

Developing Countries Leading the Way in Low CO₂ Energy Supply – Case Study of Costa Rica and Morocco

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Abstract

Many developing countries are crippled with different development challenges and also face technological, social and institutional barriers to tackle climate change and transition to a low carbon economy. However, Costa Rica and Morocco are examples of developing economies that are making commendable strides to expand clean energy and reduce GHG emissions in all sectors. This proposal aims to showcase the achievement and commitment of Costa Rica and Morocco in tackling climate change challenges against all odds. It also draws leadership insights that will guide scholars and policymakers to deliver a low carbon and sustainable future in their respective countries.

Introduction

Costa Rica is an upper, middle-income country that has experienced steady economic growth in the past 25 years. The country is a recognized global leader for its successes in implementing environmental policies that promote biodiversity, environmental conversation and reversing deforestation.¹¹

Morocco is a resilient, lower, middle income country characterized by rising domestic demand, a high dependence on energy imports and increasing economic activity. The government is working on new policies that bolster increased private sector participation, job creation, and inclusive growth with a modern social justice system.^{12, 14}

Table 1 contains key indices on Costa Rica and Morocco economies.

	Costa Rica	Morocco
Region	Central America	North Africa
Land Area (km²)	51,060	446,300
Climate	Tropical and sub-tropical	Mediterranean
Population (millions)	5.09	35.56
Language	Spanish and English	Arabic, Berber and French
Literacy Level	97.9%	73.8%
Independence	15 th September 1821	2 nd March 1956
Government Type	Democracy	Monarchy
GDP per Capita (2017 est.)	USD \$16,900	USD \$8,600
Major Exports	Medical Equipment, Electronics, Coffee, Banana, pineapple etc.	Phosphates, Clothing and Textiles, Electrical components, vegetables etc.
Major Imports	Raw materials, consumer goods, petroleum etc.	Refined petroleum, gas, wheat, cars etc.
Electrification rate	100%	100%

Table 1: Costa Rica and Morocco Fact File. Source: The World Factbook

Energy Sector Overview

Costa Rica energy mix comprises of renewables and a small share of thermal (diesel). Since 2015, the country has achieved over 250 consecutive days of electricity using renewables¹³. This remarkable feat has earned the country global recognition for its almost perfect deployment of renewables for electricity generation. However, the use of fossil fuel is still prevalent in other sectors of the economy.

A mix of fossil and renewable sources meets Morocco's energy needs. As at 2018, the total installed capacity is 10.9 GW, with a renewable share of 34%.⁸ Due to the rising cost of energy imports, Morocco has significantly increased the share of renewables in the energy mix.

Both countries operate a state-owned monopolistic market with a controlled private sector involvement. Figure 1 and 2 show the changes in the sources of electricity generation in 1997 and 2017.

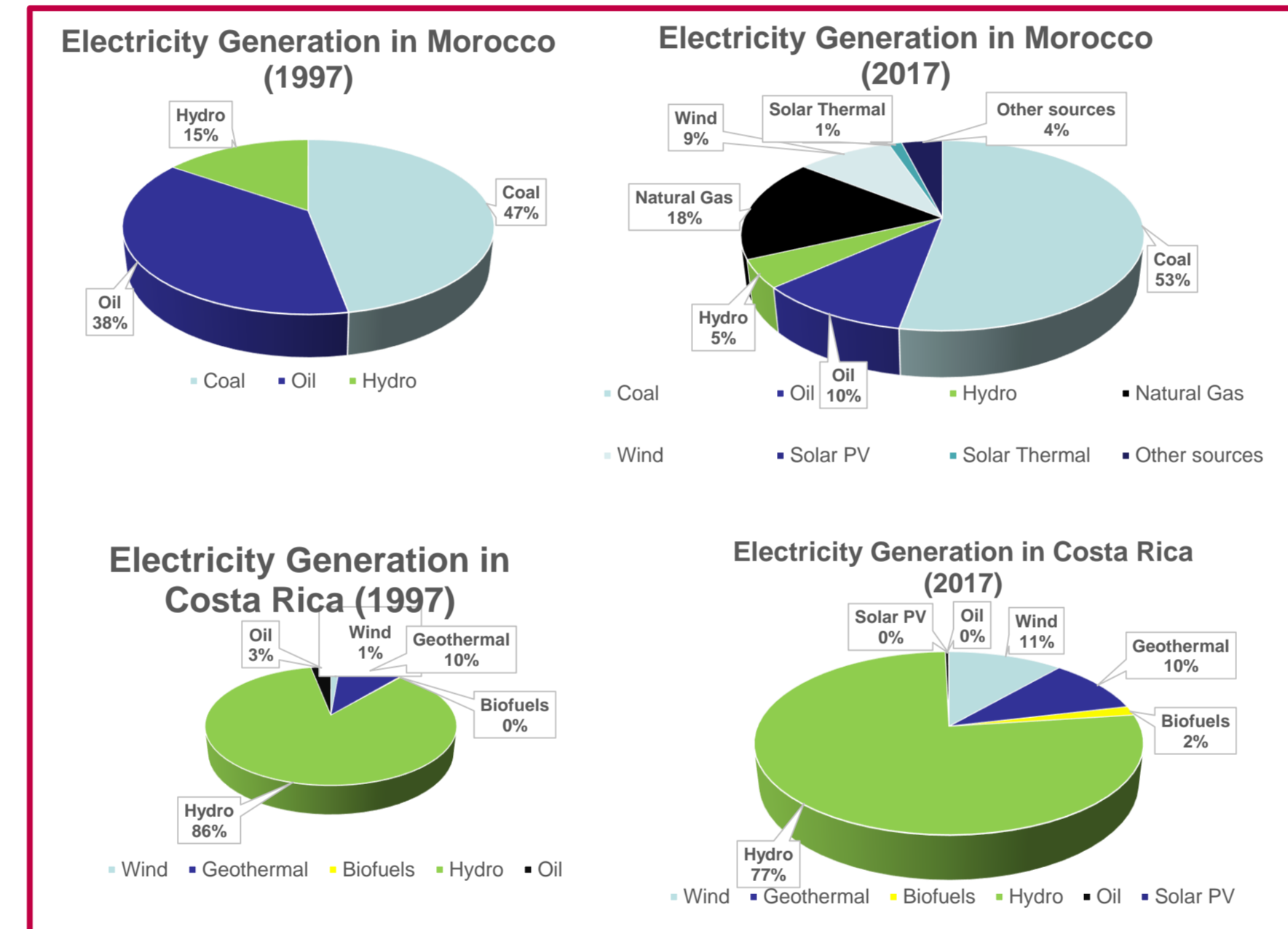


Fig 1: Electricity Generation in Morocco by Sources (1997 & 2017)⁶

Fig 2: Electricity Generation in Costa Rica by Sources (1997 & 2017)⁵

Climate Change, NDC and Paris Agreement

The Climate Action Tracker rates Costa Rica's current policy plans as "2°C Compactible". This means that the plans are consistent with Copenhagen's goal but slightly higher than the 1.5°C target of the Paris Agreement (CATI). On the other hand, the Moroccan government's actions are consistent with the Paris agreement, hence, rated "1.5°C Paris Agreement Compactible". Table 2 below identifies the priorities and action plan in three critical sectors^{3, 4, 9, 10}.

Sectors	Country	Priorities	Policy Agenda
Energy	Morocco	Increased share of renewables to 42% by 2020 and 52% by 2030	National Energy Strategy
	Costa Rica	Achieve 100% electricity generation from renewable energy by 2021	National Energy Plan VII
Agriculture	Morocco	Modernize agriculture sector sustainably with extensive irrigation program	Morocco Green Plan
	Costa Rica	Low emission through sustainable agricultural production	National Appropriate Mitigation Actions (NAMA)
Transportation	Morocco	Large scale public transport using electric trams and modern taxi system	Urban Public Transit Implementation Program
	Costa Rica	Zero emission public transportation, upscale of EVs, improved efficiency in cargo transport	National Decarbonization Plan

Table 2: Costa Rica and Morocco Priorities

Leadership Lessons

The accomplishment of Costa Rica and Morocco highlights the role of leadership in supporting developing countries 'leapfrog' the possible lock-in associated with increased emissions. Fig. 3 presents important leadership pointers to deliver a climate-resilient economy

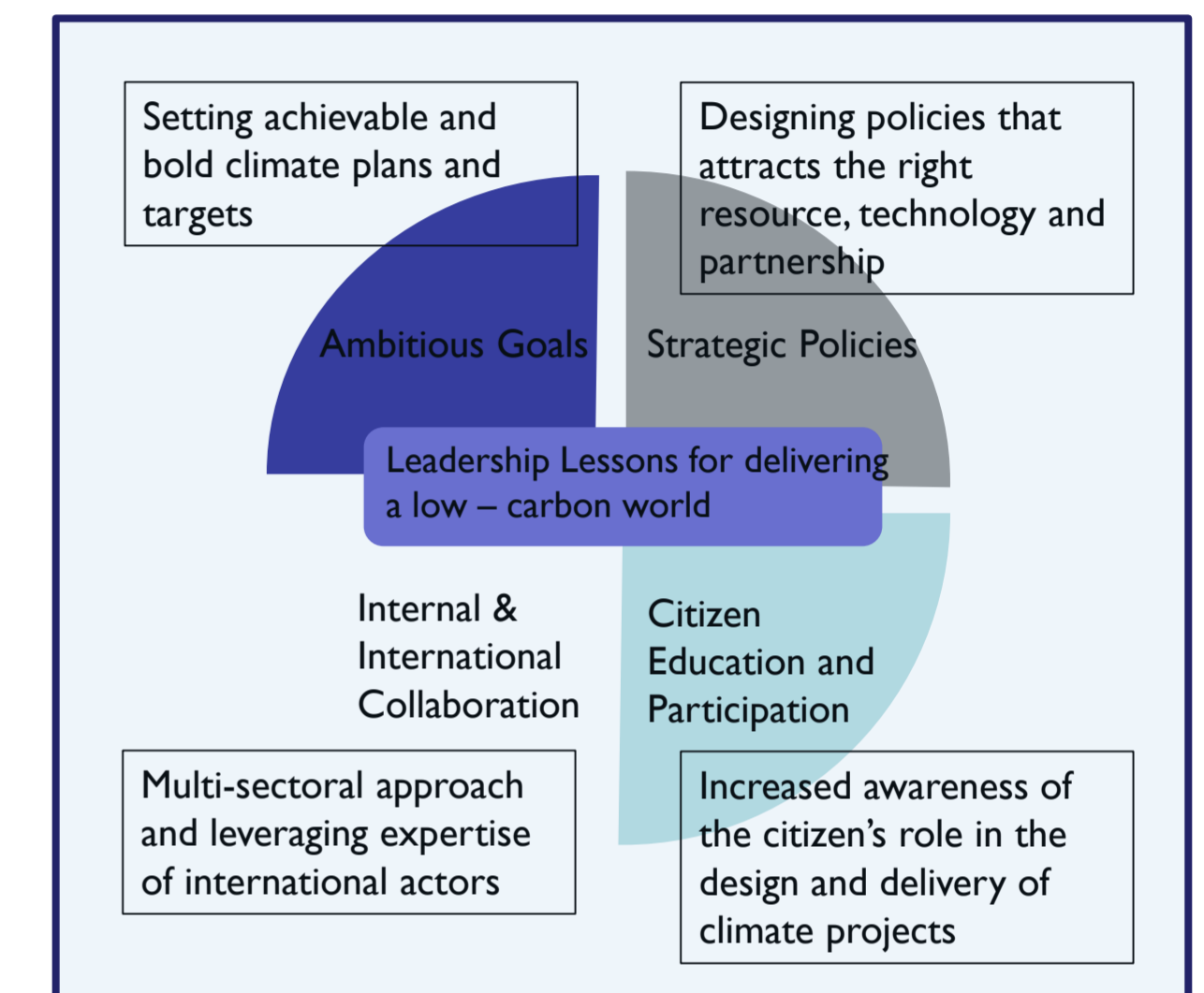


Fig. 3: Schematic Diagram showing the leadership insights for sustainable climate actions

Conclusion

Costa Rica and Morocco are noble examples of developing countries committed to addressing climate change, though, facing other socio – economic challenges. These governments have designed and implemented policies, laws and plan to significantly limit the amount of GHG emissions in the key economic sectors like energy, transport and agriculture. The achievement of the national and system leadership in Costa Rica and Morocco shows that policymakers must demonstrate a strong commitment to sustainability, design ambitious climate goals, build synergies within and externally, and equip citizens with the right education.

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