

China's grip on Ecuador's energy matrix

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China-Latin America Sustainable Investments Initiative

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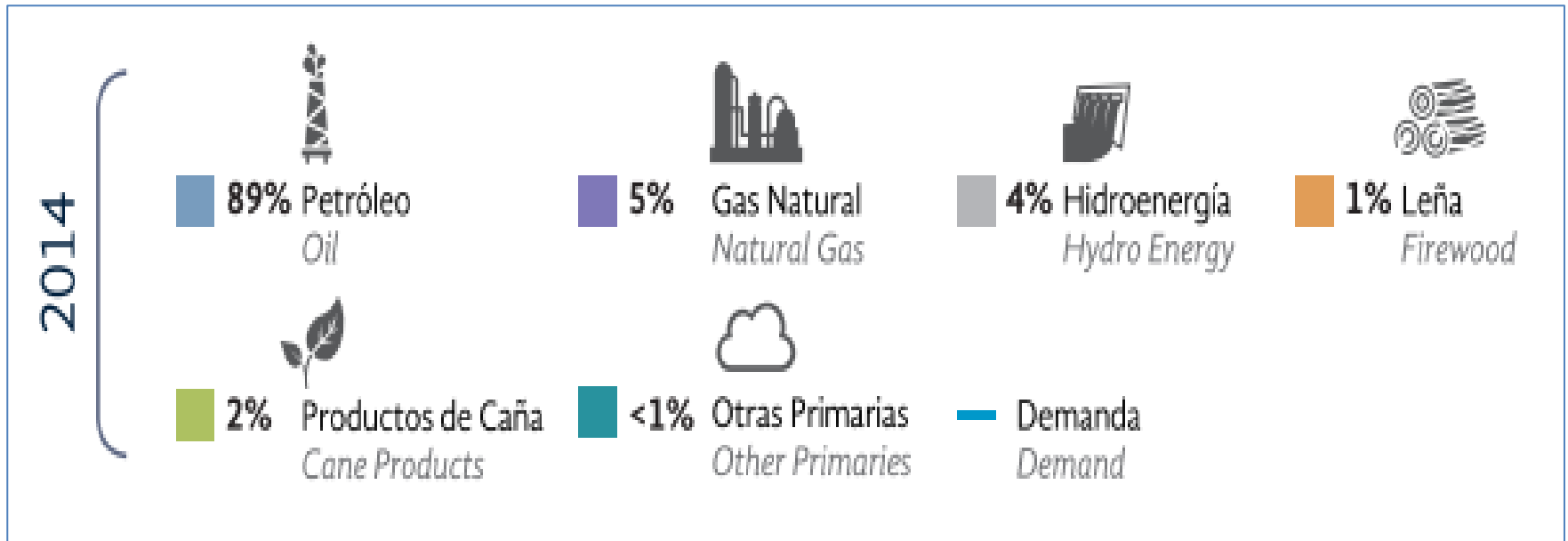
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Outline:

1. Ecuador's energy matrix
2. China & Ecuador's hydro sector: loans & projects
3. Issues at the macro level
4. The Coca Codo Sinclair dam
5. Issues at the project level

Ecuador's energy production by source (2014)

Crude oil has historically been the main primary energy source



Summary National Energy Balance 2015

Ecuador's road map to change its energy matrix:

- ✓ Make it a national priority
- ✓ Creating a new regulatory framework
- ✓ Finding the financing

ECUADOR: Con más energía y cada vez más limpia.

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Chinese loans to Ecuador: 2010 to 2016

Date	Purpose	Lender	US\$ mm
2010	Coca Codo Sinclair hydroelectric project	Chexim	1,682,745
2010	Multi-sectorial Investment Program projects	CDB	1,000,000
2011	Annual Investment Plan projects	CDB	1,400,000
2011	Annual Investment Plan projects	CDB	600,000
2011	Sopladora hydroelectric project	Chexim	571,363
2012	Investment Program for Economic Infrastructure	CDB	1,400,000
2012	Investment Program for Economic Infrastructure	CDB	300,000
2012	Investment Program for Economic Infrastructure	CDB	300,000
2013	Simon Bolívar highway	Chexim	80,000
2013	Minas San Francisco hydroelectric project	Chexim	312,481
2013	Cañar and Naranjal flood control project	BofCH	298,881
2014	500KV Transmission System -CCS	Chexim	509,233
2014	10 Highways	BoCh	311,964
2015	3 Highways	BoCH	85,710
2016	Priority Projects	ICBC	970,000
2016	City of Knowledge -Yachay (Phase I)	Chexim	198,244
2016	Infrastructure Projects/Programs	CDB	1,500,000
2016	Infrastructure Projects/Programs	CDB	500,000
2016	Santa Elena Hydraulic- Aqueduct Project (Phase I)	Chexim	102,567
2016	200 Educational Units	BoCH	167,372
			12,290,560

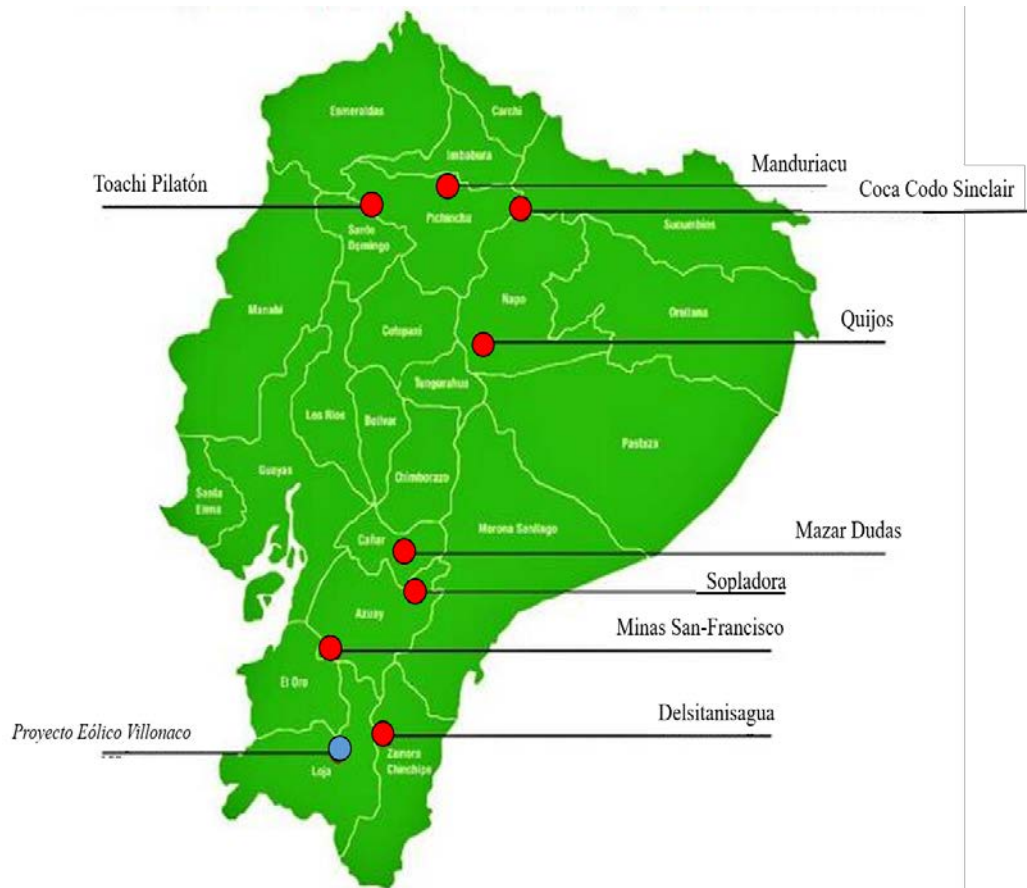
Source: Ministry of Finance. External Public Debt Statistical Bulletins (2010-2016).

International funding of hydro energy projects in Ecuador 2009 to 2016 (US\$ million)

Project	Constructor	MW	Lender	Loan	Original Costs	Final Costs	Variation	Status to January 2017
Coca Codo Sinclair	Sinohydro	1,500	Chexim	1.683	2,675	2,851	7%	In operation
Transmission lines	Harbin		Chexim	509	602	602*	N/D	In operation
Sopladora	China Gezhouba Group Company	487	Chexim	571	882	963	9%	In operation
Minas-San Francisco	Harbin Electric International	270	Chexim	312	509	684	34%	Progress 91%
Toachi-Pilatón	China International Water & Electric Corp	254	Russia Exim	123	517	589	14%	Progress 94%
Delsintagua	Hydrochina	180	CDB	185	216	335	55%	Progress 80%
Manduriacu	Odebrecht	65	BNDES	90	135	227	68%	In operation
Quijos	China National Electric Engineering	50	CDB	9	115	155	34%	Progress 46%
Mazar – Dudas	China National Electric Engineering	21	CDB	42	50	83	66%	Progress 86%
Villonaco (wind project)	Xijian Goldwind	16	CDB	34	37	43	14%	In operation
		2,843		3,558	5,738	6,532		

Sources:: Annual Debt Bulletins (2010-2016), Ministry of Finance. Master Plan of Electrification 2012-2021. MEER, CONELEC. Enlace Ciudadano No. 416 (March 21 2015). Ministry of Electricity and Renewable Energy.

China's role on Ecuadorian transition to a new energy matrix



International lending for “renewable” energy projects:

Type :

Hydro: US\$3.5b → 99%

Wind: US\$37m → 0.95%

Lenders:

Chexim: US\$3,075b → 86.4%

CDB: US\$270m → 7.6%

Other lenders: US\$213m → 6%

Contractors and amounts:

8 Chinese: USD\$6.3b → 96.5%

1 Brazilian: US\$227m → 3.4%

But...

“Ecuador se convertirá en el país con la matriz energética más limpia del planeta”

Ecuador será una potencia en tema de electricidad y al momento no existen problemas de abastecimiento de energía eléctrica, sostuvo el ministro de Electricidad y Energía Renovable, Esteban Albornoz.



The Ecuadorian Constitution emphasizes the importance of ensuring diversification of low-impact renewable energy sources (Art. 413).

A cleaner and sustainable energy matrix requires at the macro level:

- Holistic approach → more than building dams
- Funding → high indebtedness prevents funding for “truly” sustainable projects
- Public participation and information → China-Ecuador “integral strategic association”

Coca Codo Sinclair

The crown jewel



- Biggest dam in Ecuador (1500 MW) will cover 30% of national energy demand
- Financed by Chexim and built by Sinohydro
- US\$600 million savings per year
- Other benefits:
 - jobs, social programs
 - sub-contract national enterprises
 - exporting electricity
 - technology transfer
 - CO2 emissions reductions

Coca Codo Sinclair

The crown jewel

- Outdated technical assessments
- Lack of integrated Strategic Environmental and Social Assessments
- Other issues:
 - 16 workers dead
 - 92 claims, 14 lawsuits
 - 6 orders of suspension and a warning of termination of the contract from the project auditing company



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A cleaner and sustainable energy matrix requires at the project level:

- Strategic Environmental and Social Assessments
- Open databases, access to information, participatory monitoring
- Chinese guidelines be integrated into the environmental and social regulatory framework



Gracias!

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