

ECONOMY OF NATURAL RESOURCES THROUGH THE USE OF SOLAR ENERGY FOR HEATING AND HOT WATER-SUPPLY

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ABSTRACT

A serious economic effect on reducing costs for heating and hot water-supply if not using classic but untraditional sources of energy could be attained with the help of solar energy for example. The encouragement of this untraditional way of heating demands economic mechanisms to stimulate the families, which would like to use it.

Tax concessions, tax exemption, low-rate loans, tax remissions for successful results, stimulation of personal contribution, etc. must be implemented when taking new measures concerning the tax regulation of a country.

Keywords: economy, natural resources, solar energy, heating, hot water-supply.

INTRODUCTION

Natural energy sources are not inexhaustible. Wood, coal, natural gas, etc. are limited in quantity, which presumes the demand and supply of new technical solutions, implementing solar and other alternative sources of energy. On the other hand, it is of great importance to encourage the investment of government in the support of comfortable habitation for the most productive part of society – the young families – by implementing new and modern heating systems. The reasons are at least two – the first concerns the better adaptation of the young to modern innovative solutions and on the other hand, a main purpose is to overcome the lack of financial resources for a sufficient standard of life for this group of society.

Also, an important fact is this group is the main element in the reproduction of the nation and it is indispensable for the young

families to dispose of modern and comfortable living environment.

The encouragement of the use of an alternative energy source requires:

- Economical mechanisms for stimulation of young families, which agree to use untraditional ways of heating – with solar energy, for example.
- A good tendency would be the stimulation of young families, e.g. students, which should have the opportunity to borrow an extra non-interest loan from the government when their excellent rating in the university is combined with the use of alternative sources of energy. It is well-known that the young people spend the most significant part of the energy resources. Also, a good measure is for the government to pay an important part of the investments in solar installations by creating special funds, intended to

stimulate innovation in the sphere of alternative energy.

- There must be economical mechanisms, intended to stimulate families, which are using alternative energy sources – for heating or ventilation of their houses with the help of solar energy. The solar energy, received with the help of photovoltaic batteries could be also used for lightning, setting in motion of special circulative pumps, which allow to use rainwater to irrigate plants and vegetables, which could be cultivated by the inhabitants on the roof of their building. An example for this is the implementation of solar energy,
- **The participation of the inhabitants in the building and mounting of the solar systems for heating and hot water-supply should be stimulated.**

Besides tax exemption and low-rate loans young families must have the opportunity to participate personally in the building, thus economizing extra financial resources. During the reconstruction of existing buildings, the new design must foresee the integration of solar heating systems with the aim to economize on financial means for the maintenance of a central heating system or

intended to be used for irrigation on the roof of an experimental building in Kyoto. (Fig.1.)

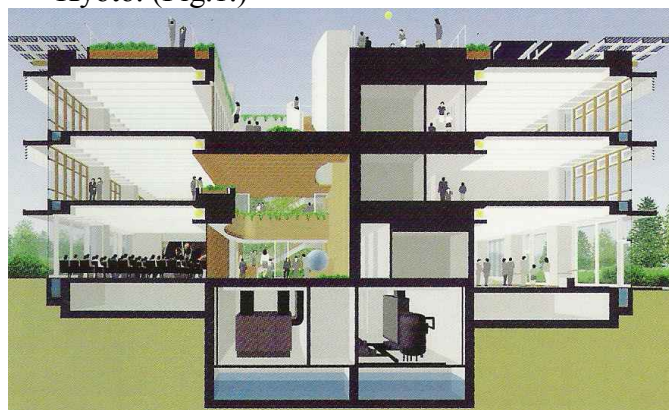


Fig.1. Experimental building in Kyoto. [3]

similar system. When building new houses, according to suitable systems, it is right for the future owners to participate in the building. There are special developed and patented building elements and building methods for the construction of one-storey houses, intended for building in South Africa. (Fig.2.) The method allows to raise buildings, made of high-quality prefabricated elements for maximum one week. The useful surface of the different houses is 38 m², 45 m² and 52 m².

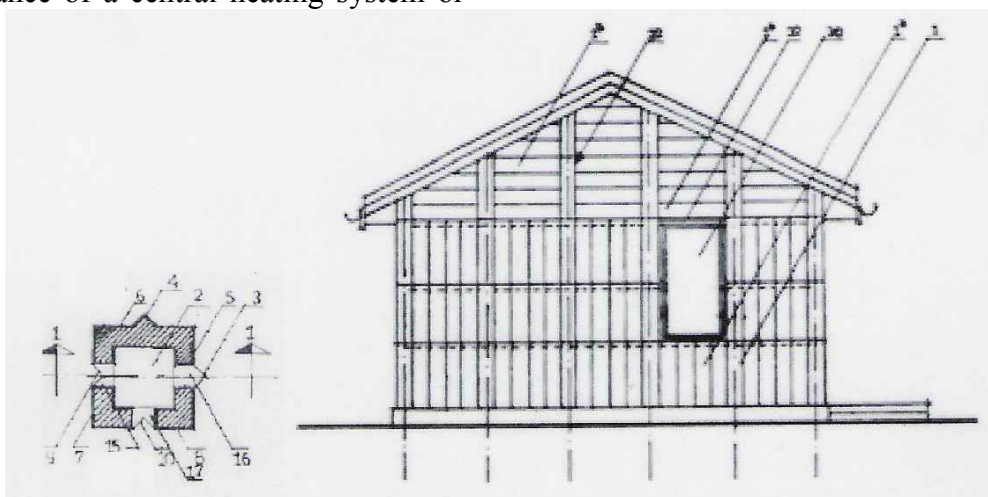


Fig. 2. South Africa. Patented invention BG N. 62101B1. Building element and method for construction of one-storey buildings, using this building element. Gold medal in the International Invention Exhibition „East-West”. Sofia. Bulgaria. Authors: arch. Yanko Aleksandrov, arch. Liudmila Aleksandrova [1,2]

Investments must be directed for the design and building of the above-mentioned buildings, made:

A) with flat roof;

B) with inclined roof;

C) with combined roof structure, where the plane of the roof merges in the plane of the façade. (widely developed solution in the design of Zaha Hadid, etc.)

- If the buildings are with a flat roof, investments should be directed in the area of research and design of special structures, intended for building of flat roofs, where vegetation could be cultivated. This allows the economization of useful surface. The building-up of the area must be “closed”, the houses (one-, two- or three-storey) must be tightly adjacent. To economize energy, there must be photo-voltaic batteries situated on the roof.

- If the buildings are with an inclined roof, it is suitable in the under-roof space to be situated water collectors and accumulators to use solar energy for heating and hot water-supply.
- The combined roof structures are suitable for the development of a green system, but only in case of extremely good hydro- and thermal insulation. Here, the situation of water collectors and accumulators is also a good opportunity. The economy of energy should be realized whatever the configuration and form of the roof. Also, it must be kept in mind that for some regions (for example countries of Southeast Asia – Hong Kong and others) there is a great necessity the constructions to be naturally ventilated. (Fig.4.)

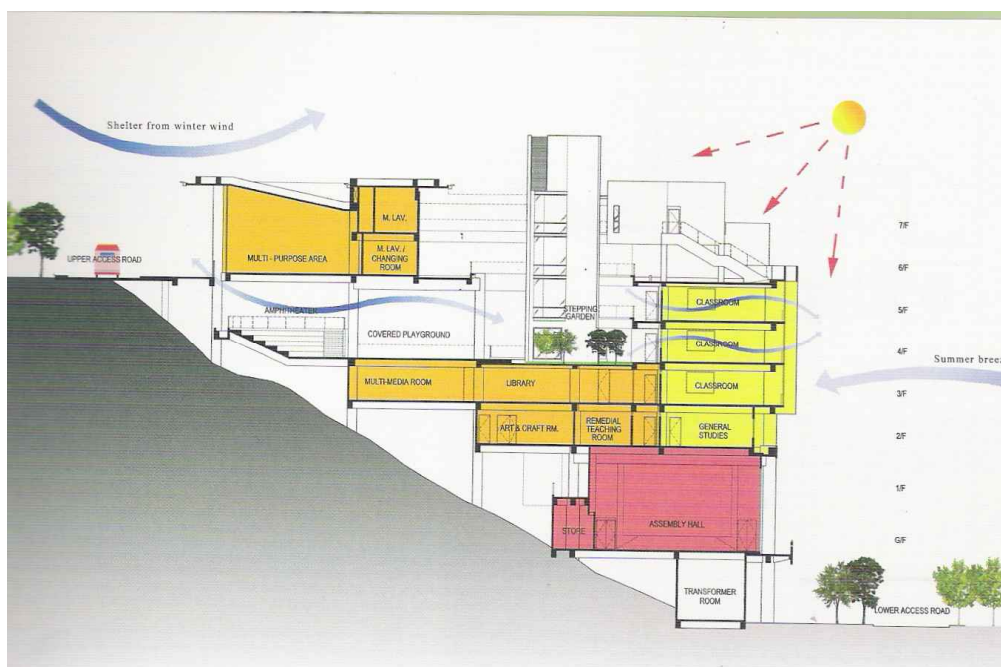


Fig. 3. Horizontal ventilation of a building in Hong Kong. [4]

(p.23. The Assessment Certification Process. Enhancing Hong Kong's Built Environment. Enhancing Hong Kong's Built Environment. 2005. HK-BEAM Society. Hong Kong.)

Basic technical elements of the solution:

- shelter from winter wind • upper access road • multi-purpose area • covered playground • multimedia hall • a library • classrooms • lower access road • free access of summer breeze.

CONCLUSION

- The economy of natural resources by using solar energy for heating and hot water-supply is a world tendency, which is illustrated by several cases from Southeast Asia.
- The binding of the use of alternative energy to economic mechanisms for the ensuring of demographic growth (stimulation of young families, which agree to use such sources) allows to positively regulate the birth-rate of the nation.
- Tax concessions, tax exemption, low-rate loans, tax remissions for successful results, stimulation of personal contribution, etc. must be implemented when taking new measures concerning the tax regulation of a country.
- The buy up of the unnecessary extra electricity by the National Electric Company (when this electricity comes from the implementation of photo-voltaic solar batteries, situated on the roofs) is a complementary opportunity to stimulate the young owners.

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