

# HOW TO SUPPORT SOLAR THERMAL MARKET THROUGH INNOVATIVE POLICY GUIDELINES IN SICA COUNTRIES?

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## 10 1 SUMMARY

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SICA (Central America Integration System) countries are rich in solar energy resources for applications beyond electricity generation, such as cooling and heating. However, the development of this sector has been strongly limited due to the lack of adequate energy policies. In this regard, the objective of the present research is to outline a political framework and the establishment of innovative partnerships for wider deployment of heating and cooling technologies in the region. This is mainly based on the scope of the SICA Centre for Renewable Energy & Energy Efficiency (SICREEE) to support the development of the region by the introduction of clean energy technology. Therefore, a mixed-method approach will be applied by conduction of interviews and workshops and the review of the literature. The findings will be useful for the region and decision-makers to go from policy to action.

**Key words:** solar thermal policy, partnerships, heating and cooling, SICREEE, SICA countries.

## 2 ABSTRACT PROPOSAL

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Worldwide, policy attention and support for the integration of renewables for cooling and heating remains particularly limited. Only 49 countries (most within the European Union) have national targets compared with those (166 countries) that appoint commitments for renewable energy integration in the power sector. Denmark was found as the only country with 100% renewable energy share for heating and cooling (IRENA, 2020). Latin America and the Caribbean have great potential for using solar thermal energy in the residential and industrial sectors. However, despite the potential, the use of solar thermal technologies has not spread on a large scale in the region. In terms of solar thermal energy, Brazil has the largest market in Latin America, according to IEA, Brazil is 4th in installed capacity of solar thermal energy in the world ranking, but 32nd in solar thermal energy per capita among 57 countries.

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Located in an area privileged by solar irradiation, SICA (Central America Integration System) countries have great potential for the use of solar energy. With a global horizontal solar irradiation between 4.6 kWh/m<sup>2</sup>/day to 6.2 kWh/m<sup>2</sup>/day, they can generate electricity as well as use solar resource for thermal applications such as space heating, air conditioning, hot water, industrial process heat, and drying. However, in SICA countries, solar thermal energy represents an incipient industry and is far to be harnessed due to a lack of enabling technologies. In the region, the only applied technology corresponds to solar heating in a low extension: non-pressurized and pressurized. The first one used in the residential sector because it is pressured and easy to install, and the latter is commonly applied in the industrial (mostly in small and medium scale industries) and service sectors. Solar thermal energy is also utilized to dry grains, vegetables, and fruits. Some of the potential players in this technological area are Costa Rica and Panama.

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Costa Rica with 41,3% of households dependent on hot water systems reflects great potential for solar thermal energy for heating. Indeed, there are available technical standards for solar thermal equipment, such as solar

collectors and their components and solar sanitary water heating systems. Furthermore, the Regulatory Law for the Rational Use of Energy (1994) states specific provisions for the promotion of solar water heating, including incentives for the elimination of import taxes and/or for research and technological development. Moreover, throughout the Solar Heating and Cooling Technology Roadmap, Costa Rica is enabling a regulatory framework to allow the massification of solar thermal, especially in the residential and tourist sectors. Similarly, Panama launched the “Mobile Solar Thermal Energy Classroom” in 2020, the first in the region. The mobile unit was donated by UN Environment Programme and is located at the National Institute of Education and Training for Human Development. This initiative is mainly to support young people with technical backgrounds to become future installers of solar water heaters for application in hospitals, industries, the agricultural and residential sector. Panama is working to become the Central American Hub for solar thermal energy through the Termosolar Panama Project. It is executed through an inter-institutional alliance between the UN Environment Regional Office for Latin America and the Caribbean and the National Energy Secretariat (SNE) with financial support from the Global Environment Facility (GEF) and key stakeholders from public and private sectors. According to the objective of this project, one million square meters of solar thermal applications for water heating will have been installed by 2050 throughout the country.

Despite the limited utilization of solar thermal energy in SICA countries, it is gaining force gradually. However, it does not have the speed that was estimated in the first years of the entrance of commercial technologies in the region, there is still a latent need for political and institutional support. And even though most countries have shown satisfactory performance on sustainable development, policies have been mainly focused on renewable energy promotion for electricity sector, limiting opportunities for heating and cooling policies, a common barrier for developing countries. Nevertheless and with reference to the Sustainable Energy Strategy 2030 of the SICA countries (EESCA 2030, by its Spanish acronym), there are potential areas for replacement of inefficient heating and cooling equipment by solar technologies, where some countries are taking leadership actions. But it also leads to the need of building national and regional policies to spur the development of this sector with a sustainable and innovative focus.

In this regard, this paper aims to identify and propose regional policy guidelines and adequate institutional arrangements to facilitate wider deployment of heating and cooling technologies in individual countries. Supportive governance and institutional framework are crucial to the implementation of suitable policy and long-term plans, that is what SICA Centre for Renewable Energy & Energy Efficiency (SICREEE) offers to the region. The SICREEE’s proposal, in addition to supporting the creation of regional policy, is to improve data and experiences exchanges among SICA countries, as well as encourage a strong institutional structure that clearly defines the roles and responsibilities of stakeholders to move renewable heating and cooling targets into actions. To do that, extensive review of literature, data collection and interviews (it is planned a workshop and personal interviews) to be carried out with key stakeholders from decision making, industries and users. This research will offer innovative insights to contribute to a fair energy transition where distributed generation plays a key role based on solar thermal initiatives.

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### 3 REFERENCES

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### 90 4 CONFERENCE TOPIC

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