backing	Wholesale dealer's markup coefficient	Retail dealer's markup coefficient	Subvention rate
1	1000	1.20	1.25	100
2	2000	1.19	1.24	200
3	3000	1.18	1.23	300
4	4000	1.17	1.22	400
5	5000	1.16	1.21	500
6	6000	1.15	1.20	600
7	7000	1.14	1.19	700
8	8000	1.13	1.18	800
9	9000	1.12	1.17	900

10	10000	1.11	1.16	1000
11	1500	1.10	1.15	100
12	2500	1.09	1.14	200
13	3500	1.08	1.13	300
14	4500	1.07	1.12	400
15	5500	1.06	1.11	500
16	6500	1.05	1.10	600
17	7500	1.04	1.09	700
18	8500	1.03	1.08	800
19	9500	1.02	1.07	900
20	10500	1.01	1.06	1000
21	800	1.20	1.15	150
22	1800	1.19	1.14	250
23	2800	1.18	1.13	350
24	3800	1.17	1.12	450
25	4800	1.16	1.11	550
26	5800	1.15	1.10	650
27	6800	1.14	1.09	750
28	7800	1.13	1.08	850
29	8800	1.12	1.07	950
30	9800	1.11	1.06	1050

Note

In table 38 the results of calculations of effects of backing at different stages of promotion of an eco-friendly goods in the market under conditions when before backing the enterprise release price was $1580, the wholesale dealer's price was equal to $1580 × 1.20 = $1896, the retail price was $1896 × 1.25 = $2370, and the subvention rate was $500.

To choose any curves of demand and supply in the market. To illustrate, how sales volumes of a green goods will change when its price is backed at various stages of its promotion in the market. To draw conclusions based on the results of calculations and graphic constructions.

Table 38

The comparative analysis of the effects of green products backing

Subvention recipient	VAT exempted product	VAT taxable product	
	Retail price change, $	Retail price change, $	State receives less amount of VAT, $
Retail dealer	-500	-600	100
Wholesale dealer	-625	-750	125
Producer	-750	-900	150

Methodological recommendations to perform the task

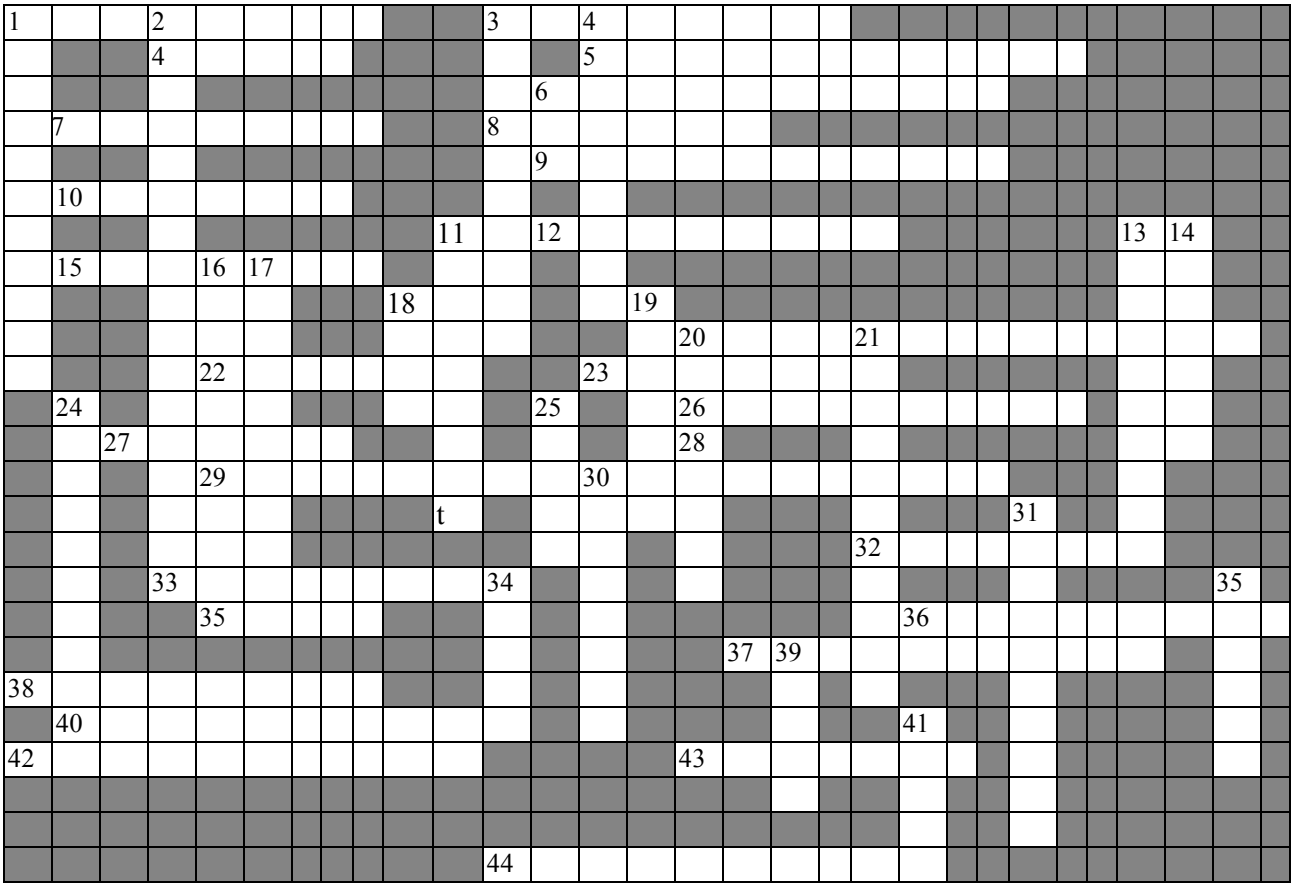
While performing the task one should use for calculations the theoretical approaches and formulas shown in topic 20 of the teaching manual "Green marketing". There is a model solution of the problem in the mentioned topic as well.

Crossword and word search puzzles

Crossword

Across:

1. Group of economic methods of production greening motivation of positive nature.
3. Kind of eco-destructive environmental impact.
4. Kind of eco-destructive environmental impact.
5. Utility that has undergone communicative influence.
6. Consumer protection movement.
7. Consumption motivation component.
8. Rather stable display, person's attribute.
9. Type of economy development when person's living conditions are improved and environmental impact remains within economic capacity of biosphere.
10. Name of environmental labeling sign used in Japan.
12. Final stage of product existence.
15. Type of moral motivation of making consumer choice when purchase is of no sacrificial nature.
20. Eco-friendly products made of textiles that contain microcapsules with cosmetic substances.
22. Environmental safety level when anthropogenous infringements rate exceeds the rate of self-regeneration of nature, but there is no radical change of natural systems yet.
23. One of economic structures of stimulation of green production consumption.
26. Group of economic methods of production greening motivation of negative nature.
27. Type of environmental problems that include loss of species, biodiversity.
29. Characteristic of interests of various market subjects.
32. Tool of economic motivation of production greening.
33. Type of consumer choice by main orientation.
35. Type of ecological interest separated by scale which arises at groups of population living in immediate vicimity of sources of increased anthropogenous influence.
36. Risk estimate method.
37. Type of consumer choice without motivational orientation.
38. Customer who is inclined to purchase new products, without waiting recognition by others.
40. One of external factors of marketing mix formation.
42. One of motivation components.
43. Consumer - active opponent of any novelties.
44. Type of moral motivation of making consumer choice when purchase is of sacrificial nature.



Down:

1. Type of consumer who does not pay attention to product ecological compatibility.

2. Environment protection movement.

3. Type of green marketing including that of production of cleaner goods and services.

4. One of directions of environmental entrepreneurship development.

11. Type of environmental marketing, includes that of investments into environmental projects at local, regional and state levels.

13. Set of factors which induce person's activity and define her activity direction.

14. Risk estimation method.

16. One of factors of eco attributive consumption stimulation.

17. Property characteristic, sign, reflecting goods possibility to perform one or another function to meet consumer's needs.

18. Factor which can cause failures during rollout.

19. One of factors of eco attributive consumption stimulation.

21. Environmental safety level when rate of regenerative processes is higher or equal to those of anthropogenous infringements.

24. One of factors of eco attributive consumption stimulation.

25. Type of consumer who is more willing to pay for product ecological compatibility than others.

28. Kind of eco-destructive environmental impact.

29. One of types of motives of environmentally focused consumption.

30. Nonrenewable loss of biological productivity.

31. Kind of eco-destructive environmental impact.

34. The country with average (during 1992-2000) annual increase rate of green products market of 4.9%.

35. State of environment which provides conditions of functioning, reproduction and development of present and future generations of people at certain level.

39. One of enterprise characteristics, directed to environment and defining its internal strengths or weaknesses.

41. Type of environmental problems connected with pollution.

Word search puzzle 1

In the table below find answers to the following questions:

Name of environmental labeling sign used in Japan.

State of environment which provides conditions of functioning, reproduction and development of present and future generations of people at certain level.

Type of green marketing including that of production of cleaner goods and services.

Type of environmental problems connected with pollution.

Kind of eco-destructive environmental impact.

Characteristic of interests of various market subjects.

Characteristic, property or sign reflecting goods possibility to perform one or another function to meet consumer's needs.

Customer who is inclined to purchase new products without waiting recognition by others.

One of factors of eco attributive consumption stimulation.

Type of environmental marketing which includes that of investments into environmental projects at local, regional and state levels.

Rather stable display, person's attribute.

One of directions of environmental entrepreneurship development.

One of components of consumption motivation.

Factor which can cause failures during rollout.

Utility that has undergone communicative influence.

Type of consumer who is more willing to pay for product ecological compatibility than others.

One of external factors of marketing mix formation.

Risk estimation method.

Type of consumer who does not pay attention to product ecological compatibility.

Kind of eco-destructive environmental impact.

The country with average (during 1992-2000) annual increase rate of green products market of 4.9%.

Set of factors which induce person's activity and define her activity direction.

One of enterprise characteristics defining its internal strengths or weaknesses.

Risk estimation method.

Type of environmental problems that include loss of species, biodiversity.

Type of economy development when person's living conditions are improved and environmental impact remains within economic capacity of biosphere.

Consumer - active opponent of any novelties.

Tool of informing customer about eco-friendly advantages of product.

Kind of eco-destructive environmental impact.

Environmental safety level when anthropogenous infringements rate exceeds the rate of self-regeneration of nature, but there is no radical change of natural systems yet.

Environment protection movement.

Group of economic methods of production greening motivation of negative nature.

Tool of economic motivation of production greening.

Consumer protection movement.

Type of moral motivation of making consumer choice when purchase is of no sacrificial nature.

Kind of eco-destructive environmental impact.

Group of economic methods of production greening motivation of positive nature.

Type of moral motivation of making consumer choice when purchase is of sacrificial nature.

Type of ecological interest separated by scale that arises at groups of population living in immediate vicimity of sources of increased anthropogenous influence.

One of types of motives of environmentally focused consumption.

Environmental safety level when rate of regenerative processes is higher or equal to those of anthropogenous infringements.

Type of consumer choice not having motivational orientation.

Type of consumer choice by main orientation.

One of product life stages.

One of structure factors of stimulation of eco-friendly production consumption.

One of external factors of stimulation of green production consumption.

One of widespread motivation incentives.

Nonrenewable loss of biological reproduction.

One of factors of eco attributive consumption stimulation.

One of factors of eco attributive consumption stimulation.

D	U	L	U	M	N	W	A	I	N	D	I	E	N	V	H	H	Y	M	O
R	S	W	N	I	C	A	T	E	A	I	R	L	S	I	I	C	E	M	C
A	R	O	U	T	S	U	S	D	B	T	E	U	O	R	E	R	R	A	L
G	B	I	M	I	S	I	S	E	L	L	C	P	R	O	R	A	C	I	Y
G	C	O	M	R	M	N	O	I	B	U	T	M	Y	N	M	L	A	F	Y
A	O	L	E	C	A	L	N	L	R	M	I	O	P	Y	E	A	S	E	T
L	C	O	G	I	R	C	P	I	I	T	O	C	A	G	N	N	E	E	N
B	A	L	M	A	K	O	R	U	U	N	N	A	N	O	T	O	D	R	O
E	V	N	I	G	E	F	E	Q	M	E	J	L	A	L	A	I	L	A	M
N	C	O	E	E	T	I	T	F	E	R	A	I	Y	M	L	T	E	V	I
I	E	N	C	I	N	D	I	F	N	A	P	T	Y	S	I	A	N	C	T
Y	M	Y	O	N	N	I	A	T	T	R	S	I	S	I	T	U	I	E	N
S	P	H	V	A	T	E	T	U	B	I	M	R	E	M	U	S	N	O	C
B	A	T	L	R	O	S	P	A	L	L	O	C	T	E	P	M	O	C	R
A	C	K	A	S	O	E	D	O	T	I	V	E	I	T	I	O	K	S	I
G	N	I	Y	T	P	S	I	M	T	I	T	I		I	T	N	L	B	O
A	N	A	L	I	C	A	L	M	O	V	A	O	N	O	A	G	I	E	N
E	E	W	E	O	I	R	A	L	A	N	L	N	T	E	Q	G	R	E	I
Q	F	V	K	N	S	E	T	I	O	A	I	G	H	C	O	M	A	X	B
Z	L	P	O	C	I	R	H	W	E	A	K	T	U	P	E	Y	R	K	J

Word search puzzle 2

In the table below find words related to green marketing and explain their meaning or their relation to the topic.

L	N	O	I	T	C	E	R	I	T	L	U	M	A	T	I	B	E	W	E
E	A	L	I	T	Y	K	I	D	O	B	A	G	N	T	R	U	T	U	R
V	G	Y	A	N	A	T	I	I	N	N	C	K	I	S	L	E	L	T	I
I	O	T	A	S	L	Y	C	A	L	O	V	A	T	U	B	C	O	O	S
T	L	I	V	T	N	M	E	N	Y	E	R	C	O	S	A	A	E	C	M
O	A	O	I	I	O	E	N	T	A	M	M	I	R	T	N	L	A	M	I
M	N	N	T	M	R	I	V	I	L	C	O	A	L	A	I	E	G	L	C
A	A	M	O	U	L	U	M	S	S	A	L	O	B	L	I	G	A	A	H
S	O	L	O	G	I	S	S	P	O	F	F	E	R	O	C	E	T	C	E
I	I	Z	T	A	C	D	I	E	Y	I	D	N	E	M	L	S	I	I	M
T	B	I	O	L	N	O	I	S	T	J	N	T	U	P	A	P	O	N	C
U	A	T	N	A	L	S	A	F	E	H	I	S	L	L	G	A	L	L	O
A	L	I	T	Y	T	I	S	I	S	Y	R	O	M	A	G	A	O	N	M
U	P	R	O	F	I	R	C	A	L	P	R	D	O	R	D	R	I	R	I
Q	N	E	P	S	G	L	O	B	A	N	I	E	T	A	C	E	T	K	S
N	O	D	L	I	B	Y	X	G	P	A	C	O	M	M	I	P	B	E	C
S	N	U	I	I	R	M	P	A	T	J	E	C	C	U	N	M	O	C	N
U	O	Q	L	U	M	Y	A	T	H	Y	L	I	O	N	V	E	N	I	E
M	C	E	M	A	O	S	R	I	O	N	A	X	E	V	I	O	C	N	G
E	R	I	S	H	P	E	R	D	B	L	I	N	N	C	T	V	M	A	I
J	O	K	E	Y	Q	U	S	O	N	S	A	K	I	E	N	E	R	Z	F

Check questions

1. The essence of economic development inconsistency.
2. Defining sustainable development.
3. The essence and time dynamics of concepts of development of economic management subjects.
4. The interconnection of green marketing concept with different concepts of development of economic management subjects.
5. The essence, emergence and development of consumerism.
6. The essence, emergence and development of environmentalism.
7. The essence of "green" consumerism.
8. The notion and levels of environmental safety. Environmental safety level in Kazakhstan (Ukraine, Russia)
9. The ecological crises in mankind development and technological revolutions corresponding to them.
10. The environmental marketing concept.
11. The goals and objectives of green marketing.
12. The aspects of formation and development of environmental marketing.
13. Commercial and noncommercial types of green marketing.
14. The kinds of environmental marketing from viewpoint of environmental economics, their goals and interrelation.
15. The objects and subjects of green marketing.
16. The factors of environmental marketing formation.
17. The directions of environmental marketing development.
18. The stages of environmental needs evolution, the motives of their emergence and content of eco-friendly products which satisfy them.
19. The factors of environmental needs development.
20. The methods to reveal requirements in both existing and new green products.
21. The types of products by ecological compatibility level.
22. The results of green products use.
23. The methodological approach to definition of product ecological compatibility level.
24. The types of consumers by ecological compatibility of their behavior.
25. The customers' utility functions with a different type of behavior by ecological compatibility.
26. The consumers' readiness to pay a premium for ecological compatibility of various type of products.
27. The conditions under which one makes an environmentally focused consumer choice. The concept and components of motivation.
28. The directions of research of motives of environmentally focused consumer behavior.
29. The directions of environmental needs research. The kinds of ecological interests by the range.

30. The kinds of stimuli of environmentally focused consumer behavior. The situational factors.

31. The concept of attributes and eco-attributive consumer choice. The basic diagram to distinguish eco attributes of products.

32. The kinds of consumer choice by motivational orientation.

33. The directions and growth rates of green products world market.

34. The arguments of expediency of eco-friendly products market formation in Kazakhstan and other post-Soviet countries.

35. The directions of formation and development of green products market in Kazakhstan.

36. The advantages of eco-friendly goods from the consumers' viewpoint.

37. The tools of informing on advantages of green products. The types of cover stores, their essence.

38. The essence of environmental labeling. The types of environmental labeling signs.

39. The stages of substantiation of choice of optimal variant of green goods market formation.

40. The conditions of expediency of taking administrative actions directed on eco-friendly goods market formation by various market subjects.

41. The methodological approach to evaluation of green product compatibility to differently directed interests of market subjects.

42. The methodological approach to risk evaluation of interaction with eco-friendly products market subjects.

43. The states of consumers' purchasing readiness, dependence of expenses directed to attract customers on these states.

44. The criteria of optimization of costs for green products promotion.

45. The matrix of economy development possibilities depending on motivated state level of greening and innovative development of enterprises. The economic methods of motivation of production greening.

46. The diagram of redistribution of means for benefit of eco-friendly products producers, the approaches to enable it.

47. The approaches to optimize environmentally focused tax pressure.

48. The approaches to definition of economic expediency of expenses connected with transitions between environmental safety levels.

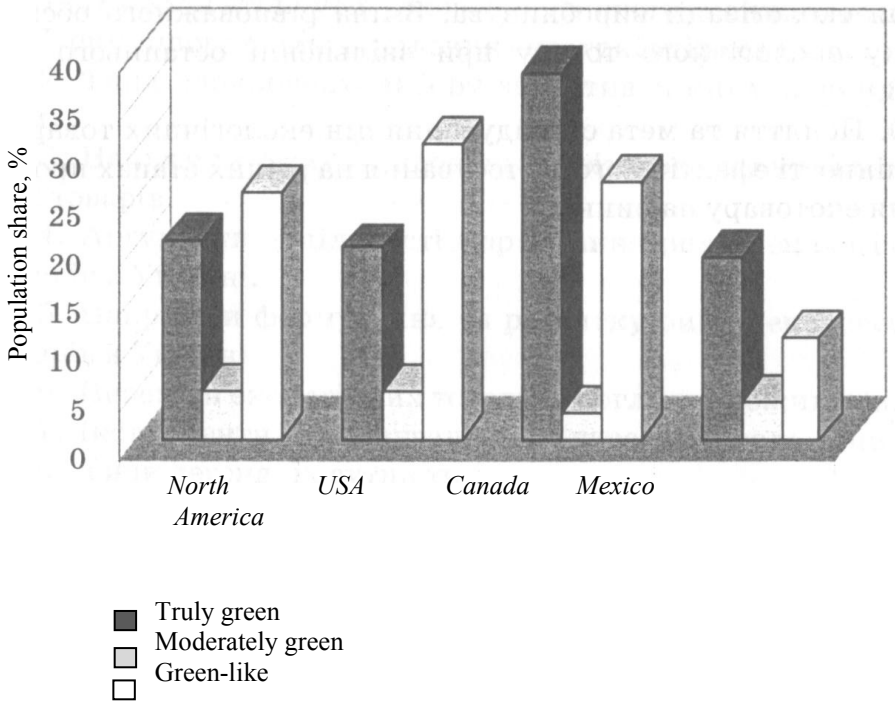
49. The criteria of optimization of instruments of economic motivation of production greening. The change of equilibrium volume of green product market when the latter is VAT exempted.

50. The concept and goals of green goods prices backing. The differences of effects of its application at various stages of green products promotion in the market.

APPENDIXES

Appendix A

SEGMENTATION OF GREEN PRODUCTS MARKET OF NORTH AMERICA (as a whole and by regions)



Appendix B

Creation of motivation of environmentally focused innovative activity and eco attributive consumption at various levels

Table B. 1

Examples of creation of environmentally focused activity motivation at different levels

Examples of incentive measures	Directions	Interests of the market subjects	Their actions	Stimulation result
At state level				
Ecological upbringing	Green products consumers	Preservation of the environment	Purchasing environmentally focused products	Growth of green goods consumption volume
Environmental examination	Green products producers	Get the permission to sell a product	Manufacture of goods with observance of ecological requirements	Production volume growth of eco-friendly products
Adoption of environmental laws and orders	Green products producers	Profit retention	Introduction of products that ensure observance of environmental laws and orders	Volume growth of green products introduction
Green products funding	Developers of eco-friendly innovations	Profit earning	Carrying out developments in a financed direction	Volume growth of eco-friendly developments
At level of producers				
Informing about eco-friend-ly properties of own product	Green products consumers	Health provision	Eco-friendly product consumption	Growth of green goods consumption volume
Production of new eco-friendly products	Green products producers	Retention of own market share	Manufacture of products with eco-friendly properties not worse than those of competitor	Production volume growth of eco-friendly products

Expansion of green products production	Green products producers	Getting innovation competitive advantages	Introduction of fundamentally new eco-friendly developments	Volume growth of green products introduction
Order of eco-friendly developments	Developers of eco-friendly innovations	Getting innovation competitive advantages	Carrying out developments in a financed direction	Volume growth of eco-friendly developments
At level of customers				
Formation of a positive attitude towards green product	Green products consumers	Consumption of the best production	Choice to consume eco-friendly product	Growth of green goods consumption volume
Showing demand for eco-friendly goods and stop purchasing non-green ones	Green products producers	Satisfaction of customers' needs	Manufacture of goods with properties meeting customers' requirements	Production volume growth of eco-friendly products
Protests against non-green manufacture	Green products producers	Satisfaction of customers' requirements	Rejecting non-green manufacture in favor of green one	Volume growth of green products introduction

Table B.2.

Examples of creation of eco-attributive consumption motivation of various green products

Green product type	Product examples	Main consumer	Major source of motivation
Means of environmental pollution prevention	Treatment facilities, soil-protective technologies	Producer	Government institutes
Means promoting elimination of detrimental environmental impact consequnces	Recultivation technologies	Producer	Government institutes
Protective means of person or nature system against detrimental impact penetration	Tools for afterpurification of water, conditioners	Consumer	Producer, public organizations
Products enabling to increase human tolerance or stability of nature systems to detrimental influence of eco-destructive factors	Pharmaceutical drugs boosting human immunity	Consumer	Consumer

Products enabling to maintain human tolerance	Cleaner foodstuff	Consumer	Consumer
Products which give a chance to replace objects, services, works which have worse environmental properties	Less harmful kinds of fuel, construction materials	Producer, customer	Government institutes, manufacturer
Products promoting saving of material and energy resources	Heat insulating materials, non-resource intensive technologies	Producer, customer	Producer
Means providing secondary processing of products	Equipment, technologies and preparations providing recirculation of materials	Producer	State
Means promoting conservation of biodiversity and maintenance of balance in ecosystems	Means supporting wildlife reserves	Government institutes	Government institutes
Educational and information services	Ecological education, consulting services	Consumer, manufacturer	Government institutes
Goods and services necessary to increase the person's information contact with nature systems	Parks, public gardens	Consumer	Public institutes, customer

Appendix C

CHANGE OF DEMAND FOR ECO-FRIENDLY GOODS WHEN THEIR PRICES ARE BACKED

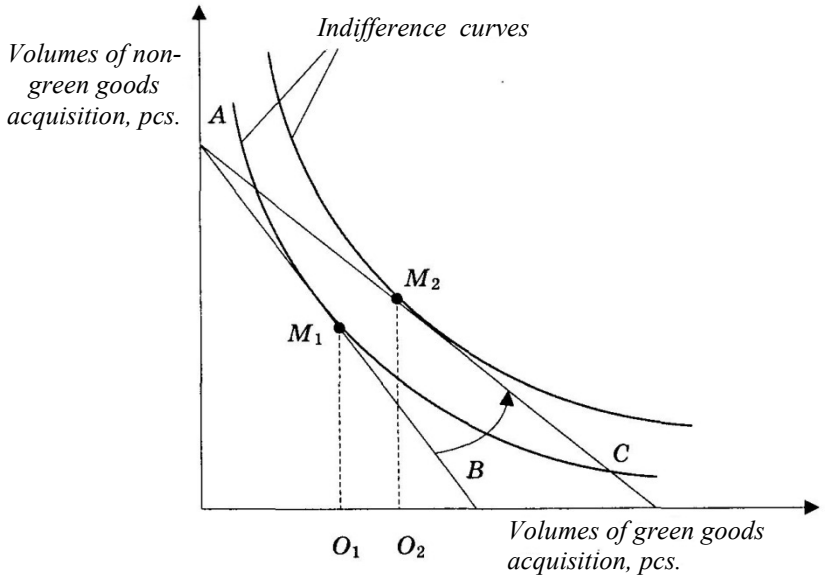


Fig. C.1. **Demand growth for eco-friendly products when their prices are backed**

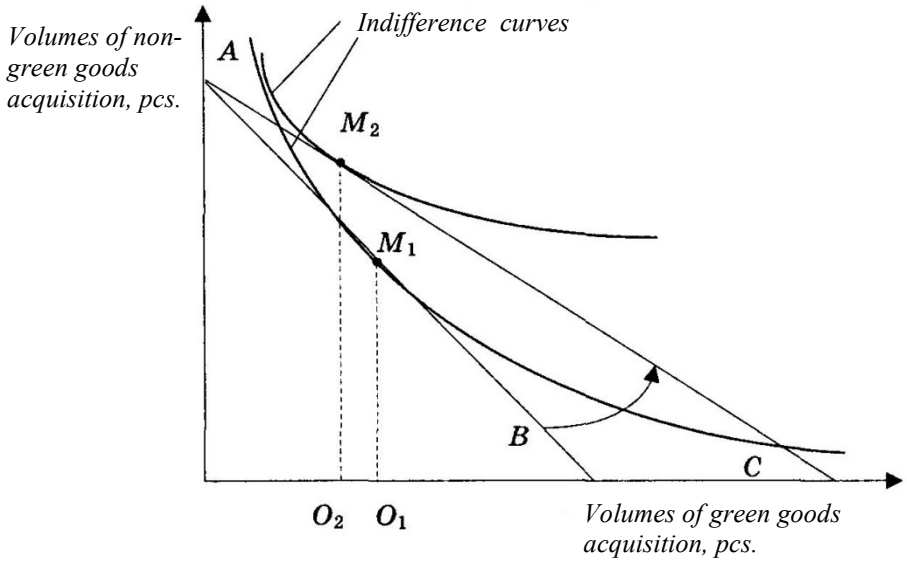


Fig. C.2. **Demand decrease for eco-friendly goods similar to Giffen products when their prices are subsidized**

Appendix D

MINDFUL CONSUMPTION
(recommendations to shopaholics)

Objective:

It is necessary to realize clearly, what and in what quantities we consume to maintain the necessary quality of life; and how it will affect the further existence of our planet and life of future generations.

Description:

This meditation is an analytical practice, one of the meditations on a specific topic in attempt to give awareness to that what you do every day. It does not mean that it will cultivate in you a sense of guilt or to impose any «duty». Just the comprehension of one's connection with the rest of the world will help to create more reasonable approach towards one's consumption.

Benefit:

- it reminds us of interrelation with everything that exists on the planet;
- it counteracts a thoughtless consumption;
- it decreases consumption (therefore output as well) of toxic products which pollute the planet.

Time:

Practice this analytical meditation every time when you feel that your expenditure gets out of control.

Preparation:

Write an approximate list of your expenditure for last six months, including all energy consumption, such as electricity and gasoline for your automobile.

Procedure

1. When alone please, sit down on a pillow or in a chair. Visualize oneself connected with all living beings, the sky above, the earth below, mountains, water and trees. Try to strengthen and fix this sensation of interrelation and interdependence.
2. Imagine that everything you consume affects other creatures living on the Earth. Visualise as you are filling in a tank of your car. Think about oil industry workers who extract oil, workers at plants where it is refined into gasoline. Remind yourself that it is a limited resource and that autos pollute air.
3. Think of all people who produce, transport and sell food that you eat. Think about pesticides and fertilizers which were used for growing cultivated plants and how they influence our planet and our health.
4. Recollect a cheap T-shirt which you wear and think about people most likely from the countries of the Third World who produced it for a scanty payment.
5. Transfer this realization of influence of your consumption on the whole planet and your day-to-day life, and then try to make more weighed decisions when purchasing products and things.

5 rules of reasonable consumption:

(why in fact we do not need a hundred things and how to get rid of them)

Purchasing new things, we hope that that will make our life better and happier. However the joy from acquisition passes quickly and we understand, that we have no time to wear clothes, to read dozens of books or to listen to hundreds of albums. Scientists' researches prove that the quantity of purchases does not influence our happiness. Look At Me tries to understand; what rules should be followed in order not to become a victim of consumerism.

A number of scientists investigated the connection between volume of consumption and happiness, and it has been proved that we can be happy without having scores of things. One of them - research of a psychologist and professor of University of British Columbia Elizabeth Dunn and professor of Harvard Business School Michael Norton. Having devoted several years to work on the book "Happy Money", they have found out that accumulation of things does not make us happy. It does not mean that money cannot change our life for the better: happiness is brought, for example, by travel costs. We have found out, what other scientifically proved rules can help to get rid of unnecessary things and to feel happy.

To have no more than 100 personal belongings. One of the most simple methods to control purchases is to see that you have no more than 100 personal things. Things and devices shared by members of the family such as home appliances, books and gadgets should be excluded from the list. Moreover, some groups of things (for example, cosmetics or sports equipment) can be counted as one object.

After an economic crisis this rule of 100 things underlay the whole movement called «The 100 Thing Challenge». It was initiated by Dave Bruno, a Californian who occupies himself with digital-marketing. In 2008 he realized that things, purchases did not bring him joy any more, and decided to reduce the quantity of personal belongings to 100 and started to publish a blog about it. His example inspired thousands of Americans, trying to reconsider their way of life after 2008 crisis, and soon Bruno wrote a book about his experience and spoke at the conference Technology Entertainment Design.

To set priorities. One important advice for those for whom it is difficult to get rid of unnecessary things, - a target selection. Peter Walsh, who has written several books about that how to struggle against chaos of daily life, asserts that to throw out unnecessary things is easier when you have defined your goal for the nearest future. For example, if it is important for you now to focus on work then it is time to get rid of game consoles and other distracting things getting dusty in the corner.

Your objective can be quite simple - for example, saving not only money but also time. The more we purchase, the more time we have to spend for taking care of objects which we possess. For example, Graham Hill, an entrepreneur and the founder of Life Edited, a website about that how to spend resources wisely, in his article for The New York Times tells, how much time and efforts he wasted for his houses and autos bought during Internet boom at the end of 90s. By the end of 00s Hill got rid of all unnecessary objects and expensive immovables and moved in a

small and rationally designed apartment in New York - according to him, a modest way of life makes him happier than an unreasonable consumption.

To buy small things in stead of big ones. When buying something you do not need much, you should remember that small purchases bring as much joy as large ones. It is explained by phenomenon which psychologists call hedonic adaptation - we get used to things very fast, and they cease to make us happy. By the way, this term is applied with regard not only to things but also to events: Sonja Lyubomirsky, a professor at the University of California and the author of researches about connection of happiness and quantity of consumed things, thinks that we «adapt» to positive events of our life as well and we start to take good friends or happy coincidence for granted.

One gets accustomed to both big and small things in a similar way, therefore if you want to buy something expensive and not too necessary; it is worth remembering that more modest analogue will make you happy as well.

To spend money for experience, instead of objects. Many scientists agree that unusual experience makes us happier, than acquisition of new things. Just therefore many psychologists advise to spend money for travels, concerts, unusual lessons, subscription to a gym and so on. Such investments make people happier because all these ways of spending time help to strengthen social bonds.

This rule is explained as well by the phenomenon of hedonic adaptation - it applies only to things, and experience does not cause such «adaptation». Journeys and other similar events become a part of our recollections - at that even if for example, a trip was not ideal, people remember positive moments. And moreover, many such ways of pastime - for example, easy master classes - assume contact with people, and that is directly connected with feeling of happiness.

To take hours of silence or «technological Sabbath». Our books, musical recordings, films and TV series are not stored on tangible carriers any more: numerous streaming services like Spotify, e-book readers and online theaters save us from problems related with keeping disks and books. However, by getting rid of unnecessary things, we do not reduce consumption: to purchase books on Amazon, and games and magazine subscription in Apple Store - pretty easy, and we acquire much more than we can consume.

In the article «Only Disconnect» for New Yorker the journalist and researcher of digital technologies Evgeny Morozov suggests everybody to take «hours of silence» because, in hiss opinion, boredom is the only way to escape from a constant flow of upgrades made by social networks. Tiffany Shlain, a director, offers more radical method - once a week all members of her family take «technological Sabbath» and turn off all devices with a screen. Both ways help to achieve the same goal: tearing ourselves away from iPhone, we do not spend time consuming unnecessary information and we can focus on that that takes place around.

A. Savina, 10.31.2013 http://www.lookatme.ru/mag/how-to/better-life

China Sustainable Consumption Week

There was Sustainable Consumption Week in China in 2015. Its theme was «Green Life, Consume with Wisdom». In the country where the large quantity of productions is concentrated, it is very important to appeal to people to reconsider their way of life and to reduce collective impact of mankind on natural resources.

Having become the center of a global manufacturing, China today – largest consumer of primary materials, including fossil fuel and metal ore. Well-being of people of the country grows along with scales of consumption. Chinese household expenses increased from US$ 554 billion in 2000 to US$ 3.4 trillion in 2014 according to the World Bank.

China Sustainable Consumption Week – attempt to convince people to spend these trillions of dollars on goods and services with lower resource and energy intensity. Such changes will have a positive environmental impact on a global scale.

During the Week there were various events promoting sustainable food sources, energy efficient equipment and environmental labeling. More than 600 chain stores operating in China joined the campaign. They are GOME, Wal-Mart, Vanguard, IKEA, H&M et al. The organizers of the Week call all trade giants to consider issues connected with sustainable development in their development plans.

http://green-city.su/%EF%BB%BFza-razumnoe-potreblenie/

Appendix E

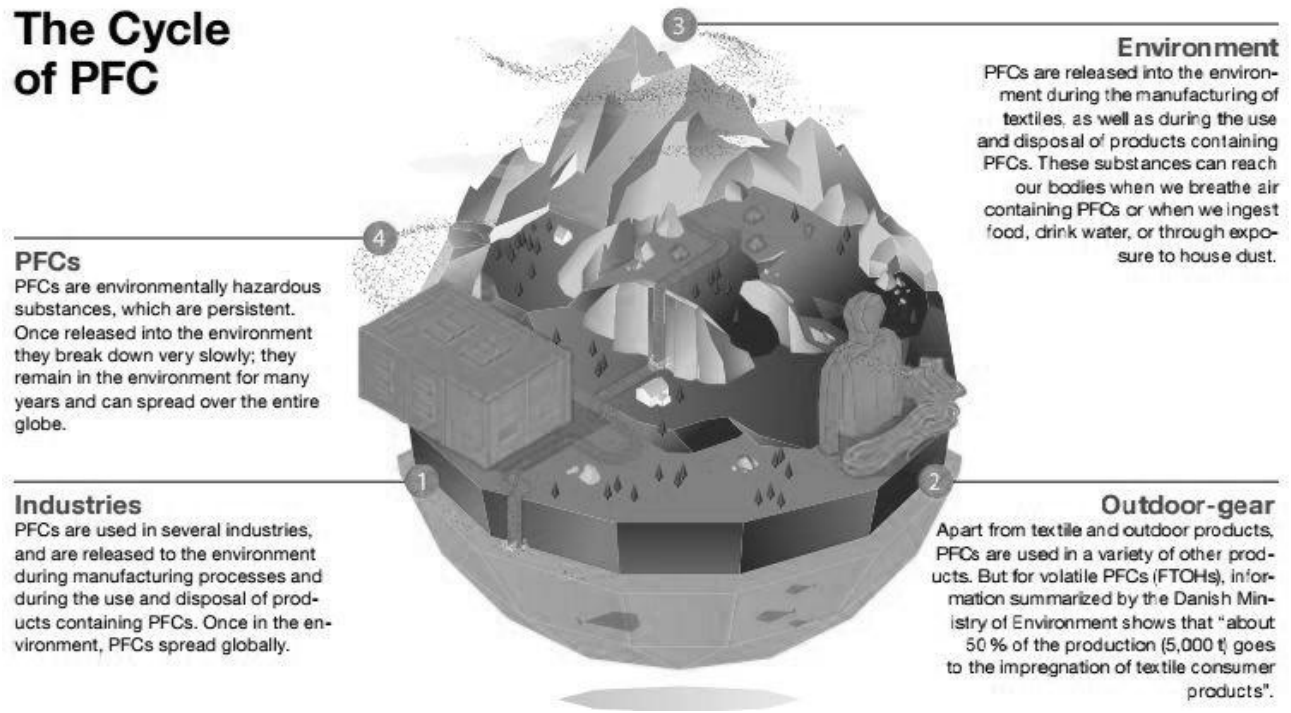
Deadly fashion: how we are influenced by what we wear

What interrelation is there between clothes from a fashionable boutique and spread of diseases dealing with endocrine system? Environmentalists confirm: the most direct one. Everyone got accustomed that environmentalists talk endlessly about pollution of the planet by waste of various productions. One used to pay attention to that that is possible to see – oil once again spilled in ocean, protection forest fires or to dumps growing around megalopolises. The same can be said about food – for example, harm from predilection to fastfood is obvious. Therefore many people try to eat cleaner food, and the prefix «bio» has even become trendy.

In the meantime one of the most dangerous threats for the future of mankind is not so remarkable, though has become, according to experts, an actual menace. The question is about hazardous per and poly-fluorinated chemicals (PFCs), getting into water during production of clothing, being accumulated in the environment and virtually do not break down. These substances called hormone destroying – they damage fine endocrine system of the person and, as consequence, «turn off» reproductive function of males as well as females. Several years ago Greenpeace exposed the use of such chemicals by plenty of popular brands, from manufacturers of cheap youth's apparel to luxury brands. The list included Puma, Adidas, Nike, Benetton, H&M, Mango, Zara, Burberry, Armani, Dizel, Gap, Versace, Luis Viutton, D&G, Hermes, Valentino and many other famous companies. As a result of the pressure of Green Peace and millions of buyers worldwide the part of these companies took an obligation to stop using PFCs. The last victory at this field took place 09.02.2015 – one of the largest manufacturers of zippers, Lanfranchi Company undertook to give up using hazardous chemicals.

About that what problems are caused by getting of PFCs into an organism and how keeping of promises by brands is monitored, told Nina Lesichina manager of toxic program projects of Greenpeace Russia.

Why has Greenpeace paid attention to clothing making? The most urgent issue which is now raised by the World Health Organization (WHO) in Europe, America and China – so-called hormone or endocrine-destroying substances. These are nonylphenol ethoxylate, fluorinated compounds which are used to make apparel waterproof, as well as heavy metals and phthalates, parabens and fire-retardants. In 2011 Greenpeace launched Detox My Fashion campaign. The point – ensure that fashion brands will give up using hazardous chemical substances. Today almost all of them make clothing in the countries of South East Asia – first of all, China, Indonesia and Taiwan. As a result in these countries more than 70% of potable water has already been polluted by hazardous substances. At present textile industry enterprises of this region annually dump 300-400 mln. t. of heavy metals, solvents and toxic waste into rivers.



The infographics from Greenpeace's report – «Footprints in the Snow – Hazardous PFCs in remote locations around the globe»

The analysis of samples are made in own research center of Greenpeace in the British city of Exeter, and also at accredited laboratories in Hamburg.

If not to take measures, risks will increase. The problem is aggravated with that that harmful substances remain in final product as well – dresses, jeans and footwear. When we purchase new wear of American or European brand made in China, it also contains toxic substances which during laundering are washed away, get into rivers, are accumulated and affect people's health through water. Some substances, for example, antimony or dimethyl formamide can get into our organism through the skin. Even small concentration of them is extremely hazardous during the so-called vulnerable life periods – for pregnant women and small kids. Therefore we analyzed kids wear.

What health problems can be caused by these chemicals? They destroy endocrine and reproductive systems of the human being. What can be the outcomes? Sterility, prostate cancer, breast cancer, diabetes, adiposity, diseases of kidneys and liver, diseases of thyroid gland and nervous system, disturbance of sexual function. Ministry of Health of the Russian Federation records the largest gain of diseases related to person's endocrine system. The specific character of these substances is also in that that they get into organism by different ways. For example, bisphenol-A which is used in manufacture of plastic and makes it soft, can get into food from a container, by means of toys or a feeding bottle. They accumulate during our life and cause grave consequences. Besides the aforementioned, many researchers connect IQ reduction, autism and the whole range of the most actual diseases and abnormalities with the impact of hormone-destroying substances.

Environmentalists work with the Chinese authorities concerning legislation toughening. Greenpeace has a big office in East Asia – there are branches in Beijing, Hong Kong and Taiwan. Four years later after the start of «Detox My Fashion» campaign 20 large fashion brands, which account for 10% of the market, pledged publicly and developed some plan of actions to give up using hazardous substances by 2020. Some of them have already eliminated them completely. On this wave in the PRC there are serious changes: the state has paid attention to the problem, enterprises install local treatment facilities, change technologies. These brands – serious part of economy of China, and it is important to Beijing to keep manufacturers in the country. Besides, they too began to think of environment and nation health – it seems that the critical mass has been accumulated. As for regulation of use of hormone-destroying substances they have forbidden bisphenol-A in kids products, in particular, feeding bottles. By the way, in Europe and the USA there is a similar law in force. China and Indonesia have added a number of hazardous substances used during the manufacturing of textiles, to the list which demands an additional estimation, and in the long term they will forbid these substances.

(One of the dangerous substances, with which fabric is processed to make it crease-resistant – phenolformaldehyde resin, containing both monomers of precondensates and oligomers. It also protects clothing from mold – due to its toxicity. The formaldehyde is a strong allergen, despite it, it is actively used during finishing of bedclothes and towels). Some researches show hundredfold and more excess of safe level of this chemical in samples of apparel made in South East Asia.

Heavy metals – cadmium, lead, mercury – in textile can be found in colouring agents, but, by analyses of Greenpeace, it happens more rarely. Nevertheless the danger of heavy metals has already been recognized by both producers and states. But at the same time highly toxic hexavalent chromium is still used during leather dressing.

The European countries pay a lot of attention to this problem. In EU territory some countries (Germany, Sweden, and the Scandinavian countries) take serious measures to ban the use, for example, of fluorinated compounds in clothing (there are harmless alternatives in the market). In 2015 they banned to import textiles containing nonylphenol ethoxylate in the EU. The prohibition to use it during production on the European Union territory existed before as well but there was a loop-hole for business. And now there is none – total ban introduction has been supported by all EU countries during voting. 32 brands already introduce safe alternatives. There are leaders, but there are also those who participate in the campaign for public relations, but actually do nothing. And there are brands that ignored the appeal. Among the ranking leaders – Puma, Adidas, Benetton, H&M, Mango, Zara, Burberry if to speak about tourist clothing - Fjällräven, Paramo, Pyua, Rotauf and R'ADYS. Among brands which use commitments only for «green image», there is, for example, Nike. The part of brands has completely ignored the addresses or are not fulfilling the taken obligations, among them - Giorgio Armani, Dizel, Gap, Versace, Luis Viutton, D&G, Hermes и Valentino.

How to reveal, just by looking at it, that clothing may contain hazardous chemicals? As a rule, dangerous chemicals are used to add specific properties to fabrics, for example, waterproofing or bright colors. Therefore it is better, if clothing will be of natural colors, without rubber and plastic insertions. Certainly, it is a question mainly of natural fabrics – cotton and flax. In any synthetic fibers there is higher probability of presence of certain chemical elements – it deals with the lion's share of sports and tourist apparel. In 2015 Greenpeace has planned to take samples of outdoor clothing and to send them for analysis. Results are to be known in 2016.

There are many brands which do not use fluorinated compounds and achieve waterproofing of fabrics by means of safe alternatives. There are already companies that manufacture such production, including camp backpacks, wear for active sports. But there are few such things in the market or their cost is very high. If the detox fashion becomes the standard for all brands, this clothing will become accessible to a wide range of people. For the present many people simply can not afford to buy good things. But the simplest way to avoid effects of dangerous chemicals – to consume less. It is overconsumption that is the main cause of global ecological crisis.

Clothing selection rules:

– avoid fabrics of chemical and synthetic fibers, first of all – polyester, acryle, nylon;

– not worth purchasing wear of crease-resistant fabrics and those with a preliminary shrinkage;

– things of unshowy natural colors are more preferable;

– scrutinize labels, especially when buying kids or tourist wear;

– before put a new thing on, wash it. Use organic detergents which are sold in many stores and will not do harm neither to the person, nor the nature;

– lining of outer clothing of a synthetic fabric should be of natural material;

– removable insole – sign of good quality footwear;

– better less, but of better quality: save on quantity, but buy things of quality;

– if money is an issue, it is possible to find a lot of resources in the Internet where people give unnecessary things including clothes.

Is it possible to buy completely natural wear? How much time transition to safe manufacture will take and whether it will occur at all – no one knows. Nevertheless there is the way to restrict penetration of synthetic substances into an organism – «green» stores which appear more and more. However, they mainly specialize in foodstuff, cosmetics and cleaners. For example Indian cosmetics enjoys constant popularity and sold at prices which much lower than those for cosmetics of hyped-up American and European brands made in Southwest Asia.

The case of clothing is somewhat different. There are very few stores selling cleaner wear and it is mostly imported from Europe. Expensive things anyway are sold at prices, not available to everybody.

Today the large number of fully natural things meeting the international environmental standards is made in Germany. It is partly connected with development of the so-called anthroposophy movement (considered by many researchers to be rather harmfull sect). Rudolf Steiner established it in the 20s of the XXth century, during rapid blossoming of occult ideas. The followers of this movement succeeded in agriculture, medicine and

cosmetics. Steiner's brainchild became Waldorf schools which spread at present all over the world, including Russia. Anthroposophists treat the nature with care that is reflected in the idea of biodynamic households producing raw materials as much natural as possible.

All their rules are accurately described. Sheep, for example, should live on a free pasture, and that land on which they live, should mostly feed them. Only 10% of fodder must be purchased. Sheep are not tailed as it is pretty painful and inhumane operation. They are not treated with chemicals against parasites, sheared manually, antibiotics are not used. If to speak about dyes then at present virtually everything is painted with monocomponent synthetic dyes. Anything painted with natural means; it is possible to find more and more rarely because such articles are light-fugitive and are painted many times.

Why is quality clothing expensive? The majority of such things are manufactured in Europe, and in the EU 70% of price of an article is remuneration of skilled labor of employees. In exchange the buyer gets a thing that can be used for decades. For example, one of the toys in a shop – a large wooden assembly kit with 25-year warranty on it. One more cost item – price for raw materials. But the manufacturer does not put advertising rate in it: these products are not advertised, and distributed by means of catalogs. The international environmental standards are used to certify an entire production process from cultivation till sewing so that it does not harm either health of people or the nature. A typical example is T-shirt for €2. Actually it damaged a lot of people, including children working somewhere in India or China so that you could buy it so cheaply. A stiff price guarantees to buyers that they do not participate in this immoral process of global production.

Many town communities in Germany and the USA give bonuses to people for refusal to use pampers. There are natural fabric analogs which consist of a cotton diaper and panties on top of them; it is possible to launder them in a washing machine. The quality natural clothing used for a long time and one needs less of it. The main idea of «green» culture: less means better. It does not matter – whether it is food or wear – not only a certain person's life but also the whole world is changed because of it».

PFCs in remote locations around the globe. In the spring and summer of 2015 to check up, how far per and poly-fluorinated compounds spread on the planet, Greenpeace organized eight expeditions to the most remote areas of the planet to take water and snow samples. In particular, ecologists have taken samples on the Slovak side of the High Tatras; at the junction of Sweden, Norway and Finland – Treriksroset; in Kaçkar Mountain in Turkey; in the Haba Mountain in China; in Pilato Lake in Italy; in Lakes of Macun; in Torres del Paine in Chile; and in the Golden Mountains of Altai in Russia. Dangerous synthetic substances were detected in all samples as outlined in the table from the report of Greenpeace.

The table from Greenpeace's report – «Footprints in the Snow – Hazardous PFCs in remote locations around the globe». (Maria Al-Salhani)

Country	Location	Date of expedition	Altitude, where snow sample taken	GPS snow sample coordinates	PFC evidence in snow	Altitude, where water sample taken	GPS water sample coordinates	PFC evidence in water
China	Haba Mountain, Shangri-la county	26-27.05.2015	5053 m (16578 ft)	27°19'38.16" 100°6'24.00"	Yes	5053 m (16578 ft)	27°20'57.19" 100°04'117.38"	Analysis can not be made[17]
Russia	Verkhnemultinskoe lake, Altai Republic	08.06.2015	1778 m (5833 ft)	49°92'4450" 85°88'4698"	Yes	1778 m (5833 ft)	49°92'4450" 85°88'4698"	Yes
Italy	Lake of Pilato, Monti Sibillini, Umbria	28.05.2015	1943 m (6375 ft)	42°49'33" 13°15'56"	Yes	1943 m (6375 ft)	42°49'33" 13°15'56"	Yes
Switzerland	Lakes of Macun, Swiss National Park	19.06.2015	2641 m (8665 ft)	46°43'717" 10°07'549"	Yes	2636 m (8648 ft)	46°43'729" 10°07'546"	Yes
Slovakia	Žabia Bielovodská dolina, High Tatras, Carpathian	26.05.2015	1722 m (5650 ft)	49°11'73.2" 20°05'560"	Yes	1700 m (5577 ft)	49°11'73.2" 20°05'560"	Yes
Sweden	Kiruna, Övre Soppero	02.06.2015	511 m (1677 ft)	68°15'30.6" 22°01'55.9"	Yes	-	No sample	sample was not taken[18]
Norway	Skibotridalen, Troms county	03.06.2015	616 m (2021 ft)	69°11'54.5" 20°32'01.0"	Yes	-	No sample	sample was not taken[18]
Finland	Kilpisjärvi Enontekiö	04.06.2015	742 m (2434 ft)	69°04'17.8" 20°41'28.5"	Yes	-	No sample	sample was not taken[18]
Chile	Torres del Paine Nationalpark, Patagonia	10.06.2015	900 m (2953 ft)	-50°94'2886" -72°95'0042*	Yes	900 m (2953 ft)	-50°94'2882" -72°95'0424"	Yes
Turkey	Çamlıhemşin, Rize, Erzurum, Yedigöller plateau (Moryayla), Kaçkar Mountains	13.06.2015	3100- 3120 m (10171-10236 ft)	40°45'27" 40°50'29"	Yes (but there is no check sample)	2980 m (9777 ft)	40°45'60" 40°50'40"	Yes (but there is no check sample)

17 PFC background concentrations are higher than in the samples taken

18 No remote lakes in the given area

Appendix F

The international environmental organizations, programs, commissions and documents

IYF – international youth federation for forest conservation. It was established in Switzerland in 1984.

«Ark» (from Noah's Ark) – international environmental movement for encouragement of production and sale of cleaner foodstuff, as well as various consumer goods not polluting the environment. It was created in December 1988.

WCP (World Climate Program) – The program established at the Eighth Session of the World Meteorological Congress in 1979.

The objectives of the WCP:

- to assist people to use available data about climate during planning and regulation of all sides of human activity;
- to improve modern data about climate and to understand more fully a relative influence of various factors on it;
- to develop methods of long-term forecasting of possible changes of climate which could prove unfavorable for mankind;
- to study state and usage of climatic resources of the Earth.

The organization was created in 1947, functions within the frameworks of the Global Environment Monitoring System (GEMS), including: estimation of transboundary transfer of pollutants; study ozone layer influence. It has the wide program of environmental pollution measurements by means of a network of special stations, spreads nature-conservation knowledge, funds training of personnel in the field of the atmospheric chemistry and experts in atmospheric pollution control.

Goals: development of the international cooperation in the area of meteorological observations; assistance in information interchange; standardization of meteorological observations; publication of reports and statistics.

Principal activity: implementation of international climate programs; development of climate monitoring system; atmospheric, environmental studies and water resources research.

WHO (World Health Organization) – specialized agency under the aegis of the UN, established in 1946 which main objective is achievement by all people of the Earth the highest possible level of health, protection and improvement of human being's health by means of control and management of negative environmental impact.

The WHO organizes combat against the most dangerous diseases, assists countries in medical education of the population, organizes epidemiological supervision and control over quality of drugs, organizes scientific researches, including regarding preservation of the environment, creates information centers dealing with its subject matter, preparation of medical personnel and experts ecologists.

The WHO implements actions for sanitation of environment, including for environmental safety provision, including safe water supply, nutrition and waste

disposal, evaluates influence of climate changes on the state of person's health, develops global strategy of health protection of people and quality of the environment. It publishes The World Health Report. The headquarters of the WHO is in Geneva (Switzerland).

WSNC (World Strategy of Nature Conservation) – program prepared by the International Union for Conservation of Nature (IUCN) with the participation of the Food and Agriculture Organization of the United Nation (FAO) and United Nations Educational, Scientific and Cultural Organization (UNESCO). It was approved at the 14th General Assembly of IUCN in Ashkhabad in 1978 and was adopted in 1980 in many countries of the world, including in the USSR. The strategy generalizes the experience of all countries in the field of protection of nature, formulates the basic environmental problems of the present, recommends the system of rational methods of management of the resources of the biosphere.

WWW (World Weather Watch) – international organization, which purpose – coordination of activity of all interested countries regarding collection and exchange of meteorological data. The WWW network includes three world centers – in Moscow, Washington and Melbourn, as well as several dozens of regional meteorological centers. The WWW is a part of the World Meteorological Organization (WMO).

The World Commission on Environment and Development – created in 1983 with the purposes of revealing the major problems of preservation of the environment and search of ways of their possible solution. The principal activity of the World Commission is directed on information gathering and preparation of environmental condition reports. The given commission also offers support to the states concerning cooperation and interaction in the field of preservation of the environment and meeting the international nature-conservation commitments.

WCN (World Charter for Nature) – set of the program theses adopted in 1982 at the 37th session of the UN General Assembly, reflecting main principles of relationship of the mankind with the environment and offering measures to implement them.

The World Wildlife Fund (WWF–International) – largest international nongovernmental public nature-conservation organization uniting 26 national branches all over the world, as well as over 5 million individual members. The organization main objective – provision of protection of all biological resources of the Earth in ecosystems, supporting their existence under conditions of rational nature management. The organization gives financial support as grants for protection of natural territories, technical training, environmental education and nature conservation scientific researches. The Fund headquarters is located in Switzerland.

Since 1985 the Fund has invested more than US$ 1 billion 165 million in implementation of over 11 000 programs and projects of protection of nature in 130 countries of the world. In April, 2000 the President of Honor of the Fund started a bus tour through twelve European countries «Panda 2000», organized by the Fund and Canon. This project pursued two goals: to study the European youth's attitude towards environmental problems; to attract more attention to activity of the Fund and

to that important role it plays in environment protection. In 2009 Global action of the WWF «Earth Hour» became the most mass public action in the history of Russia and the world.

The World Wide Fund for Nature (the former name «World Wildlife Fund») – international organization advocating fauna and environment all over the world. It uses educational programs to show the importance of natural resources preservation.

The Global Environment Facility (GEF) – international organization created in the early 90s. The GEF meant to help first of all developing countries to solve global environmental problems. Three international structures participate in the activity of the GEF: United Nations Development Programme; United Nations Environment Programme; World Bank. As first and foremost four directions are distinguished for funding: global warming of climate; pollution of international waters; biodiversity reduction; Ozone Layer depletion.

There is GEF project in Russia as well. In 1996 Russia was granted $10.1 million for biodiversity conservation. The project was designed for five years (till 2001).

Greenpeace – international non-governmental organization created in Canada in 1971 for natural environment conservation from destruction by direct action protest, nonviolence and independence. This is the largest environmental association having its supporters in 30 countries of the world. It numbers about 1.5 million members, 1/3 of them – Americans.

Main objectives: attraction of attention of the wide public to problems of preservation of the environment and persons guilty of creation of these problems. It is funded by private sources and there is a branch in Moscow.

Greenpeace activists:

- arrange pickets near chemical plants and atomic power stations;
- interfere with toxic waste sale;
- hinder discharge of untreated sewage into seas and oceans;
- collect the information on the enterprises harming the Nature.

Greenpeace applies nonviolent, but active methods of struggle for environment preservation. It calls to ban whaling and use of nuclear weapon and nuclear energy, to stop the environment pollution causing acid rains, and to protect the nature and bowels of Antarctica.

One of the most known campaigns of the organization – conducted in the early 70s – to draw attention of world public to the destiny of whales. Such species as a humpback whale, a blue whale and a sperm whale, because of excessively active whaling were on the verge of extinction, they were still hunted out of control. Greenpeace activists chased whalers, impeding them to hunt for whales. They shot whalers' actions and showed to millions of televiewers across the world. The information about these actions filled pages of newspapers. As a result, under the pressure of the public whaling was banned in 1982 by the law of the International Whaling Commission for 5 years, since 1985.

Greenteam - kids environmental organization emerged at Greenpeace in 1990. It unites hundreds of groups working in many countries. They mainly consist of 10-

14 year olds who not only help adults, but also conduct researches themselves, collect data, interview and arrange press conferences, and also publish newspapers.

Rio Declaration on Environment and Development - one of the documents adopted by the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, including 27 principles of activity of the states which should provide formation of a sustainable development of a society and environment preservation.

Friends of the Earth – international organization advocating fauna and environment. Groups from 34 countries tak part in it. It conducts campaigns for protection of nature at local, national and international levels. The youth branch of the organization is called «Earth Protection Movement».

The United Nations Economic Commission for Europe (UNECE or ECE) – established in 1947 for international cooperation in the area of economic activity.

Principal activity of the UNECE - development of relations in the field of preservation of the environment and sustainable development; rational use of natural resources; coordination of the international program «Environment for Europe»; development and implementation of a legal mechanism of regulation of quality of environment; giving help to the countries with transitive economy.

European Union for Coastal Conservation (EUCC) – created in 1990 to spread experience of protection of nature and optimum use of coastal territories of the European states.
Principal activity of the European union consists in advising national, regional and local bodies and institutes; in conducting scientific researches on protection of nature and management problems; in information data exchange. Besides, the union is involved in publishing and educational activity.

The European Environment Agency - established in 1990 for the purpose of creation of scientific base to carry out environment projects and programs of the European community.

The main activity of the agency is directed on organization of topic centers in various directions. There are centers controlling quality of air and water resources; condition of soil, flora, fauna, biotopes; state of land tenure and of other natural resources. Besides, the agency develops criteria of estimation of influence on environment and creates legislative framework.

«Green» parties – true alternative to conventional division of political forces into the left, the right and centrists. The political platform of parties is based on that that all of us should dramatically change our way of life if we wish to save our planet and our descendants from environmental disaster in the future. The members of parties demand more fair distribution of resources of our planet between the poor and the rich and put forward well considered plans of creation of new, more fair public order. There are green parties in many countries of the world.

IMO (International Maritime Organization) – established in 1948 for international cooperation in the area of shipping and sea pollution prevention. The Marine Environment Protection Committee is part of the IMO.

«Intermediate Technology» - international organization developing long-term programs of raising and development of economy of the poor countries by using state-of-the-art technologies. The purpose of activity of the organization – teach inhabitants of the poorest countries to rely mainly on local resources.

ISAR (International center of operative communication and information on ecology problems) – noncommercial non-political organization, information center for noncommercial public organizations in the USSR. It provided grants for public environmental organisations of the USSR. It headquatered in Washington, D.C. In Russia there are branches in Moscow, Nizhniy Novgorod and Vladivostok.

MAB («Man and Biosphere» program) – international research program of UNESCO, adopted in 1970 at 16th session of the General conference of this organization. The program is directed on solution of a series of environmental issues formulated in the form of 14 subprogram projects, directed on long-term researches on interference of the person and ecosystems. Over 90 countries participate in it. According to this program biosphere reserves are created in various countries.

IAEA (International Atomic Energy Agency) – international organization in the United Nations system, being the center of assistance to international cooperation in the area of peaceful use of an atomic energy and preservation of the environment from radioactive pollution. It was established in 1957. It develops the Rules of construction and operation of atomic power stations, makes examination of designed and acting NPSs. Since 1961 the IAEA together with the World Meteorological Organization (WMO) has been gathering data about concentration of radioactive impurities in deposits, exercises control during radiation accidents, develops recommendations for elimination of their consequences, develops norms of safety and protection against radiation, including safe transportation of radioactive materials and waste disposal.

IHP (International Hydrological Program) – one of the programs which are carried out by United Nations Educational, Scientific and Cultural Organization (UNESCO). The program deals with studying of water resources and hydrological processes on the planet. IHP has several groups of projects: scientific, educational projects, projects of informing of the public about significance of water resources, ways of their preservation and rational use. The program is carried out in several phases. More than 130 countries participate in it.
The international youth federation on study and preservation of the environment. It was established in Salzburg (Austria) in 1956. It numbers 130 member organizations from 54 countries from all continents.

«Survival International» - conducts campaigns in support of preservation of aboriginals and local environment. It informs the public about the danger menacing indigenous population, carries out actions for support of people's basic rights all over the world.

International Fund for Animal Welfare (IFAM) – the largest nongovernment organization in the area of animal patronage. It was established in 1969. There are offices of IFAW in 10 countries of the world, its activity supports 1.8 million person.

Program activity of the Fund is directed on termination of a mass commercial hunting of mammals in the wild, protection and habitat preservation, rescue of animals in a case of natural disasters and emergencies, including created by the person, assistance to domestic animals in trouble.

In 1994-1996 the Fund implemented a three-year program of individual scientific grants on research of marine mammals in Russia. Since 1995 the Fund has been funding the program to study white whales near the Solovetskiye Ostrova in the White Sea, makes efforts directed to stop cruel and economically unpromising hunting of baby seals. With assistance and financial support of the Fund creation of Center of overexposure of animals confiscated by custom officers bacame possible. IFAW provided a financial help to shelters for the pets that lost their home and owners.

GCI (Green Cross International) – international public association created in 1993 according to the decision of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro.

Main objectives: ecological and environmental education as a basis of sustainable development and change of system of values, elimination of consequences of cold war for environment. The Russian branch of GCI – Green Cross Russia (GCR).

«International Young Naturefriends» - international youth environmental organization, established in 1895 by Austrian socialists. There are thousands of centers in the countries of Western Europe.

ILO (International Labor Organization) – international organization, a specialized agency of the United Nations. It was established in 1919 at the League of Nations which purposes are: creation of safe working conditions, increase of educational level of heads, experts and workers; prevention of occupational diseases; reduction of pollution of biosphere and liquidation of other factors negatively affecting health and well-being of workers.

IUCN (International Union for the Conservation of Nature) – intergovernmental scientific and advisory organization created in Fontainebleau (France) in 1948 on the initiative of UNESCO. Main goals – preservation of natural resources and their rational use.

The work of IUCN promotes realization of the Washington convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In structure there are six commissions: on ecology, environmental education, rare species, national parks and protected territories, legislation, nature-conservation strategies and planning. Red and Green Lists of rare and endangered flora and fauna have been created and are reissued on the initiative of IUCN. The union includes 773 organizations from 23 countries of the world, including from Russia (data of 1995). Its headquaters is in Switzerland.

IEC (International Ecological Court) – founded on the initiative of lawyers at conference in Mexico City in November, 1994. The panel of judges includes 29 environmental lawyers from 24 countries, including the representative of Russia.

The Scientific Committee on the Effects of Atomic Radiation – international organization created by the United Nations in 1955, deals with issues of study of action of ionizing radiations on the human being and environment, especially connected with radioactive fallout.

Oxfam – international organization participating in long-term programs to improve of technology of agriculture, to protect health and improve social conditions in poor countries; rendering humanitarian aid during emergencies, environmental disasters.

Agenda 21 - one of the documents adopted by representative 1992 United Nations Conference on Environment and Development in Rio de Janeiro in which they described environmental problems of the world, possibilities of the international cooperation on ways of their solution.

Club of Rome (CoR) – international non-governmental organization uniting scientists, scholars, public figures and businessmen from more than 30 countries of the world (club includes about 100 people), worried by prospects of development of mankind that made a significant contribution into study of prospects of biosphere development and propaganda of idea of necessity of harmonization of relations of the Person and the Nature.

The Club of Rome was founded by an Italian businessman Aurelio Peccei in 1968. It is registered in Geneva Canton as civil association. When A. Peccei died in 1984, A. King was elected president.
The main form of its activity – organization of large-scale researches on a wide range of issues, mainly in socioecological area. The Club of Rome has begun works on research of the problems named «problematique».

The Socio-Ecological Union (SEU) – one of the most authoritative international non-governmental organizations, uniting hundreds of public groups and organizations from Russia, the United States of America, Norway, Ukraine, Moldova, Georgia and many other states. It emerged in 1988. It developed from student Druzhina (people's patrol) Movement for environmental protection, working from the 1960s.

In the SEU there are «problem» centers:

– Center of Wilderness Protection, supporting development of reserved areas;

– Center of Nuclear Ecology and Energy policy, paying a special attention to problems and consequences of nuclear productions;

– Center of Independent Environmental Programs co-ordinating work on social protection of children in zone of environmental emergencies;

– «Ecological education» association; «Chemical Safety» union;

– Forest program.

The organizations, members of the SEU, publish newspapers «Bereginya», «Vesti SEU», «Green ray», digital and printed bulletins and other literature.

FAO (Food and Agricultural Organization of the United Nations) – specialized agency under the aegis of the United Nations, formed in 1945 for the purpose of improvement of nutrition and increase of standard of living of the people. It pays the main attention to food resources of the Earth and development of agriculture in the

world. It has the purpose of improvement of production and processing of agricultural production, forestry and fishery, promotes investments into agrosphere, rational use of soil and water resources, fertilizers and pesticides, development of new and renewable energy sources. The FAO prepared a soil map of the world, on its initiative the World Soil Charter was adopted, international conferences on the population, food, protection of water resources were held.

UNEP (United Nations Environmental Program) – specialized agency of the system of the United Nations, the basic subsidiary organ. UNEP was created according to decisions of the Stockholm Conference of the United Nations in 1972 since which the environment problem became known in its modern version, and the day of opening of the conference – 5th of June – proclaimed the World Environment Day. Since 1972 similar conferences are held every five years.

The main goal of UNEP – coordination of international cooperation in struggle against pollution and degradation of the environment, against desertification of lands, loss of fertility by soil, deterioration of quality of waters on a global scale. It coordinates the program of the Global Environment Monitoring System (GEMS) which includes WMO, WHO, FAO and UNESCO.

UNEP's governing body is Governing Council, elected by the United Nations General Assembly for a term of four years. The Council performs functions of assistance to international cooperation in preservation of the environment, submission of recommendations about implementation of a respective policy, guidance and coordination of nature-conservation programs, constant monitoring of environmental condition in the world, assistance to the international communities in accumulation of knowledge and information on the environment. UNEP submits annual reports about its activity to the United Nations General Assembly through the Economic and Social Council. In 1985 environmental agenda for youth was drawn up. In January, 1988 UNEP appointed 12 young men from various regions of the world as youth messengers in the field of preservation of the environment. The body operates on a constant basis with headquarters in Nairobi (Kenya). There is a branch in Russia, publishes «Our planet» magazine.

UNESCO (United Nations Educational, Scientific and Cultural Organization) – specialized agency of the United Nations. UNESCO exists since 1946 to promote peace and international security, development of cooperation of countries in the area of science, education and culture for encouragement of universal respect for justice, laws, human rights, and fundamental freedoms provided by the Charter of the United Nations for all nations of the world.

One of the main activities is preservation of the environment and culture monuments. UNESCO heads the international cooperation in this area. The most known direction in the activity is a scientific program «Man and Biosphere» (MAB), adopted in 1970, it conducts researches of socio-economic factors of development and interrelation between the person and environment. Its headquarters is in Paris.

UNICEF (United Nations International Children's Emergency Fund) – international organization which deals with, inter alia, advocacy of a healthy way of life and a careful attitude towards the nature among women, children and youth. It

studies influence of environmental pollution on health of young and rising generation.

The international cooperation of the states for the purpose of protection of human environment, habitat of flora and fauna is organized under the aegis of the United Nations and on a bilaterial basis.

The necessity of international cooperation in the area of preservation of the environment is dictated by the fact that the states are in ecological dependence on each other.

Therefore in Rio de Janeiro in 1992 from a rostrum of the United Nations Conference on Environment and Development there was the Statement by Maurice F. Strong: «We will survive together, otherwise nobody will survive.»

Appendix G

The international environmental organizations of Kazakhstan:

- ***Ecological Society Green Salvation***
- ***public organization "posadiderevo.kz"***
- ***public association the Karaganda regional ecological museum***
- ***public association «ecoobraz».***

Ecological Society Green Salvation

The Ecological Society Green Salvation was founded in 1990 and is registered as a public organization of the city of Almaty. The Society's goal is to protect the human right to a healthy and productive life in harmony with nature, and to foster improvements to the socio-ecological situation in the Republic of Kazakhstan.

The organization is guided by the following principles in its activities:

– universality, indivisibility, interdependence and interconnection of all human rights;

– observance of rights of both the present and future generations to a healthy and productive life in harmony with nature;

– necessity for general ecological and environmental education;

– compulsory cooperation between government bodies, business corporations and the public in solution of environmental problems.

Membership in the organization assumes personal initiative and participation in a specific work. Employees of the Greeen Salvation – people of different occupations who combine their organizational work with their professional activity. Honorary members and volunteers make a substantial contribution.

Main directions of activity of the Ecological Society Green Salvation:

1. Protection of citizens' rights to favorable environment.

The organization defends rights using pretrial and legal methods, seeking observance of national legislation and international agreements. Among the organization's most important activities are lawsuits concerning nonreporting information by «Kazatomprom» and statistics bodies; recognition of the invalidity of the state environmental assessment's conclusion for the project to construct a 110-kV high voltage power line in the Mountain Giant District and resumption of work of a Plant for Construction Materials and Structures. On average, eight statements of claim are filed annually and dozens of legal consultations are held.

In 2004 and 2007, Green Salvation had to appeal to the Aarhus Convention's Compliance Committee. In two cases the Committee acknowledged noncompliance with a number of Convention statutes in the Republic of Kazakhstan and violation of citizens' rights to participate in decision-making processes and to access to justice with regard to environmental concerns.

2. Participation in the development of environmental legislation.

The organization took part in the official discussion of the Law «On Protection of the Natural Environment in the Kazakh Soviet Socialist Republic» (1991) and the laws of the Republic of Kazakhstan «On Environmental Protection» (1997), «On Environmental Assessment» (1997), «On Specially Protected Natural Territories» (1997 and 2006), «On Land» (2001), «On Tourist Activities in the Republic of Kazakhstan» (2001), the Land Code (2003) and others. In 2002, at the request of the Committee for Environmental and Nature Management Issues of the Lower House of Parliament, the organization made a public environmental apraisal of the draft of a Forestry Code (2003).

3. Ecological and environmental education.

Since 1995, the organization has been publishing the «Green Salvation» Bulletin, its supplement in English «Green Salvation» Herald comes out from 2000. The thematic issues deal with environmental legislation and protection of human rights, ecological education, development of national parks and other socioecological problems. There are special courses and teaching manuals for students. Over 30 publications in Russian, Kazakh and English languages have been issued up to date.

Green Salvation collaborates with Kazakhstan and foreign media, participates in TV and radio programs, and organizes exhibitions.

In 2002, a video program of the organization emerged. Such films as «Legacy of the Nuclear Age», «The Riches of Nature—In Whose Hands?», «Passengers in Forgotten Way Stations», «Canyon», «The Earth Does Not Belong to Man…» et al were shot. Several of them were awarded prizes at international festivals, kept in the Central State Archives of Films, Photographs and Sound Recordings of the Republic of Kazakhstan.

There is a discussion club «Green Lens» from 2007.

In 2002, it launched a website in Russian and English.

4. Environmental actions.

Green Salvation actively takes part in actions directed on preservation of integrity of ecosystem of protected natural territories. The organization is collaborating with the Ile-Alatau State National Nature Park administration. There is a constant video monitoring on its territory. Together with the environmental club «Berendei» (Kapchagai), summer environmental schools were organized in the park.

The organization took an active part in anti-nuclear campaign against plans to import and bury radioactive waste from other countries in the Republic of Kazakhstan. In 2009 it has successfully carried out an action against construction of high voltage power lines on territories of the Charynsky State National Park and Altyn-Emel National Park. It took part in the international campaigns: International Right To Know, Publish What You Pay and Caspian Revenue Watch.

The organization actively monitors projects of development banks and activities of of transnational corporations, influencing the environment.

5. Gathering data concerning environmental situation in the Republic of Kazakhstan.

In the electronic database, library and video collection of the organization there are various documentary, reference and teaching materials. They are used by activists of nongovernmental organizations, specialists, instructors, students and schoolchildren.

The Ecological Society Green Salvation calls for cooperation for the sake of the Earth!

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Republican public association "PosadiDerevo.kz"

- public organization which main task is preservation and improvement of vegetation of the country.

The association deals with environment protection, teaching population to be environmentally responsible. The organization gives talks on meaning of the environment with school kids, conducts actions to plant and care of trees for all comers. RPA "PosadiDerevo.kz" often acts as an organizer and coorganizer of various events directed on development of the country in environmental, cultural and social spheres. The organization actively participates in a public life of the city and unites people who care about the destiny of the planet. At present there are branches of "PosadiDerevo.kz" in such cities as Almaty, Astana and Karaganda.

Ecoobraz -

promotes sustainable development of the Republic Kazakhstan through drawing up and implementing respective educational programs. The organization was created in 1995 as part of Karaganda EcoCenter. In February, 1998 Public association the Center of Coordination and Information on ecological education "EcoObraz" (Eco image) is registered in the Department of Justice of the Karaganda region. Since 2006 EcoObraz is Associated members of the Foundation for Environmental Education (www.fee-international.org)

The short description of projects is given below.

SPARE (School project on application of resources and energy). It was created by the Norwegian Society for the Conservation of Nature (Norges Naturvernforbund) in 1996 and in several years it spread to dozens countries of the world (Norway, Scotland, Finland, the Baltic countries, Poland, Hungary, Russia, Uzbekistan, Tajikistan, Armenia, Azerbaijan, Belarus, Moldova and Ukraine).

SPARE appeared in Kazakhstan in 2000, and two organizations became coordinators of this project in the republic: Public association Karaganda «EcoCenter» and Public association «EcoObraz».

All participants of the School Project for Application for Resourses and Energy (SPARE), and this is thousands of girls and boys worldwide, tell about its urgency and practical importance. SPARE does not simply form environmental culture and

outlook of school kids, it helps them to get practical results here and now. Participants of SPARE investigate power consumption at school and at home, analyze it, look for actual ways to save it and whenever possible, introduce them in practice, that, certainly, substantially strengthens educational function of the project. Kids realize a close relation between domestic power consumption and environmental problems due to the received knowledge and experience.

According to the teachers participating in the project, the given project has successfully complemented the school syllabus of ecology, physics, valueology and biology, has united inquisitive children in circles and groups. The absence of rigid frameworks in the project allowed educators to use various forms and methods of training that made work under the project more interesting. SPARE does not simply give to kids new knowledge, it provokes interest to scientific researches and practical application of this knowledge in them. Besides, both teachers and students note such rather important fact as collaboration of schools participating in the project which stimulates schools to achieve more and more, let them feel that «we are not alone in it.»

SPARE objective - make kids environmentally conscious and draw attention of the public to problems of energy use, saving of energy and power resources, preservation of the environment. SPARE is much more, than just an ordinary school program. The project not just gives to kids knowledge about energy and its interrelation with environment, it creates motivation for saving of resources and energy, teach skills of environmentally stable and safe life style, involves school kids in useful activity on energy and resource saving, stimulates interest in them to scientific researches and practical application of the knowledge, received at school. It is rather important as today's school kids tomorrow will become specialists making decisions. As schoolchildren from many countries take part in SPARE project there is presence effect and feeling of active participation in an important business of international importance.

Climate saving

Climate change problem - one of the most acute global environmental problems demanding to take quick and urgent measures. One of such measures is growing understanding of the population and, in particular, of school kids and youth, the reasons and consequences of climate change, and also methods of easing of these consequences.

PA “EcoObraz" has carried out, is carrying out and plans to continue projects in the area of spreading knowledge and technologies, helping to stop climate change processes.

Actions carried out within the limits of projects allow improving knowledge, skills and means available to teachers and allowing them to train in an efficient way the present and future generations of schoolchildren energy use and climate change problems. The teachers having such knowledge and skills teach issues of climate change and greenhouse effect more effectively. Youth becomes more interested in environment problems; the rising generation is supplied with an appropriate,

interesting and modern material. Schoolchildren are encouraged to be more active in global environmental issues.

Among projects already carried out in this area – "Design and introduction of educational materials on climate change in the State and Russian languages in secondary schools of Atyrau and Mangystau oblasts", funded by the Program of Small Grants of the Global Environmental Fund and carried out in partnership with the the Regional Ecological Center of the Central Asia, "Save energy – save climate" (supported by JP Morgan and Landrover). The rest of current projects of the organization more or less deal with climate change issues as well.

Eco-Schools

– program of environmental management and certification and training for sustainable development for schools. Its comprehensive approach based on participation and involvement and combination of teaching and actions makes the program an ideal way for schools to embark on a meaningful path towards improving the environment in both the school and the local community while at the same time having a life-long positive impact on the lives of young people, their families, local authorities etc. (part of program definition on its international site www.eco-schools.org)

The Eco-Schools program in Kazakhstan is supported by the Ministry of Education and Science of the RK and the Ministry of Environmental Protection of the RK.

Having become the participant of the program, the school will receive: special teaching and auxiliary materials regarding how to take part in the program, international certificate of the participant of the program, information and moral assistance from the National Operator of the program.

How is the program run at school? To become successful and receive an international award of the program – the Green Flag and the certificate, it is necessary to take 7 steps. 7 steps – 7 elements of the program – include Eco-Committee formation, carrying out an environmental review of the school, drawing up and implementation of an action plan, monitoring of its execution, introducing in curricula sustainable development issues, involvement of community and formulation and introduction of the Eco Code of the School.

It is necessary for a school to be registered to take part in the program. It is possible to address concerning registration or program implementation at school to the National Operator of the Eco-Schools program in the Republic of Kazakhstan by the electronic address: ecoschools@ecoobraz.kz or by phone (7212) 91-10-79.

After registration a school will receive a package of documents with explanations and advices how to run the program at school as well as the international certificate of participation.

National Operator of the Eco-Schools program in the Republic of Kazakhstan Maria Zhirkova and team of PA «EcoObraz»

Eco-Schools program partners in the RK

- *Field Studies Council Environmental Education* www.field-studies-council.org
- *Norges Naturvernforbund* www.naturvern.no
- *The GEF Small Grants Program*
gefsgp.un.kz
- Karaganda Regional Ecological Museum
www.ecomuseum.kz
- Regional Ecological Center of the Central Asia (Almaty, Kazakhstan)
www.carec.kz
- PCF «Lutchik nadezhdy» (Ray of Hope)

Public charitable foundation dedicated to give assistance to handicapped children and families where they are brought up «LUTCHIK NADEZHDY» (Kazakhstan, Karaganda)

- Public association “Otrazhenie" (Reflection) (Temirtau, Kazakhstan)

The organizations - members of SPARE network

– The Azerbaijan Youth Movement (Baku, Azerbaijan)
– NGO Eco-club "Tapan" (Ark) (Yerevan, Armenia)
– CRCT "GUTTA-CLUB" (Chisinau, Moldova)
– IPA “Ecoproject Partnership" (Minsk, Belarus) spare-belarus.by, www.ecoproject.by
– Environmental association "Za Zemiata" (Sofia, Bulgaria) www.sparebulgaria.com, www.zazemiata.org
– Sustainable Development Union «Ecovision/Ecokhedva»(Тбилиси, Грузия) www.ecovision.ge
– Environmental movement BIOM (Bishkek, Kyrgyzstan) www.biom.org.kg
– "Proaktiva" (Skopje, Macedonia) www.proaktiva.org.mk
– IPYEO "Friends of Baltics" (Saint-Petersburg, Russia) www.baltfriends.ru
– Environmental Organization “Little Earth" (Dushanbe, Tajikistan) www.seu.ru/members/fe/
– ADEK (Tashkent, Uzbekistan)
– Eco-club «Eremurus» (Kyiv, Ukraine) www.eremurus.org

Photocompetition «Miracles of the Caspian Biodiversity»

- stage of the School Caspian Biodiversity Project – directed on increase of school kids’ awareness in Atyrau and Makat about local species of animals and plants and expansion of educational tools of teachers of the region concerning biodiversity.

The School Caspian Biodiversity Project and Photocompetition «Miracles of the Caspian Biodiversity» are organized and carried out by Public association «EcoObraz» in partnership with The Field Studies Council Environmental Education at financial and information support of Agip KCO.

Young reporters for the environment/YRE - program of the the Foundation for Environmental Education, which associated member PA “EcoObraz" has been since 2006.

Program goals:

– increase pupils’ initiative in own education;

– give an idea about the professional world;

– develop skills of collection and processing of information;

– promote understanding of necessity of a sustainable development and an active civic stand;

– establish new relations between pupils and teachers.

Young Reporters for the Environment program is

– international network of cub reporters;

– more than 500 schools from 17 countries of Europe and Africa;

– media coverage of environmental issues;

– search for solution of global and local environmental problems;

– youth’s awareness of one's role in global environmental processes;

– pupils’ ability to affect environmental condition of their region.

In Kazakhstan Young reporters for the enviromnent program has been run by Public association “EcoObraz" throughout more than 2 years.

For this time project participants made over 15 journalistic investigations and as result, more than 15 articles dealing with environment were published.

There are educational seminars and trainings on basics of journalism for participants of the project several times per month.

YRE in Kazakhstan:

38 schoolchildren from 11 schools of Karaganda and Karaganda oblast participated in the program;

3 articles were published in the international edition «YRE Book 2008»

Young Reporters for the Environment take part in publication of the youth environmental magazine “Ya i Zemlya” (I & Earth). In the magazine there is a special item where YRE articles are published.

At the end of school year the young reporters, the most active participants of the program, are awarded honorary diplomas and gifts.

«Learning About Forests»

At present the project is in the pipeline in Kazakhstan. One can learn how the project is run around the world at the site *Learning About Forests.http://www.leaf-international.org/*

Youth environmental magazine «Ya i Zemlya»

This magazine meant to increase the level of young people’s awareness – very important part of civil society - concerning ecology, a sustainable development and access to environmental information.

Magazine pages deal with environmental situation in the world and Kazakhstan, acquaint with results of researches of Young Reporters for the Environment (YRE),

and inform, how one can participate in solution of global and regional environmental problems.

The magazine is created with participation of young people and for young men!

«AGE» (Another Generation for the Environment) training center - youth organization formed using facilities of the Center of Ecological Education «EcoObraz».

The purpose of volunteers of the center – informing the population on existing environmental problems and a role of every person in their solution by means of various measures: actions, seminars and campaigns.

The TC's structure includes young people with an active civic stand, wishing to improve environmental condition.

Volunteers of the center by means of interesting actions involve the population in process of preservation of the environment; teach at household level to make actions which will favourably influence region ecology.

The AGE cooperates with large environmental organizations of Kazakhstan, Uzbekistan, Tajikistan and Kyrgyzstan.

Appendix H

RECOMMENDATIONS

for the International Crisis Conference participant countries
developed on the results of the panel session "Sustainable Energy Strategy for Future
Kazakhstan up to 2050"
VII Astana Economic
Forum
Astana, Kazakhstan
22-23 May 2013

Recommendation 1: "Green growth" National Strategies development

To develop regional and national strategies of the transition to a green economy for "green growth" accelerating we encourage basing on the UN Conference on Sustainable Development Rio +20 "The future we want" outcome document and Sustainable Energy for All UN Initiative.

Almost all countries in the world have contributed to the UN Conference on Sustainable Development Rio +20 outcome document. This gives hope that the global energy and environmental problems will be solved by considering this document, and we offer while "green economy" national, regional and global programs developing to focus today on the outcome document of Rio +20.

Sustainable Energy for All Initiative was launched by the UN Secretary General with the goals of poverty and beggary eradication through providing by 2030 access to everyone on the planet to the basic minimum level of energy services; twice increasing the global energy efficiency, and doubling the share of renewable energy in the global energy balance.

The Concept of the Republic of Kazakhstan for the transition to a green economy was approved by the President of the Republic of Kazakhstan Decree (May 30, 2013 N» 577). Achievement of the indicators are envisaged according to which the Concept, i.e. to increase the share of alternative and renewable electricity in the total country energy balance up to 50% by 2050; to reduce the energy intensity of GDP until 10% by 2015 and till 25% by 2020 comparing to the baseline in 2008.

We recommend to the participating countries of the International Crisis Conference while formulating actions in national, regional and national programs of green growth to focus on Global Agenda, developed by the High-level Group to implement Sustainable Energy for All UN Initiative taking into account national and regional specificities.

We also call for the financial resources provision to the developing countries to achieve the Initiative's objectives with a cost-effective basis.

Recommendation 2: Active participation in the Future Energy EXPO-2017

Further use of Energy Future Expo-2017 Pavilions is planned under Nazarbayev University laboratories, the Kazakhstan's as leading world scientific and educational cluster with the future energy specializing.

Therefore quite logical an offer for the international community to represent their best clean energy and green growth developments at Expo-2017, taking into account their possible beneficial use as future laboratories of the Energy Future knowledge new system. Taken together they can become a world center for innovation and knowledge in the future energy field, a triple helix of relationship: business, universities and government.

Recommendation 3: To hold an international competition to develop a stand-alone renewable power with 3 kW capacity at the EXPO-2017.

Development of low cost autonomous personal renewable energy sources that can provide electricity for one house is a very promising area for business. Showcasing the best of them at EXPO-2017 will enable businesses to choose the best of them for production, which in turn, will enhance access to consumers.

The list of potential consumers:

1. Solitary villages, cottages, farms and hamlets lacked centralized power.
2. Solitary objects of telecommunications (including repeater towers cellular operators), navigation software, where the centralized power supply is difficult, impossible or deprived of economic sense.
3. Solitary objects of state agencies: the Army, Border and Rescue Guard, etc.
4. Private farms.
5. Catering facilities along the routes or places where centralized power supply is difficult, impossible or deprived of economic sense.
6. Recreational facilities: cottages, lodges, camp sites, etc.
7. Vehicles used for recreation – yachts, trailers, buses cottages.

Recommendation 4. To establish an international prize for achievements in the field of Sustainable Energy for All.

The Nobel Prize in the science field stimulates development and expands access to its results. It is reasonable to establish a similar award in the Republic of Kazakhstan under the auspices of the UN in the field of Sustainable Energy for All and awarding ceremony to be organized at EXPO-2017 in Astana.

Sustainable Energy for All Initiative launched by UN Secretary General, today is the most effective global program in the field of energy and actively implemented worldwide. Establishment of the international award will promote objectives and further development of the Initiative.

Recommendations
to the Government of the Republic of Kazakhstan

developed basing on the results of the "Sustainable Energy Strategy for Future Kazakhstan up to 2050" panel session in the framework of the VII Astana Economic Forum
Astana, Kazakhstan
2014 May 22-23

Recommendation 5. Kazakhstan's support of the Sustainable Energy for All UN Initiative

We recommend to the Government of the Republic of Kazakhstan:

To send an appropriate letter to UN Secretariat for the Sustainable Energy for All Initiative official support

To consider and adopt an appropriate national strategy based on the Concept Sustainable Energy Strategy for Future Kazakhstan up to 2050;

Currently more than 70 countries and 150 business representatives supported this Initiative voluntarily, accepting the obligations.

Given the active Kazakhstan's position at Rio +20 and the Energy Future EXPO-2017 it is quite logical Kazakhstan's official support for Sustainable Energy for All UN initiative, due to its basic ideas adopted by Kazakhstan and implemented already in the Republic of Kazakhstan transition to green economy Concept.

Recommendation 6. Integrated use of mineral energy sources in Kazakhstan.

In addition to significant potential in traditional energy sources - oil, gas, coal and renewable energy sources - solar, wind and water, Kazakhstan has huge reserves of mineral sources of energy such as uranium ore, shale gas, lignite, coal bed methane and other.

In 2050 perspective and subsequently, each of these above mentioned mineral energy sources has strategic importance in crisis exhausting situations.

Integrated use of all energy sources in Kazakhstan should be the basis of the energy Anti-crisis Plan of the country. It is important today to begin work on the sources refinement and development of technology to obtain pure gas and coalbed methane from oil shale and lignite.

Recommendation 7. Legal fundamentals for sustainable energy

We recommend the Government of Kazakhstan to improve the legal fundamentals for the development and renewable energy sources use, in order to develop Kazakhstan's leadership in the field of sustainable energy of the Central Asian region.

Kazakhstan was one of the first in the post-Soviet space to begin the electricity industry renovation.

Decree of the President of the Republic of Kazakhstan dated May 30, 2013, N« 577 approved the Concept of the Republic of Kazakhstan to transit to a green economy. According to which it is envisaged to increase the share of alternative and renewable electricity in the total energy of the country up to 50% by 2050; and

energy efficiency there is the task to reduce energy intensity of GDP by 10% by 2015 and by 25% by 2020 compared to in 2008.

Decision of the Government of the Republic of Kazakhstan dated August 29, 2013 Ne 904 approved the “Energy 2020” Program.

Analysis of the current state of the electric power industry of Kazakhstan has identified a number of legal issues to ensure sustainable energy, which require to be resolved:

1. Mechanisms to attract the foreign investments to ensure the construction of new generating facilities are not developed;
2. State guarantees for sustainable energy development are not designed;
3. The State has not defined a long-term transparent pricing policy for electricity after the abolition of tariff increases in 2016;
4. Centralized trading market of power does not work adequately, also there is no competition and the consumer's right to choose their electricity supplier in the retail electricity market;
5. There is no separate body as authorized ministries (agencies) for energy, which would be able to regulate and coordinate all aspects of sustainable energy;
6. The legal aspects to use renewable energy sources in Kazakhstan by foreign companies and individuals are not worked out.

These actions implementation will promote clean energy development in Kazakhstan and demonstrate the country’s commitment to the future energy to the world.

Answers to crossword and word search puzzles

Crossword

Across:
1. incentive
3. chemical
4. noise
5. communicated
6. consumerism
7. stimulus
8. motive
9. sustainable
10. ecomark
12. disposal
15. sympathy
20. cosmetotextile
22. crisis
23. market
26. compulsory
27. global
29. multidirectionality
32. backing
33. rational
35. local
36. analytical
37. situational
38. innovator
40. competition
42. requirement
43. laggard
44. obligation

Down:
1. indifferent
2. environmentalism
3. commercial
4. ecoturism
11. nonprofit
13. motivation
14. analogy
16. price
17. attribute
18. risk
19. quality
21. equilibrium
24. convenience
25. green
28. light
29. moral
30. collapse
31. biological
34. Japan
35. safety
39. image
41. brown

Word search puzzle 1

ecomark
biological
crisis
communicated
market
brown
stimulus
sustainable
local
nonprofit
equilibrium
image
convenience
indifferent
Japan
multidirectionality
compulsory
analogy
environmentalism
hierarchy
situational
laggard
rational
noise
commercial
safety
light
need
incentive
consumerism
attribute
sympathy
backing
risk
competition
innovator
collapse
disposal
motive
obligation
moral
analytical
green
motivation

Word search puzzle 2

obligation
laggard
indifferent
sympathy
global
backing
motive
environmentalism
noise
incentive
analogy
convenience
attribute
stimulus
quality
crisis
competition
disposal
nonprofit
commercial
equilibrium
local
motivation
innovator
Japan
safety
compulsory
multidirectionality
collapse
chemical
situational
sustainable
ecoturism
consumerism
analytical
moral
risk
biological
image
communicated
price
rational

Educational edition

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Ossik Yuriy Ivanovich

GREEN MARKETING

Workbook

Cover design *Yu.A. Volkovitch*

Printed from the authors' original

Signed to print 21.04.2016 y. Format 70×100 1/16. Offset paper.
Volume 9,25 p.sh. Circulation 500 copies. Order № 361.

Printed at Publishing house of Ye.A.Buketov Karaganda State University
100012, Karaganda, Gogol Str., 38. Tel. (7212) 51-38-20