KARA SOLAR – COMMUNITY RIVER TRANSPORTATION POWERED BY THE SUN IN ECUADORIAN AMAZON

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Tapiatpia, the first solar boat built in 2012 by Kara Solar Foundation, is still operating nearly a decade later, and increasingly supports clean, local economies in the Achuar territory, in the Ecuadorian Amazon.

The Kara Solar Foundation, an Indigenous-led team of engineers, communicators, social scientists and solar technicians, created the project after indigenous Achuar people in the southeastern Ecuadorian Amazon expressed their vision to build a solar-powered boat. Tapiatpia, the first solar canoe, arrived in the Achuar territory in 2017, after having successfully tackled a 1,800-kilometer journey across several Amazonian rivers.

Since then, Kara Solar has delivered 12 solar-powered canoes to communities in five countries and built solar recharge stations that double as community energy centers. Six of the canoes were delivered to communities in Ecuador, two in Peru, two in Brazil, one in Suriname and one in the Solomon Islands. The Foundation has also trained members of Indigenous communities to operate and manage the systems in their own villages.

Kara Solar's vision is to create solar technologies that equip Amazon communities with new tools to build clean energy autonomy, strengthen cultural resilience, and contribute to the defense of rainforest ecosystems. They are united by a shared commitment to fostering technological independence, vibrant communities, and ecological resilience through solar innovation in the Amazon.

The Kara Solar Foundation website tells the story of the project. Kara Solar began as a team to build a solar-powered boat. A fire canoe in the form of electric fish named Tapiatpia had long been an Achuar vision and community members were increasingly interested in replacing expensive petrol-powered boats with solar alternatives.

After a study conducted with researchers at the Massachusetts Institute of Technology (MIT) and having found that solar river transportation in the Ecuadorian Amazon was feasible, between 2014 and 2016 the team designed and built the first solar boat, Tapiatpia,. Tapiatpia arrived in Achuar territory, in the south-eastern Ecuadorian Amazon in 2017, after a 1,800-km voyage through Peru via the Aguarico, Napo, Marañón and Pastaza Rivers.

Kara Solar was incorporated as a non-profit Foundation in 2018 to operate and maintain Tapiatpia as a community service and expand the model of community transport and energy in Achuar territory and across the Amazon. When gasoline imports into Achuar territory were halted in 2020 due to the COVID-19 pandemic lockdown, Achuar

technicians sustained the solar boats and recharge stations autonomously. The success of this unforeseen test solidified their model of local capacity-building for community control of solar technologies.

The solar infrastructure that they build supports technological independence, liberating communities from toxic and expensive fossil fuels. The four solar boats in Achuar territory travel thousands of kilometers each year, bringing children to school and transporting community members to sports games, community work, health centers and more. Since their inception, they have seen that the model created in Achuar territory is applicable to rainforests across the Amazon and around the world. Now they are accompanying indigenous communities in Brazil, Peru, Suriname, and the Solomon Islands as they replicate this model pioneered in Achuar territory.

Today the boats, which carry up to 20 people and cost US$30,000 to US$40,000 each to build, use roof solar panels to collect power, which is stored in a battery. A fully loaded craft can travel at speeds of 15-20 kilometers per hour for 60-100 km on a full battery charge.

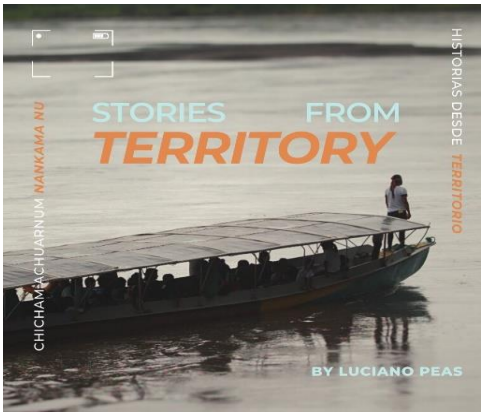
The boat was named Tapiatpia, after a giant electric fish from Achuar mythology that traveled the world's rivers, crossing continents. The Tapiatpia, 16 meters long and with a capacity for 20 passengers, is recognized as a local form of public transportation. To ensure the vessel's proper functioning, the Kara Solar technical team has dedicated thousands of hours to the design, adaptation, and testing of solar power systems and electric motors. This experience has reinforced Kara Solar's vision of training local technicians, and among them, 10 Achuar people are the most experienced. In addition, the Foundation has trained more than 500 people throughout the region.

The Foundation has also created the local manufacturing company *Motores Amazonas*, which is producing motors for family boats with a capacity of up to eight people. These motors operate with swappable batteries, allowing for greater energy autonomy by replacing depleted batteries with charged ones.

This new line of work aims to help families replace their fuel-powered boats with the new design. The batteries can be recharged at community solar charging stations. Three of these charging stations are already built, and another will be installed soon. The Foundation plans to have the first ten charging stations operational in the region by 2026. The goal for the next ten years is to put 100 boats with this technology into operation, along with 50 charging stations, covering 400 kilometers along the Pastaza and Bobonaza rivers. An agreement has been reached with the Pastaza Prefecture to replace the roads with a regional electric river transport system powered by solar energy.

The Kara Solar website features a wide range of articles published by prestigious international newspapers, illustrating the history and results achieved by this extraordinary ongoing project in the Ecuadorian Amazon.

In Belém in November 2025 Kara Solar was spotlighted at the COP 30 with their vision for a Solar Amazon implementing the strategic project: *Solar Rivers. The Future of Indigenous-led Transport and Energy Infrastructure in the Amazon*.



To know more

Kara Solar Foundation website

Kara Solar story

Kara Solar Press media

Kara Solar at COP30

Kara Solar Funders and allies

Kara Solar in Facebook.com

Article in Mongabay 2025

Article in Mongabay

Kara Solar in Equator Initiative.org

Kara Solar in npr.org

Kara Solar in Honnold Foundation.org

Kara Solar in atlasofthefuture.org

Kara Solar in bbc.com

The Amazonian Declaration for Solar Rivers