



# Energy efficiency in churches Ethics & Energy, Sweden

## Summary

Etik & Energi (Ethics & Energy) is a Swedish interfaith non-profit association working with congregations, church organizations, and people of faith in the local community. The organization was founded in 2004 and inspired by the American "The Regeneration Project" (Interfaith, Power & Light). The goal of Ethics & Energy is to help congregations conserve energy and become more energy efficient. In this way, a sustainable lifestyle will be attained, as well a sustainable management of church property. Ethics & Energy creates a national network of religious entities in response to global warming with education and promotion of alternatives such as renewable energy, energy efficiency, and energy conservation. With energy prices steadily increasing, these alternatives provide an opportunity for reducing energy costs. This money could then be used for charity and activities, rather than wasting energy. Ethics & Energy gives people of faith a chance to put their faith into action and reduce the devastating effects of global warming.



### End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

### Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

### Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

## Context

The Lutheran Church of Sweden alone owns nearly twenty thousand buildings in the country, the majority of them (80%) being heated with oil or electricity. This is both expensive and detrimental for the environment. In addition, many of the churches in Sweden are cultural treasures with ancient history, and improper heating systems can damage or even destroy antiquities and lead to expensive restoration costs. Therefore, good heating practice is beneficial to the parish in many different ways.



## Objectives

The aim of this initiative is to increase the use of renewable energy sources and decrease the energy consumption levels. Ethics & Energy collaborates with some of the nation's best consultants who possess a variety of expertise such as energy conservation, preservation and heating of historic buildings, bioenergy, solar energy, wind power, local district heating, environmental issues, pedagogies, theology and more.

## Process

Ethics & Energy has developed a unique, designed pedagogic program for congregations who want to work with energy issues. The main components of the three year program are.

Energy auditing: The parish, along with support and material from *ethics & energy*, will fill out energy auditing forms for each building. In doing this themselves, it becomes less expensive, and an important learning experience for the parish faculty. The caretaker, for instance, attains increased knowledge about the energy systems and the energy consumption of the buildings. Therefore, this is an important part of the pedagogic program.

Recommendations: On the basis of the completed energy audit, one of Ethics & Energy's energy conservation experts will perform an analysis and provide the parish with recommendations for improvement. The document will consist of practical suggestions for appropriate energy efficiency and conservation measures to be taken in each building. The suggestions may include anything from installing an entirely new heating system to something as simple as replacing incandescent light bulbs to compact fluorescents.

Feedback: No one knows the buildings better than the people working in them. Therefore, the employees and volunteers are asked to review and discuss the analysis and recommendations. Their suggestions and new ideas are then added to the document.

Education: All employees and volunteers within the congregation will receive a full day of education to learn more about energy issues. The day involves discussions and learning about faith, stewardship for creation, sustainable development, and responsibility for the local and global environment in the scheme of climate change. The day also provides an opportunity to learn more about how to conserve energy, save money and care for the environment both at work and at home.

Action plans: Based on the components above, the parish faculty then creates a plan of action for the coming year. The parish will decide which investments are to be implemented the coming year, and the employees set up personal goals for how they can conserve energy.

Revision: Every year the action plans are revised and new goals are set for the next year. This way the program becomes an efficient energy management system.

## Financial resources and partners

Parishes are able to join the *ethics & energy* association by paying a membership fee. This variable fee is based on the number of buildings the parish owns. Once a member of Ethics & Energy, the parish works accordingly to a specialized three year program, and in addition they receive a monthly newsletter, support when needed, information about governmental subsidies, discounted courses/conferences and much more. Today about 50 parishes and five dioceses are members of *ethics & energy*. In the future, personal memberships will also be available.

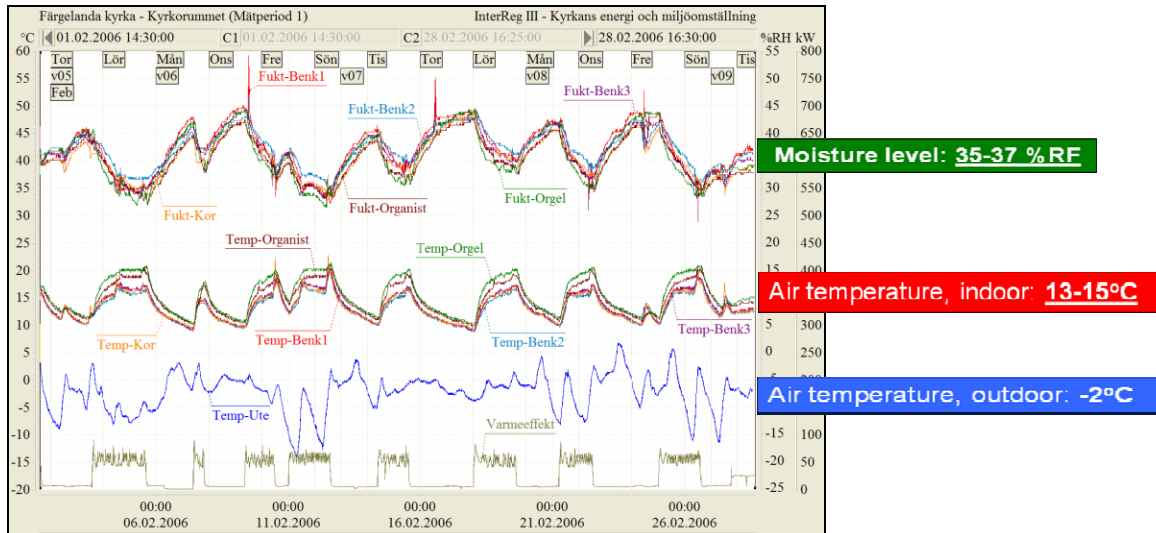
## Results

One of the members is Karlstad diocese. Karlstad consists of 156 parishes which almost all now have been evaluated regarding energy consumption and efficiency potential. The total amounts of heated buildings are approximately 600 of which 180 are churches. About 75% of the buildings are heated by oil or electricity. The efficiency potential is between 20 and 50%, and in average about 30%. The energy costs can also be reduced with the same figures (>30%). Almost all oil, which getting more expensive for every year, can rather easily be converted to other energy sources such as pellets or heat pump. The total payback time for all recommended measures is about 6 year in average.



### Efficiency measures:

- A combination of low temperature and **moister control** regulation between the divine services is to prefer. This measure combines low energy consumption levels with good protection of cultural treasures. The RH humidistat decides which base temperature that is suitable for the actual indoor conditions. The guideline is about 60%.



### Control System for regulation of indoor temperature

- Change the use pattern**; with few divines in the winter, some of them easy can be moved from the church to the nearby parish hall with cheaper heating costs.
- Adjustment** of heating and ventilation systems
- Changing from incandescent light bulbs to **compact fluorescents**.
- Additional **insulation**
- Windows restoration and modernisation
- Changing from oil and electricity to **other heating sources**

### Lessons learned and repeatability

In Sweden the church discharge over 5 million square meter distributed on 18 700 buildings. The total amount of energy consumption is 1,3 TWh/year to a cost of 1-1,3 billion Swedish crowns.

Climate change is, in addition to its environmental implications, a matter of social injustice. Global warming is one of the biggest threats facing humanity today. The very existence of life - life that religious people are called to protect - is endangered by our continued dependency on fossil fuels for energy. As temperatures rise and the supply of fossil fuels are depleted, the scarcity and burden of climate change will primarily impact the poor, and eventually come home to us all. However, the poor countries will suffer the most from these consequences, even if they are the ones least responsible for the problem (e.g. emissions of greenhouse gases).

This project has also potential to be spread to other countries as well. The energy consumption concerns us all and the church may play an important role in changing the way of how we use our energy sources.

Important lesson so far:

- Invest in energy and environmental educations, this is absolutely necessary for success
- Aim always at low temperatures
- Big savings can be achieved just by using existing techniques in a more efficient way
- Focus on how to decrease the "used" energy before you dealing with the supply



**Contact for more information:**

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