Deutsche
Bundesstiftung Umwelt

Nordkirche

Guidebook

Climate protection activities implementation in the Churches of Ukraine

Guide - buch

Empfehlungen zur Umsetzung von Klimaschutzaktivitäten in den Kirchen der Ukraine

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1. About this guidebook

This Guidebook was developed in the framework of the project “Climate protection activities of Nordkirche in Germany” (“Klimaschutz-Engagement der Nordkirche in Deutschland”). The project was conducted in the Environmental Bureau of the Evangelical Lutheran Church in Northern Germany (further - Nordkirche) as a part of the German Environmental Fund Scholarship Program by Deutsche Bundesstiftung Umwelt (DBU). The main objective of the project was to study the climate protection activities of the Church in Germany on the basis of the Climate Protection Bureau of Nordkirche (Klimaschutzbüro der Nordkirche) at Environmental Bureau of Nordkirche (Umweltbüro der Nordkirche) for the further successful adaptation of the studied programs, approaches and initiatives in the Ecological Commissions of the Churches of Ukraine and Ukrainian interreligious environmental organizations, as well as to develop the recommendations for the successful adaptation of the German experience of Nordkirche in the field of climate protection in the Churches of Ukraine and Ukrainian interreligious environmental organizations.

The Guidebook consists of two parts. The first part contains the recommendations about the initialization of climate protection activities and the step-by-step recommended implementation scheme of the climate protection management system in the Churches of Ukraine. The second part contains basic recommendations for the implementation of model climate protection projects in 4 areas of implementation:

- 7 projects in the field of Education (Education Sphere);
- 1 global project in the field of Environmental Purchase (Purchasing Sphere);
- 8 projects in the field of Transport (Transport Sphere);
- 9 projects in the Real Estate Sphere.

Model climate protection project – it is the conception/the type of climate protection project, which in practice has its own features of implementation depending on external factors.

Additionally, the selected projects in the field of Transport and Real Estate were ranked in the order of their implementation priority in the Churches of Ukraine and interreligious environmental organizations, based on the results of the expert evaluation of projects in the field of Transport and Real Estate with the involvement of a group of 9 experts (5 PhD and 4 MSc) in the implementation of energy efficiency and environmental projects in Ukraine, as well as on the basis of assessing the macro-environment of Ukraine and Germany using the STEPE-analysis methodology.

2. Organization of climate protection activity in the Churches

Only by using a systematic approach for organizing the climate protection activities in the Churches of Ukraine it's possible to ensure the effective functioning of all structural units of climate protection church management, as well as creation of the most favorable conditions for the rapid implementation of future projects. Based on the analysis of the Nordkirche climate management system, a 5-step conceptual scheme was proposed (Fig. 1) for the implementation of climate protection activities in the Churches of Ukraine. Such approach will allow efficiently and consistently to build a Climate protection engagement system for successful implementation of climate protection projects.

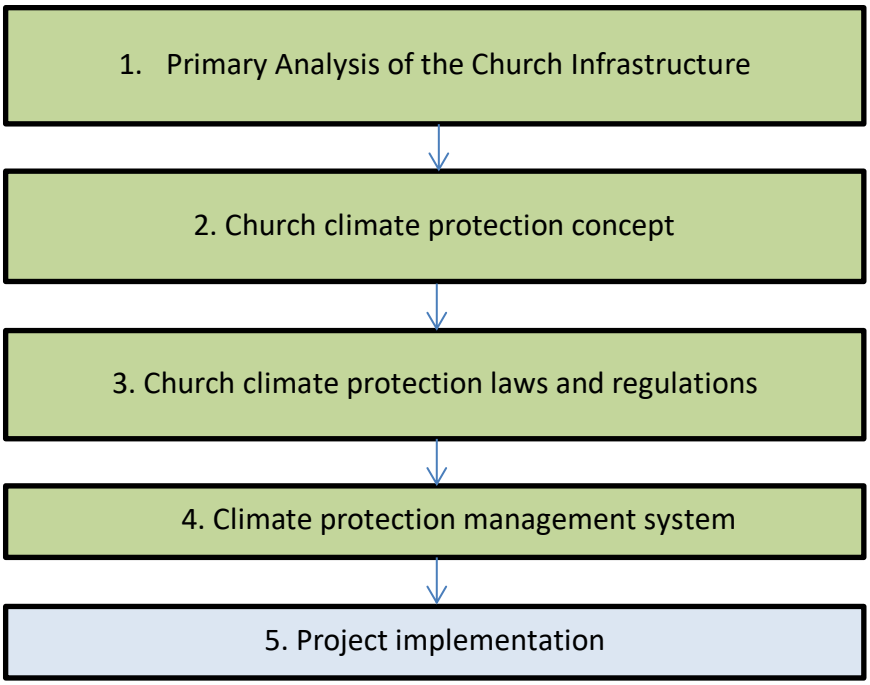

Fig. 1. The 5-step scheme for the implementation of climate protection activities in the Churches of Ukraine

2.1. Primary Analysis of the Church Infrastructure

Stage 1 “Primary Analysis of the Church Infrastructure” is the initial basic stage. After the initial unofficial interest of the Church or its individual representatives in a rough approximation, an initial assessment of the current Church infrastructure is carried out in order to determine the scope of further climate protection activities. This stage

includes determining the possible place of the environmental bureau or climate protection bureau in the existing management structure of the Church; the creation of a working group and the appointment of a leader, who all together will be responsible for the implementation of climate protection activities. This group should develop a preparation plan for the implementation of climate protection activities, identify potential best partners and engage in communication with third-party organizations to fulfill the tasks. It is also desirable to determine the reporting procedure and deadlines for completing the creation of the climate management system in the Church.

2.2. Church climate protection concept

Writing a climate protection concept is important in terms of avoiding the chaotic implementation of climate protection projects and the non-effective climate protection management. For writing the concept, it is recommended to cooperate with professional research institutions and universities by the model "Customer - Performer" (respectively, the Customer is the Church, the Performer - a professional institution). Both full financing at the expense of the Client and partial financing as a research project involving national and international grant funds are possible. It is also possible to receive state support under the financing grant programs of various ministries. The climate concept should include:

- Detailed analysis of the existing Church infrastructure and management system in terms of the implementation of climate protection activities;
- Identification of specific tasks and goals of climate protection activities;
- Description of the recommended system of climate protection church management;
- Description of possible climate protection projects and effectiveness of their potential implementation according to the available material base.

For successful creation a climate protection concept and obtaining the most objective results, it is recommended that the concept developers need to have free access to accounting information at all church levels.

2.3. Church climate protection laws and regulations

In fact, the announcing the implementation of climate protection projects at the highest Church level allows to give the climate protection activity an official and systematic character, as well as to ensure the permanent character of the project implementation. It is desirable to adopt a decree of the highest Church executive

Council, and additionally to receive the approval from the Head of the Church or in some cases Heads of large structural units of the Church (eg, bishop, metropolitan, mufti, etc.). In general, such Law or Regulation should preferably include:

- Declaring the importance of climate for the Church;
- Formulating the main objective of climate protection activity - both global (e.g. Care of Creation) and more specific (e.g. for Nordkirche - achieving CO_2-neutrality by 2050);
- The general information about the Church climate protection management system (which departments/groups will be established, at what church level, etc.);
- The information about sources of funding for climate protection departments / groups and projects;
- Some details of the system planning, such as reporting regulations, frequency of reporting meetings, details of short-term planning and control, etc.

In general case, the practical aspects of implementing climate protection activities can be fully based on the climate protection concept. That fact should also be reflected in the regulation/law. In this case, the climate protection concept and the church climate law/regulation should be the basis for the implementation of all the climate protection activities of the Church.

2.4. Climate protection management system

The next step is to actually create the workplaces according to the basic documents. In the general case, as noted above, the climate protection concept of the Church and, accordingly, the church law/regulation should contain a substantiated model of climate protection management system. A well-chosen management model is an important element in ensuring the high efficiency of all parts of the system.

More "vertical" governance models are suitable for Churches with a clear vertical hierarchical form of government. The advantages of this model are the relatively faster implementation of the tasks by the system "Leader - Responsible Executor - Executor", and the possibility of ensuring on the lowest Church structure level the obligation to execute decisions made at a higher Church structure level. However, the effectiveness of this model is influenced by the human factor (namely, the activity and professionalism of higher-level employees) and the degree of bureaucratization of climate protection units.

More "horizontal" variations in the management structure would be appropriate for Churches with a high degree of decentralization. The advantage of this model is the active involvement of the community in the implementation process of the climate

protection activities and in the decision-making process, but climate protection activities in this case due to the system of “Customer - Consultant and Contractor” relations will depend on the initiative and interest of the local community.

Both the "vertical" and the "horizontal" management models need to have clearly defined job descriptions that will minimize bureaucratic difficulties, especially when contacting other departments within the Church. Depending on the proposed model, a recruitment of qualified motivated workers of the natural/environmental specialties, which are interested in the implementation of climate protection projects, have to be conducted for the newly created jobs.

2.5. Project implementation

Successful implementation of the climate protection projects should be the main task of the entire Church climate management system at the same level as educational activities. Of course, a wide range of possible projects is in need of detailed adaptation on a case-by-case basis, depending on the place of implementation and local features. The selection of possible promising projects can be done through the implementation of internal tenders of projects on the principle of "lowest possible cost - maximum possible result". In this case, the main idea is to achieving the most balanced ratio of investment funds and the magnitude of the result obtained.

Of course, the Church is not a profitable organization, and the main task for the Church is not the expected financial profit from the project, but the expected positive environmental or climate impact. However, for non-educational projects which replace the Church's material fund, namely in the areas of energy efficiency, Real Estate and Transport, it is advisable to carry out an economic analysis of each project: to calculate such standard economic indicators and financial indicators as: CAPEX/OPEX, Net Present Value (NPV), Discount Profitability Index (DPI), Internal Rate of Return (IRR), Payback Period, etc. It is also mandatory to make a predictive assessment of the CO_2 emissions reduction potential as an indicator of reducing anthropogenic impacts on the climate. Thus, by comparing the investment and financial characteristics of the project with the obtained positive climate effect, a reasonable comparison of climate protection projects and the selection of the best ones are making.

An important issue for the Churches of Ukraine and inter-religious environmental organizations is finding possible sources of funding. The project can be implemented both in full church funding and with partial funding through international grant funds and international cooperation and support programs. It is also possible to involve local authorities on the ground and seek government programs for climate support from the Ministry of energy and environment protection of Ukraine, the Minister of

Infrastructure of Ukraine, etc. In the case of significant capital projects, one of the options is also the development and submission of joint project applications for tenders from European investment organizations such as the EBRD, etc. with the partner (and the main executor of the project) . Also, at the beginning of the project implementation, it is necessary to determine the duration of project implementation, the procedure for interim and final reporting, as well as the persons who should be responsible for the implementation of the projects.

3. Church climate protection projects

3.1. Education Sphere

The implementation of all projects in the Educational Sphere is the one of the highest priorities of the climate protection activities of the Churches. Educational projects are aimed at raising awareness of the community and parishioners of the Church and have the greatest direct social impact. It should be noted that all projects in other areas should also be accompanied by the dissemination of information on web-portals and printed materials and, where possible, educational activities among parishioners and encouraging people to participate actively

Model projects in the field of Education:

1) *Conducting seminars and workshops for the parishioners and Church staff on climate change and Care of Creation*

This model project is important in terms of integrating people and explaining the causes and consequences of contemporary climate change and the role and purpose of the Church in counteracting the negative effects of these changes. Workshops and seminars can be targeted at different age categories - from preschool to adult. Third-party specialists, such as climatologists/environmentalists/physicist/etc. from universities, environmental organizations and research institutions may be involved in this process. Additionally, the creation of related online resources with video and audio is a very effective educational tool, as well as printed information materials, which illustrates the topic well and helps the people more easily understand climate change issues in ordinary words.

2) *The publishing of educational literature on climate change and Care of Creation*

This project is aimed to create textbooks and training materials for people of all ages (from children to adults) on climate, environment and Creation. Depending on the subject matter, the writing of the books may involve climate experts and theologians from third-party organizations. It is also possible to cooperate with foreign colleagues and translate/adapt existing foreign literature.

3) *Creating online libraries*

Creating open online resources is important for enabling self-education for parishioners. In fact, the essence of this model project is the creation of convenient

interactive websites for people of all ages, where they can freely get acquainted with popular science and educational literature at a convenient time for them. Different approaches are possible to differentiate books by topic (climatology, hydrology, atmospheric pollution, creation protection, etc.), material complexity, etc.

4) *Creating open public libraries in the Church buildings*

In order to disseminate printed information to the public, it is promising to create public open libraries - specialized places where anyone can pick up a book/booklet for reading. This is especially effective for the Church buildings located near park areas and recreation areas. Part of this project idea may be to create a so-called "mobile library" or "library on wheels" - a specialized cars that can both deliver printed materials to schools/kindergartens on a scheduled terms (thus creating the ability to pick up and deliver books after reading), and also make it possible to transport the necessary correspondence to various public events.

5) *Creating ecological camps for climate change*

This model project should enable children and young people to become familiar with climate change and Creation in practice at children's and youth camps. Combining recreation, nature and active learning process, the creation of youth and children's tourist clubs, which are aimed at combining hiking and climate change issues, could be a partial case of implementation of this model idea. In general, it is also recommended to involve students interested in climate change, such as the natural sciences, or interested staff of research institutions, who are able to demonstrate and explain in practice the importance of climate change and the need for climate action.

> *Example: KlimaSail is a Nordkirche project withing the framework of the Education for Sustainable Development Concept, where youth groups aboard sailing yachts learn about the characteristics of the Baltic Sea ecosystems and explore climate change related issues. The KlimaSail team - KlimaTeamer - is made up of students from the natural, economic, social and biological sciences who are interested in climate change topics.*
> *This KlimaTeamer composition provides the appropriate professional environmental and climate educational basis for the project, and the project effectively combines educational work with the empirical element of sailing and water tourism. Additionally, youth conferences and meetings with representatives of local authorities on climate change issues and the role of human beings in the process are held in the cities visited*

6) *Creation of Church Eco-Clubs*

The purpose of this model project is to create a platform for discussion among parishioners on climate change issues and opportunities for practical project

implementation. Differentiation of environmental clubs by age is possible (for example, for youth, for all ages, etc.). Cooperation with environmental organizations and research institutions and universities on climate change and climate protection projects is recommended. In addition to purely educational discussions, it is also possible to jointly implement climate protection projects for own or grant funding. A partial case may be the creation of ecclesiastical church youth clubs in which selected projects of initiative youth will receive funding for their practical implementation.

7) *Excursions and international cooperation*

The purpose of the model project is to make excursions to various nature parks, zones, etc. - places where people can observe the beauty of nature and understand the need for its conservation, as well as industry, where parishioners can see the power of anthropogenic activity. Cooperation with foreign partners and Ukrainian environmental organizations is possible. Financing is possible both for personal and purely Church financing. In the case of the latter, it is possible to make a selection on a competitive basis (especially relevant for young people - for example, according to the results of environmental projects competitions, etc.).

3.2. Purchasing Sphere

Climate protection activities in the area of Purchasing are aimed at reducing the carbon footprint and negative impact of Churches on ecosystems through the purchasing of eco-certified products and climate-friendly products. It is necessary to take into account the impact of the full product life cycle - from production to disposal. In general, all eco-purchasing can be combined into one model project. The essence of this model project is the creation of a specialized platform to enable systematic environmental procurement at the regional level for all structural units of the Church. The categories of eco-certified and climate-friendly products can be defined depending on the scale of the climate protection activity - from office supplies and paper to food and Church paraphernalia. It is additionally desirable to create specialized databases with information on potential suppliers of eco-certified products at the regional level.

It is also important to educate the people about the need to climate-friendly products purchasing through the online publications, brochures, seminars, and more. A separate item of the Purchasing Sphere is the purchasing of green energy. The analysis of macro-enviroment of Ukraine and Germany on the basis of the STEPE analysis showed that nowadays in Ukraine, despite the high rates of renewable energy development in Ukraine in recent years, it is practically impossible to realize the purchasing the electricity from renewable energy sources for the Churches due to

unfavorable legislative, as well as economic factors. However, due to the adoption of the Law of Ukraine No. 2019-VIII "About the Electricity Market" (13.04.2017) and implementation of the new model of the Ukrainian energy market from 01.07.19, the situation with the possibility of green energy purchasing for Churches is likely to change in a few years.

3.3. Transport Sphere

According to the results of the conducted analysis, the projects in the field of Transport are to some extent inferior to the projects in the field of Real Estate from the point of priority of their implementation. This is because real estate and buildings are the majority of all the Church's estate, especially compared to church transport. All projects were ranked in the order of their implementation priority in Ukraine nowadays based on the STEPE analysis and expert evaluation method.

1. *Installation of a network of charging stations for electric cars for Church and public needs*

The main objective of the model project is to create a charging stations network for electric vehicles. Considering the continuation by the Verkhovna Rada of temporary abolition of Value-added tax and excise duty on electric transport, a significant increase of electric cars is also expected in the coming years (in 2018 according to the Ministry of Infrastructure of Ukraine their number increased by 73%). However, of course, the total number of registered cars in Ukraine still remains low (just over 11 thousand according to the Ministry of Infrastructure of Ukraine at the end of 2018), so it’s considered advisable to implement this project in large cities and regional centers.

Depending on the project budget and scale, charging stations can be used by all people (“open model”) or only by staff and visitors (“closed model”). In the case of the “closed model”, it is more economical to install a wall-box type charging station. However, at present, the Churches of Ukraine do not have their own large electric car park, so it is recommended to start this project by installing charging stations in the central districts of large cities for public use (“open model”). In general, the implementation of such a project is very important in terms of Public Relationships (PR), since the implementation of such an innovative project by the Church is completely new to Ukraine. The project also should raise the interest of the people in the Church's climate protection activities and increase awareness to climate change problem, as well as contribute to the positive formation of public opinion by non-church population.

Installed public charging stations in the public domain could be free for all public users. From the climate protection perspective it is advisable to use 100% green electricity for charging, thus increasing the efficiency of reducing CO_2 emissions in the Well-to-Wheel cycle. As noted above, the green energy purchasing is practically impossible to implement now, however, given the recent legislative changes regarding the energy market model, the situation may change in a few years.

The project model could be similar to such projects of Nordkirche with a few changes:

a) Installing the charging station at the expense of full Church investment. The technical part (installation, administration, maintenance) can be performed by the contractor. Billing to a third party electricity provider is also possible. In this case, the payment only covers the cost of operating the charging station.

b) Cooperation with local utilities. The advantage of cooperation here is the possible cost sharing. For example, installation and maintenance of equipment is provided by the Church, electricity - by local utilities.

c) Installation of the station with grant funding. This point is similar to point (a), but funding will be provided mainly by the third-party funding organizations. In addition to finding an investor, the project development and the climate protection efficiency calculations are of great importance here. Also these points also will increase the project's competitiveness and directly affect the results of project selection for financing.

2. *Use of special software packages to optimize the choice of routes, as well as to cooperate and make joint trips with Church staff*

This model project is aimed to reduce the single trips amount of Church employees and, as a consequence, the CO_2 transport emissions through the online cooperation of employees. Thus, instead of using four cars for, for example, 5 different people, employees with the help of a special software package can cooperate and travel with the only one vehicle. For the implementation of such a model project specialized software (for example, the TwoGo software package) with an online travel search tool is recommended for church workers. In the future, it is possible to expand the target audience of the project also through the involvement of believers in this initiative.

3. *Carsharing and creation of a system of collective use of electric cars*

The idea of the model project is to create Church carsharing system of electric cars. Of course, the maximal positive environmental effect of electric vehicles is only achieved if the battery is charged with green electricity. However, as noted above,

this is almost impossible to provide in Ukraine at the moment, so it is necessary to conduct / study the researches of electric vehicles impact on the climate by indirect CO_2 emissions before choosing an electric car to form an auto park. Electric vehicles for creating an auto park can be leased. Considering the features of the electric cars infrastructure in Ukraine, it is recommended to start implementation of this model project in large cities and regional centers. There are two variants of the project implementation:

a) Carrying out the work for the Church's own employees. In such a case, leased or purchased electric cars are fully supplied by the Church. A special work calendar should be created in which employees can book an electric car for work trips.

b) Public car usage. In this case, residents of the city can rent electric cars for their own use. It is convenient to make an hourly reservation through the created online portal. Of course, public carsharing also requires a system of registration and the identification system. Variations in membership fees, such as their size, and hourly fees are also possible. Thus, membership dues and money for use are aimed to ensuring the full maintenance of the electric car and its service.

3. Creating a bicycle sharing system

The idea of the model project is to create a kind of church bike-sharing. This requires the creation of a bicycle park (electric bicycle or regular bicycle), as well as the purchase of additional accessories such as a bicycle helmet, reflector vest, bicycle lock, bicycle pump and tool kit. The implementation of the project is possible in cooperation with interested third-party organizations. By analogy with carsharing, there are two variations of the project implementation:

a) Implementation of bike-sharing for the Church workers only. In such a case, the creation and operation of the bicycle park will be fully ensured by the Church. It is recommended to create a special work calendar in which employees can book a bicycle with information on the time and duration of use.

b) Public bike-sharing. In this case, residents of the city can rent bikes or electric bikes for their own use. It is convenient to make an hourly reservation through the created online portal. Of course, public bike-sharing needs a registration system and a person identification system. Variations in membership fees, such as their size, and hourly fees are also possible. Thus, membership fees and cash for use are intended to fully support the maintenance of the bike-sharing and its service. In the case of public bike-sharing, cooperation with municipal authorities and private investors is possible.

4. Implementation of bicycle / electric bicycle leasing system for employees

This model project is aimed at enabling Church staff to conveniently use bicycles and electric bicycles for work purposes, thereby promoting the use of bicycles as an environmentally friendly type of transportation. Given the price of electric bikes in the Ukrainian market, the leasing system may be advantageous for full-time Church employees. However, the market for bicycle leasing is currently only developing in Ukraine, so it is recommended to create a working church bike park for the implementation of this project. The acquisition of such a bicycle park is realized through the leasing of bicycles and electric bicycles by the Church, and then making them available to workers for commuting and work trips, as well as moving within the working day.

The creation of small bicycle or electric bicycle parks in this model project is quite relevant in regional church parishes, where frequent cycling is possible due to the short distances compared to regional centers and large cities. Traveling in large cities is also complicated because of the lack of a normal bicycle infrastructure in Ukraine and taking into account a large number of cars, which creates a potential danger for cyclists. On the other hand, creating such parks in cities can be a means of attracting attention to climate protection projects, as well as using this project like an example for stimulating the population to join and maintain an eco-friendly movement.

5. *Formation of financial compensation system for the inevitable CO_2 emissions through the creation of environmental compensation funds*

The idea behind this model project is to create compensation funds through which each person, organization, and church community can compensate the inevitable CO_2 emissions from electricity and heat, travel, and use of paper and printed materials, etc. through cash contributions. Taking into account the existing socio-economic situation in Ukraine (according to the State Statistics Service in 2017, the gross domestic product (at actual prices) per person amounted to UAH 70, 210 and the average monthly nominal wage of full-time employees was UAH 7104) it is better to accept significantly less than the German amount of compensation per ton of CO_2 emissions (in the German Church compensation fund Klimakollekte gGmbH, the payment amount is 23 euros per 1 ton of CO_2 emissions).

(Cooperation with environmental and public organizations, including international ones, is desirable. In the future payments, received as compensation, should be invested in climate protection and energy efficiency projects in Ukraine. The compensation fund must be a non-profit organization (only approved administrative costs are allowed). In addition to offsetting CO_2 emissions for its employees, the Church should also pay attention to the dissemination of information about the funds

and communications with the people about importance of CO_2 emissions compensation. In fact, the creation of such compensation funds is one additional way of financing church climate protection projects.

6. *Use of special software packages for providing remote communication methods within the existing structure of climate protection management.*

The main idea of this model project is to attempt to implement into the daily work of Church management remote communication methods instead of holding meetings to avoid transport CO_2 emissions. Taking into account the considerable distances between the infrastructural elements of the Churches in Ukraine, as well as their regional disaggregation, resolving labor issues (where possible) with implementation of this model project will allow to reduce optional CO_2 emissions and Church funding.

To implement this project, it is needed to choose a special software package in the software-market of Ukraine, which would provide the necessary number of client connections. It is recommended to purchase a corporate version of specialized video conferencing programs at the church level, thus giving this model project a systematic character

7. *Use of electric bicycles in kindergartens*

The purpose of this project is to enable kindergarten staff to travel with children and make the necessary purchases for kindergarten without carbon footprint, and at the same time make trips interesting for children. Cooperation with local kindergartens is desirable. Of course, the poor development of cycling infrastructure significantly complicates the safety of moving bicycles for children, so the implementation of such a model project is possible only in cities with safe routes that need to be approved in advance, and also relatively small distances between objects.

3.3. Real Estate Sphere

1. *Creation of the centralized system for the energy consumption and carbon footprint control*

The purpose of this project is to create a system of centralized control for the energy and heat consumption, with subsequent calculation of direct and indirect CO_2 emissions. With such a system it is possible not only to monitor the existing state of energy and heat consumption and CO_2 emissions, but also to create a database of

the obtained values and to analyze the efficiency and impact of the energy efficiency measures carried out, etc. It is recommended to use specialized software (for example, Nordkirche uses “Interwatt” software). It is possible to make a special order for IT-developers to create a similar program that focuses directly on existing Church infrastructure. Each Church Parish/Smallest Structural Unit defines a responsible person who will, on a special schedule (eg monthly), enter the necessary data into such a program.

Cooperation with the accounting sector of the Church is recommended to obtain archival data. At the end of each reporting period (according to the approved ordinance in accordance with the accepted church climate protection ordinance/law) it is necessary to compile all the data in a special report. It is advisable to provide free access to these data through the Internet so that parishioners can monitor the effectiveness of climate protection activities themselves.

2. *Establishment of an organization for conducting energy audits, assessing the potential of green energy use and implementation of climate protection measures, including the implementation of projects for the installation of wind and solar power plants*

The main peculiarity of such an organization is its focus on cooperation with Churches and Church infrastructure, as well as with parishioners interested in climate protection projects.

In terms of management and financing, there are several variations of the implementation of this project. In the first case, the Church may be the founder of such a structure. Accordingly, this structure can be integrated into the existing climate management system as an advisory body, the financing is provided by the Church, and the activity of the organization will be directed directly to the existing church infrastructure and material funds. In the second case, the Church can be co-founder of such an organization in cooperation with environmental organizations and private companies. Different variations of ownership (PJSC, Public company) are possible. Received earnings are distributed between Church and other founder according to the ownership. All income that comes to the Church as profit from the activities of the organization must be reinvested in climate protection activities. Thus, it is an additional source of funding for the subsequent climate protection projects.

It is desirable that the staff of this organization include energy auditors and energy managers. Depending on the size of the funding and the qualifications of the workforce, such an organization may carry out a full audit (ISO 14001, ISO 50001, etc.) with subsequent certification (more complex, requiring specialist staff and additional registrations and certifications), and simply provide recommendations and evaluate according to the type of audit. The organization may also have its own

engineering team on the development of energy efficient and SES/WPP projects. At the same time, contractors of these projects can be both their own employees (provided the creation of a full-scale large-scale organization) and third-party contractors.

Additionally, this organization may cooperate with other Churches. In this way, inter-religious cooperation in the field of climate protection will facilitate the establishment of social dialogue between people.

3. *Installation of photovoltaic systems (PV systems)*

This model project is aimed at implementing renewable electricity technologies in the Churches by installing the photovoltaic systems on the roof of buildings. Of course, the installation of such systems is possible only on buildings that are not under the protection of the state as historical monuments. Municipalities and international grants may be an additional source of funding for this model project, in addition to the Church financing and Church funds. To ensure the effectiveness of the model project, it is necessary to evaluate the energy consumption of the buildings selected for the implementation of the project and to calculate the relevant economic, energy and environmental indicators and coefficients. To do this, it is advisable to contact the appropriate certified organizations that can install the PV and develop the most efficient project according to the features of each building. Excess electricity can also be sold to the grid at a green tariff, which will decrease a payback period and at the same time make possible to reinvest the income into new climate protection church projects.

The following 5 projects are related to the energy efficiency of the Church buildings. The effectiveness of projects implementation depends not only on the type of building or the technologies used, but also on the features of the building's use and the heat/electricity consumption. Therefore, in order to maximize the efficiency of such model projects, a 4-step scheme for the implementation of projects with buildings in the Real Estate sector was proposed (Fig. 2).

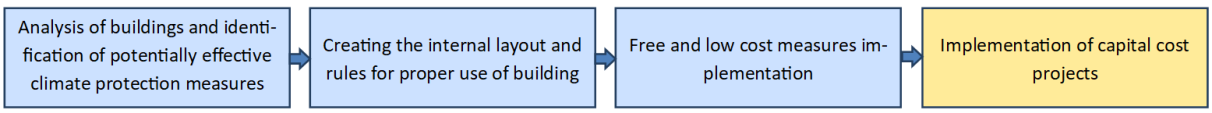

Fig. 2. The 4-step scheme for the implementation of projects with buildings in the Real Estate Sphere

The first step is to determine the energy and heat consumption analysis of the building. This can be done within the framework of a total energy audit of the building

by appropriate certified companies. Based on the analysis, the most potentially effective climate protection measures should be determined.

The second step is to create a special internal layout and rules for proper use of the building. Thus, the second step is to minimize energy and heat losses due to human factors, i.e. inefficient use of the building.

The third step is to prioritize the implementation of low-cost, energy-efficient measures, such as installing battery thermostats, replacing energy-saving lamps, and more. In fact, sometimes such measures can lead to achievement of significant reduction in energy and heat consumption (and, consequently, CO_2 emissions) with minimal investment.

The fourth step is the implementation of more capital consuming projects. For heating projects, it is additionally necessary to determine the degree of thermal insulation of buildings available and to assess the need for energy efficient or thermal insulation repairs.

4. *Modernization and energy-saving / thermal insulation of buildings*

Thermal insulation of buildings is very important for the modernization of heating systems. Except the Church funding, the other source of financing can be the "warm" loans - special offers from Ukrainian banks to finance energy efficient projects. Depending on the audit and evaluation, a list of required works (for example, cellulose thermal insulation of ceilings, mineral fiber and fiber cement slabs of exterior walls, polystyrene insulation (EPS) of reinforced concrete columns, replacement of glasses, etc.) should be determined. Also, when determining the scope of work, it is necessary to consider whether the building is protected as a historical monument. Search for third-party experienced contractors is required to complete the work.

5. *Implementation of modern energy efficient pellet boilers*
6. *Implementation of combined heat and power generation systems (cogeneration)*
7. *Implementation of modern energy efficient biofuel boilers and biofuel heating systems (wood, sawdust, etc)*

The practical implementation features of projects 5, 6 and 7 are very similar. The high investment costs require extensive preliminary analysis of buildings and heat / energy consumption, as well as careful selection of the equipment. This evaluation procedure should be carried out by the qualified specialists for installing and upgrading the heating system. Further, on the basis of recommendations and

investment analysis, the purchase and installation of equipment should be carried out. With exception of the sole Church funding, it is recommended to apply for the grant or loan financing. Cooperation with municipal authorities and Ukrainian developers is possible. Throughout the operation of the equipment, it is recommended to provide quarterly / semi-annual energy audits to calculate real CO_2 emissions reductions

8. *Implementation of solar thermal technologies*

This model project is intended for using of solar panels for heating water or air in Church buildings. The model project could include such activities as the installation of solar modules and a special system of tubes, which transfers heat from solar energy to the heat supply system. Important for this model project is a preliminary analysis of the effectiveness of the solar thermal installation potential and engineering calculations.

9. *Improvement of the server and software system within the Church infrastructure to reduce carbon footprint*

This model project is aimed at energy efficient modernization of Church's IT-servers. Of course, the effectiveness of the implementation of this model project depends directly on the capacity of the installed servers, so the project is relevant for the big Church's IT-centers. Server virtualization, PCs and servers power consumption monitoring, as well as implementation of energy efficient IT-solutions must be implemented by a specialist experienced contractor.