

# THE WAY FORWARD FOR RENEWABLE ENERGY IN CENTRAL AMERICA

*- KEY INSIGHTS FROM THE REPORT -*

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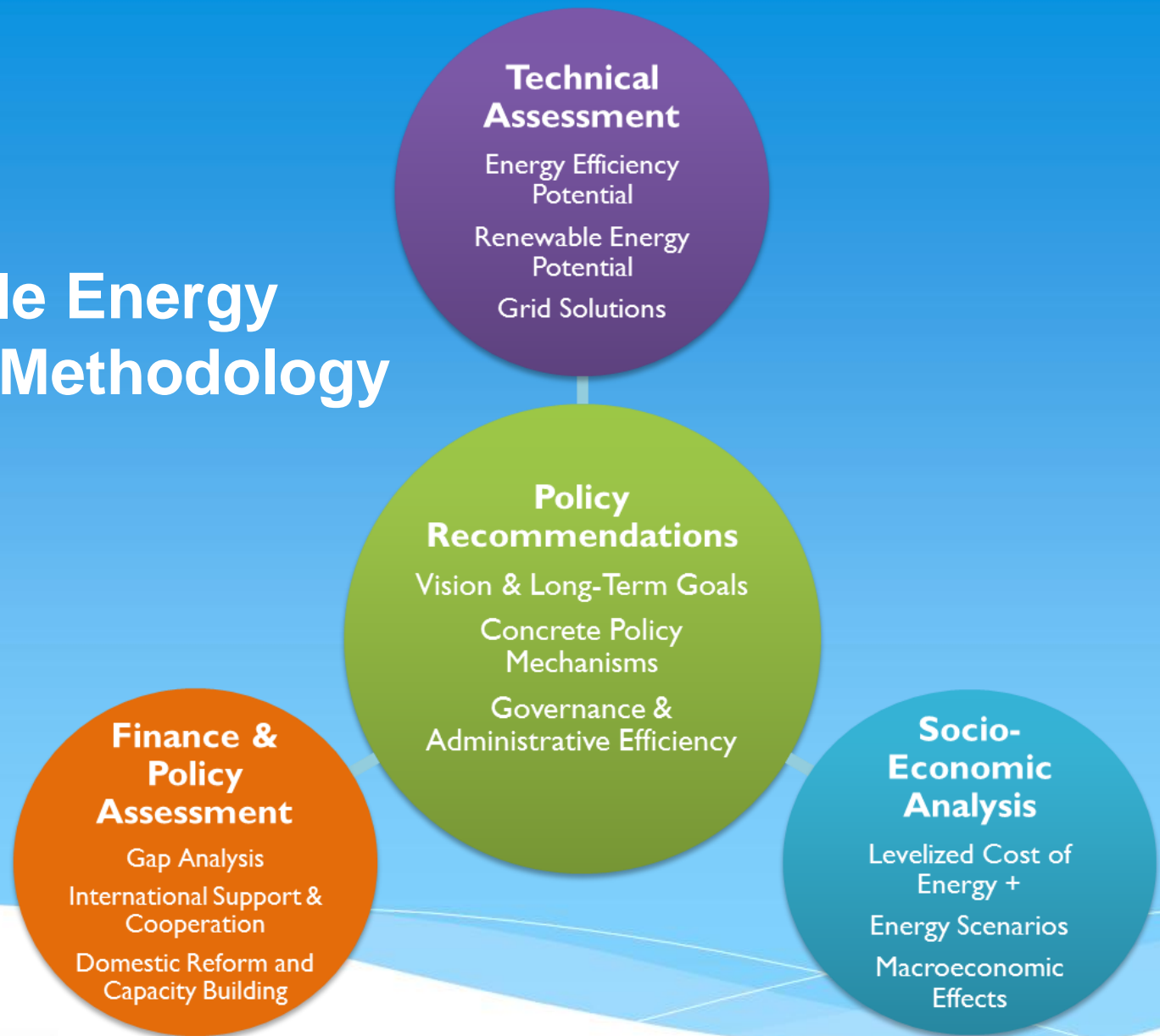
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# Worldwatch/INCAE Central America Sustainable Energy Development Initiative

- **Phase One (2012-13)** status of RE, gap analysis, success stories, identification of high impact areas, recommendations for advancement
- **Phase Two (2013-14)** Sustainable Energy Action Roadmaps: electrification, sustainable wood use, decreasing fossil fuel consumption growth through small- and large scale REs
- **Phase Three (2014-15)** Training & peer-to-peer learning exercises

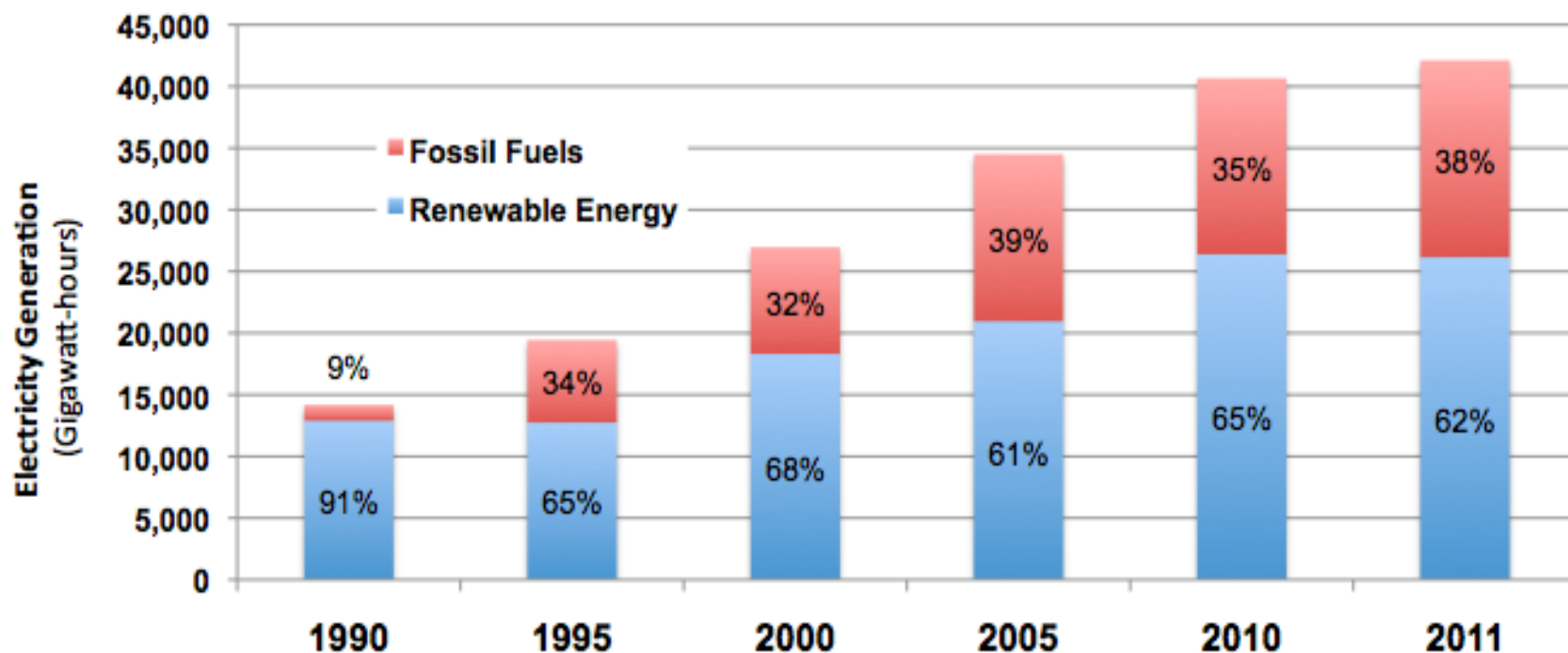
# Sustainable Energy Roadmap Methodology



# PART 1

# ENERGY SITUATION AND RENEWABLE ENERGY POTENTIAL IN CENTRAL AMERICA

# Figure 1. Fossil Fuel vs. Renewable Share of Total Electricity Generation in Central America, 1990–2011



Note: Totals may not add up to 100% due to rounding.

Source: UN-CEPAL

## Best Practice Highlights in the Report

- Micro hydropower, Guatemala
- Wind cooperatives, Costa Rica
- Bagasse power plant, Belize
- Capacity building through universities, Honduras
- Green microfinance, Honduras
- Small-scale wind & solar, Nicaragua
- Rural solar initiatives, Nicaragua
- Public tendering, Panama
- Net metering pilot program, Costa Rica
- Legal and regulatory reforms, Nicaragua

# Installed Capacity and Estimated Potential of Geothermal in Central America (World Bank)

	Installed Capacity	Estimated Potential	Number of Sites
	Megawatts		
Costa Rica	217.5	750–2,900	10
El Salvador	204.4	362–2,210	4–13
Guatemala	49.2	480–3,320	8–13
Honduras	0.0	100–990	6–7
Nicaragua	87.5	992–3,340	10
Panama	0.0	42–450	5
<b>Total</b>	<b>558.6</b>	<b>2,726–13,210</b>	<b>~50</b>

# Energy Situation in Central America

- **A leader in renewable energy with ambitious goals**
  - Dominance of large hydropower
  - World leader in geothermal
- **High use of traditional biomass for cooking**
- **Growing dependence on fossil fuels**
- **Significant untapped potentials in geothermal, wind, solar, biomass, small hydro**



# Renewable Energy Potential – Key Enablers

- **Country-wide resource assessments exist for initial analysis and identification of zones**
- **Detailed resource assessments available and used?**
- **Need for integrated planning**
  - across regions
  - across technologies
  - including energy efficiency and transmission and distribution
  - bringing together information from key actors

# PART 2

# THE SOCIO-ECONOMIC PROMISE OF RENEWABLES

# Oil Import Expenditures and Share of GDP

	2007		2008		2009		2010		2011	
	M \$	% GDP	M \$	% GDP	M \$	% GDP	M \$	% GDP	M \$	% GDP
Nicaragua	809	14.3	951	14.9	649	10.4	741	11.3	1,216	16.7
Honduras	1,392	11.3	1,937	14.0	1,215	8.6	1,684	10.9	2,267	13.4
Panama	1,230	6.2	1,927	8.4	1,235	5.4	1,713	6.5	2,863	9.2
El Salvador	1,288	6.4	1,647	7.7	1,038	5.0	1,350	6.3	1,819	7.9
Guatemala	2,422	7.1	2,690	6.9	2,014	5.4	2,227	5.4	2,951	6.3
Costa Rica	1,440	5.5	2,089	7.0	1,232	4.2	1,604	4.4	2,150	5.2
<b>Central America</b>	<b>8,580</b>	<b>7.3</b>	<b>11,243</b>	<b>8.4</b>	<b>7,383</b>	<b>5.7</b>	<b>9,320</b>	<b>6.3</b>	<b>13,265</b>	<b>8.0</b>

# Levelized Cost of Energy (LCOE) per kWh

- **Heavy fuel oil:** 12–15 US cents
- **Coal:** 10–11 US cents
- **Geothermal:** 5–8.9 US cents

*Sources: World Bank, CEPAL*

# Real Costs of Energy/Externalities

- Clean-up local environment
  - Health costs
  - Climate impacts
  - Subsidies
  - Lost opportunities: jobs, businesses
- Clear socio-economic advantage of RE over FF
- Need for country-specific LCOE+ analysis and communication

# PART 3

# RENEWABLE ENERGY INVESTMENTS AND FUTURE FINANCE NEEDS

# Investment and Finance – Status

- **Major impact of overall investment environment on investments in RE**
- **Diverse experience with attracting investments**
  - Climate Scope: Nicaragua #2 of 26 Latin American countries in climate compatible investment
- **Policy-driven market**

# Investment and Finance – Enablers

- Increase information and human resources capacity of banks to understand the value proposition of RE techs
- Increase RE developers' understanding of what banks need to approve a loan
- How can successful private business models be created and sustained?
- Role of international actors in reducing private financing risks (e.g., loan guarantees)



# PART 4

# EXISTING POLICIES AND AREAS FOR REFORM

## Vision (“Long, loud and legal”)

- Ambitious policy statements in place
- Goals, strategies, and legality of vision can be improved

## Policies and mechanisms

- RE policies exist and function to varying degrees
- Tax exemptions, tax credits, public financing
- Positive experiences with Tendering
- Net Metering
- Biofuel Blend Mandates
- Need to evaluate policies and policy mix at country level
- Additional p’s & m’s might be needed

## Administration

- Capacities have been improved
  - Policies often not fully implemented
  - Bureaucratic burden often too high
- Creation of one-window stop

## Governance

- RE offices or units exist
  - Lack of policy coherence and integrated planning
- Mainstreaming between agencies, creation of regulatory commission
- Stakeholder inclusion
- Transparency, MRV

# OUTLOOK

# Two Main Priorities for Central America

1. **Expand access** to energy in underserved communities through distributed **renewable energy** and the sustainable use of **fuel wood**.
2. **Reverse growth in fossil fuel**-generated electricity and meet future demand in grid-connected areas with **sustainable energy** and energy efficiency.

# Communications:

Web Page: [worldwatch.org/forums/ca](http://worldwatch.org/forums/ca)

Blog: [worldwatch.org/revolt](http://worldwatch.org/revolt)



Interviews with experts:

[youtube.com/user/WorldwatchEn](https://www.youtube.com/user/WorldwatchEn)

Your Contribution: report review, guest blogs,  
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