

Caribbean Energy: Macro-Related Challenges

Presentation to the Annual Meetings of the
Caribbean Development Bank

May 18, 2016
Montego Bay, Jamaica



Arnold McIntyre
Western Hemisphere Department



Caribbean Energy: The Macro Challenge

- The Caribbean Forum in 2014 identified the need for sustainably lower energy costs to improve growth and competitiveness. The region remains too dependent on fuel oil, which significantly pushed up energy costs in the past decade and its price outlook remains highly volatile.
- Dilemma: investment in effective energy reform would be valuable, but few countries have fiscal space for ambitious investments.
- Task for IMF: move the dialogue from diagnostics (“lower energy costs would be better”) to actionable policies—meaning clarification about what would be a macro-feasible strategy for cutting costs and improving growth

Caribbean Energy: Key Macro- Questions

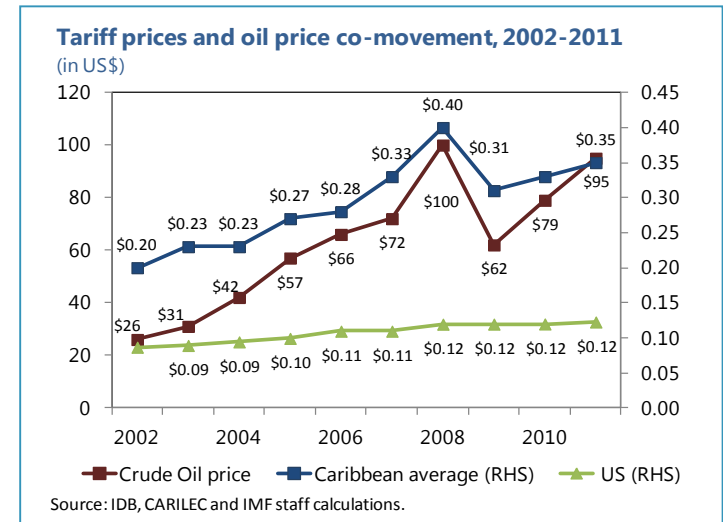
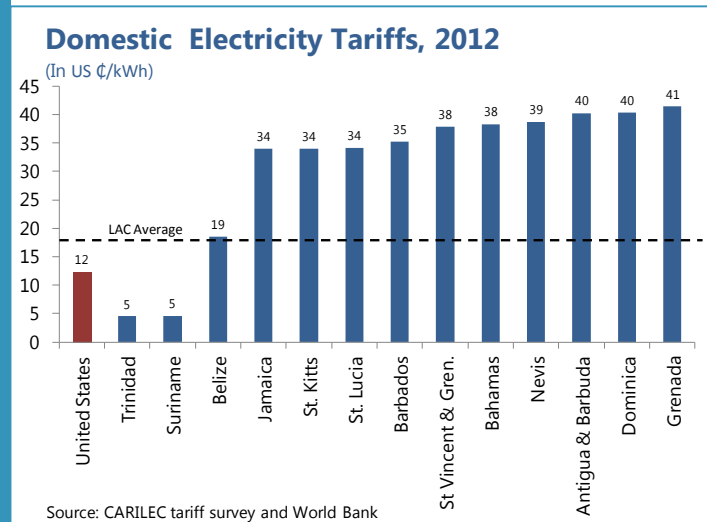
- **To get a grasp of what's macro-feasible, the IMF tackled a few fundamental questions:**
 - i. How important is energy sector reform to growth and competitiveness?
 - ii. Are countries' existing energy strategies appropriate/adequate?
 - iii. If these strategies were implemented, what macro-gains could be expected?
 - iv. How much would it cost to reach the targets in the energy strategies?
 - v. And finally, could countries afford it?

Caribbean Energy: Sector Overview

- Energy costs in the region have been significantly elevated over the past decade.

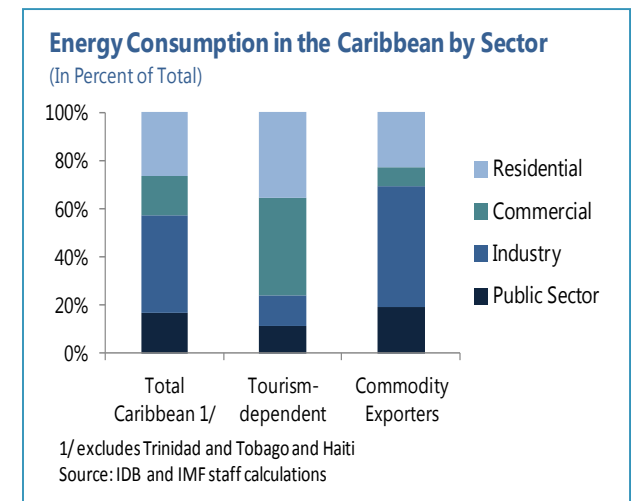
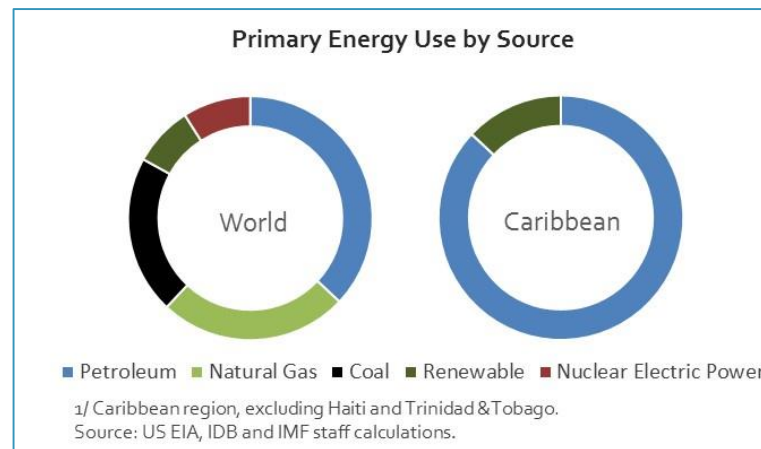
- ✓ Average electricity tariffs in the region increased by almost 80 percent over 2002-2012 exceeding 0.34 US\$/kWh for the bulk of the region in 2012, almost twice the LAC average (0.18 US\$/kWh).

- ✓ For the bulk of the Caribbean, oil price pass-through to electricity tariffs was achieved through fuel-surcharge since 2005/6.



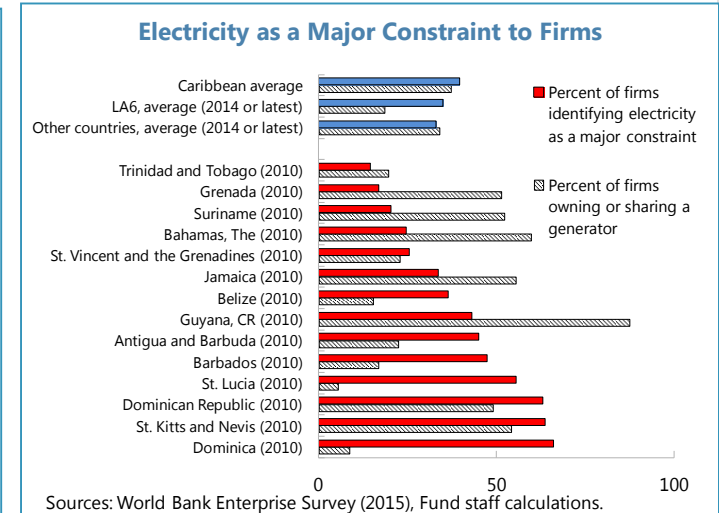
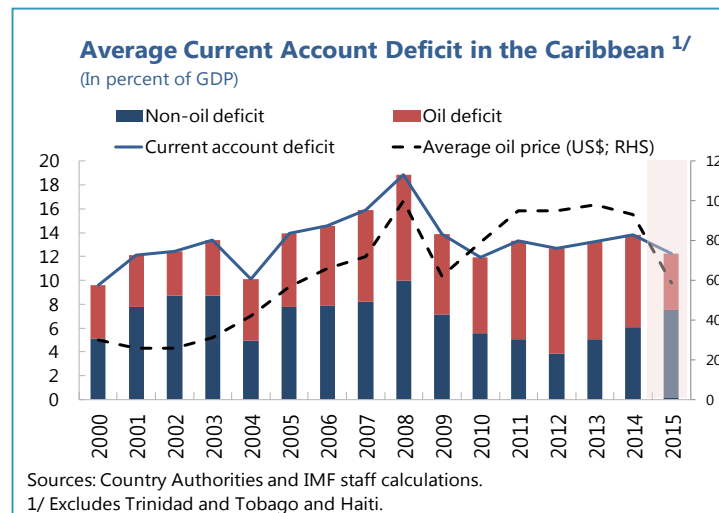
Caribbean Energy: Sector Overview

- **Overdependence on imported fossil fuels exposes the region to episodes of high and volatile oil prices**
- ✓ 85 percent of primary energy consumed is in the form of imported petroleum products, of which 40 percent is to cover transport fuel.
- ✓ Natural gas is only prominent in T&T.
- ✓ Hydro power is the most currently utilized form of renewable energy.
- ✓ In tourism-based economies, the most energy intensive users are hotels.



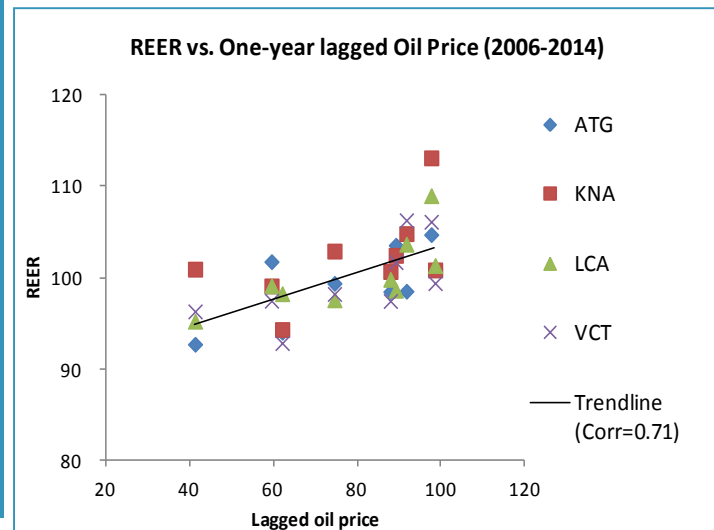
Caribbean Energy: Macro- Impact

- High and volatile energy prices have serious negative macro implications
 - ✓ High energy prices increase external vulnerability: the oil trade deficit widened by of 3.7 percent of GDP annually for Caribbean economies, on average, over 2005-2014.
 - ✓ High and volatile electricity prices raise the cost of doing business in the region and increase uncertainty of investment planning.

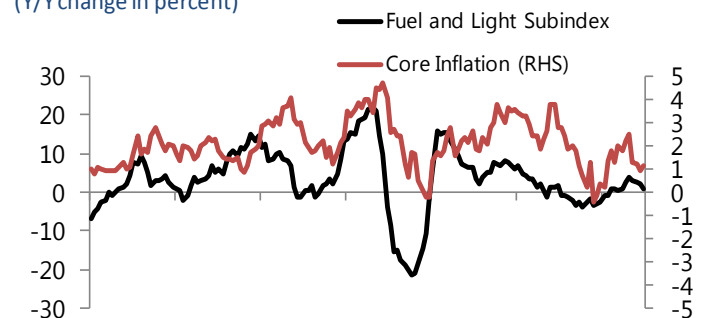


Caribbean Energy: Macro- Impact

- **High and volatile energy prices have serious negative macro implications**
 - ✓ Oil price shocks triggered inflationary episodes generating real exchange rate appreciation, with negative implications for competitiveness.
 - ✓ The energy bill has absorbed a significant share of household's discretionary income in 2012 (8½ percent of GDP).



OECS: Energy Price Volatility vs. Core Inflation 1/
(Y/Y change in percent)



Jan-02 Jan-04 Jan-06 Jan-08 Jan-10 Jan-12 Jan-14
1/core inflation excludes food and fuel; weights are based on St. Lucia consumption basket.
Source: ECCB; IMF staff calculations.

Caribbean Energy: Macro- Impact

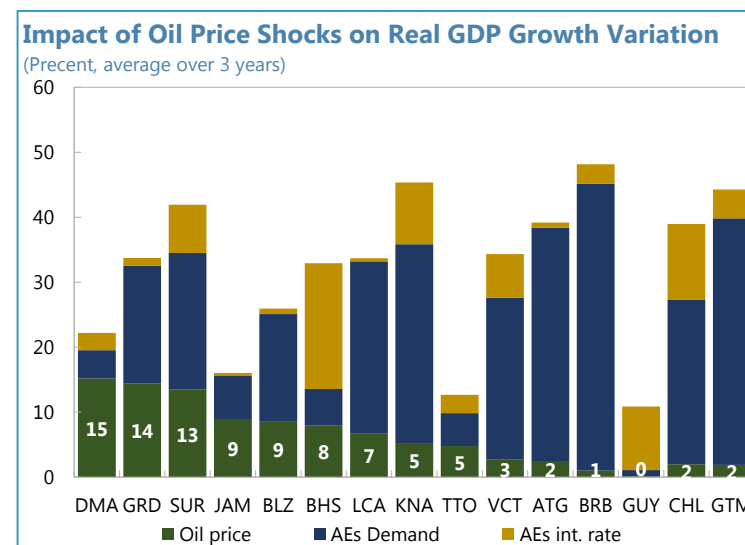
- The recent oil price decline has reduced electricity tariffs by around 35 percent in 2015, while the oil trade balance is expected to have shrunk by around 4 percent of GDP in 2015.
- The decline in oil prices may look like a panacea but its not as the region is still relatively uncompetitive as prices dropped in the rest-of-the-world as well.

Caribbean Energy: Empirical Findings

Oil Price Shocks can have a significant impact on growth and competitiveness.

Growth:

- Real oil price shocks explain **on average** about 7% of variation in real GDP growth.
- A 10% increase in real oil prices reduces real GDP growth by about **0.5 pp** over 5 years in tourism-intensive countries.



Competitiveness:

- A 10% increase in real oil prices increases the rate of REER appreciation by 2.8 pp over 5 years in tourism-intensive countries and 3.8 pp in commodity-producers.

Over the long run, reducing high energy costs through improving energy efficiency would have a discernible growth impact:

- A 10 percent improvement in energy efficiency would leave GDP 2 percent higher.

Overall impact... significant, but not a panacea.

Caribbean Energy: Existing Sector Strategies

Regional Energy Plans

Regional (CARICOM Energy Policy) and national energy plans embrace recommended energy strategies to boost growth and competitiveness by focusing on: i) regulatory reforms; ii) diversifying the generation mix and iii) improving energy efficiency.

- ❑ Building on the CARICOM Energy Policy (CEP), the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) was developed to provide CARICOM member states with a coherent strategy for transitioning to sustainable energy. The Roadmap sets specific regional energy targets for:
 - Renewable Power generation: 20 percent renewable power capacity by 2017 (currently at about 15 percent), 28 percent by 2022 and 47 percent by 2027.
 - Energy Efficiency: 33-percent reduction in energy intensity by 2027.
 - CO₂ emissions: reductions of 18 percent by 2017, 32 percent by 2022, and 36 percent by 2027.
 - Countries have national targets for renewable energy and energy efficiency that are aligned with regional targets

Caribbean Energy: Existing Sector Strategies

❑ **Regulatory Reforms** could contribute significantly. Regulatory reforms are needed to facilitate the expansion of alternative (cost-competitive) sources of energy, particularly renewable energy resources in the region.

❑ **Improving energy efficiency** can generate significant gains in reducing energy costs.

❑ **Diversify the generation mix through**

- ✓ Exploring viable renewable energy technologies, particularly geothermal power in the Eastern Caribbean.
- ✓ Diversifying through natural gas for countries where it is feasible.

Summary of Viable Renewable Energy Sources by Country					
Country	Solar	Wind	Geothermal	Hydro	Biomass
Antigua and Barbuda	✓	✓			
Dominica	✓	✓	✓	✓	✓
Grenada		✓	✓	✓	✓
St. Kitts and Nevis	✓	✓	✓		✓
St. Lucia	✓	✓	✓		✓
St. Vincent and the Grens.	✓	✓	✓	✓	✓
Bahamas		✓			✓
Barbados	✓	✓			✓
Guyana				✓	✓
Haiti	✓			✓	✓
Jamaica	✓	✓	✓	✓	✓
Suriname				✓	✓

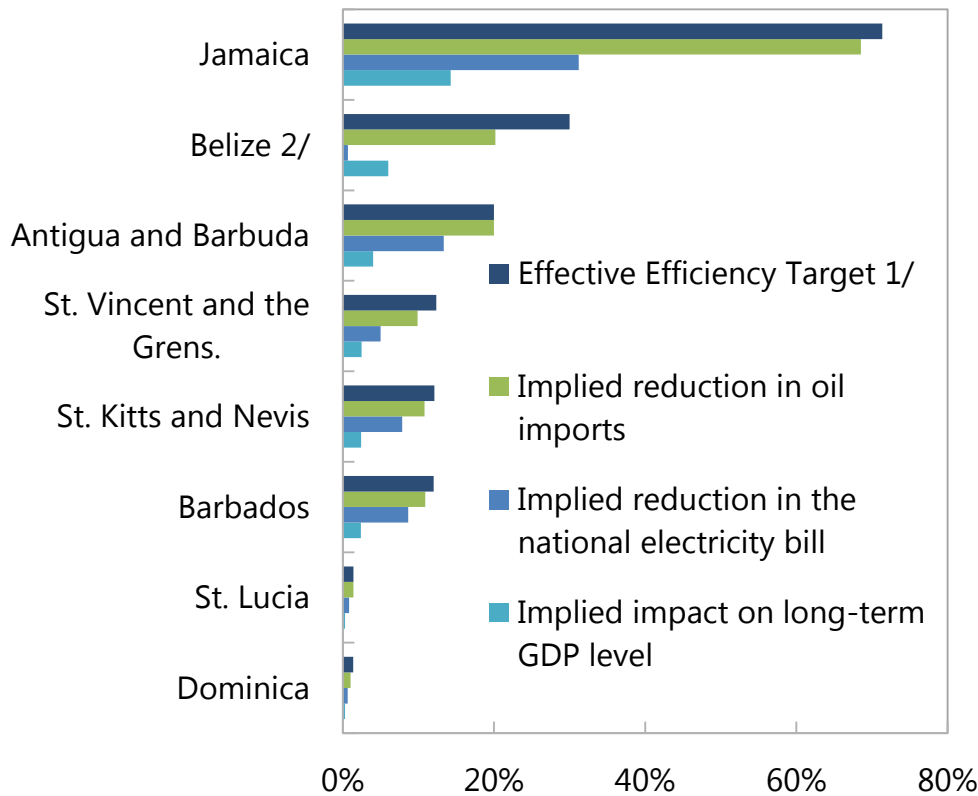
Source: CARICOM Caribbean Sustainable Energy Roadmap

Caribbean Energy: Existing Energy Strategies— Expected Macro Impacts

- Implementing the measures needed to meet the energy efficiency targets already outlined in CARICOM's regional energy strategy would lower electricity tariffs and fuel import costs—thus supporting growth.

National Energy Efficiency Targets and Implied Effects

(in percent, cumulative over the period of long-term target)



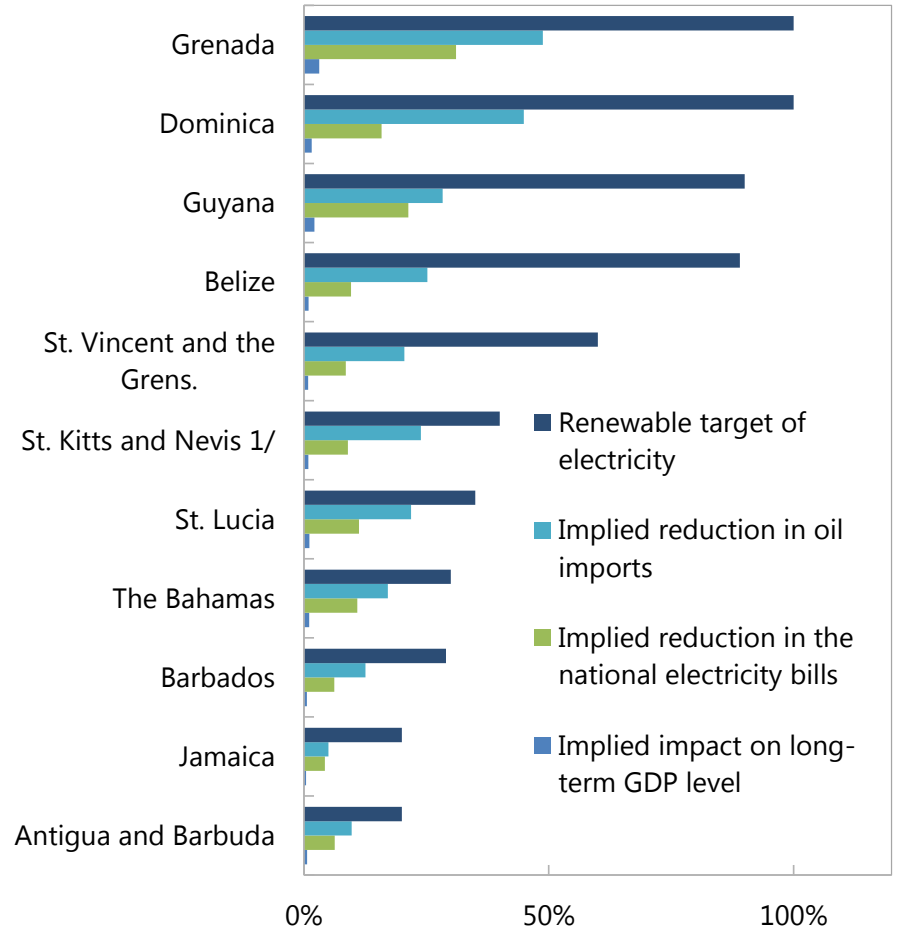
1/ Announced targets shown on the left are normalized to the same base to reflect the targeted improvement in energy consumption in the entire economy, including the transport sector.

2/ The impact on the national electricity bill from achieving the target reflects the smaller savings from energy efficiency technologies in Belize, where the electricity tariff rate is relatively low.

Sources: CARICOM Caribbean Sustainable Energy Roadmap, Castalia Report, IDB, WEO, IMF staff estimations.

National Renewable Energy Targets and Implied Effects

(in percent, cumulative over the period of long-term target)



1/ Target is the average of a 20 percent renewable target for St. Kitts and 100 percent target for Nevis, weighted by size of electricity generation on each island.

Caribbean Energy: Cost of Implementing Energy Strategies

- Total energy sector investment needs could be met by spending about **7 percent of regional 2015 GDP** ... not cheap but not insurmountable for most countries.

Energy Sector Investment Needs in the Caribbean (2018-2023)								
(in millions of USD)								
	Building/ Upgrading power plants ^{1/}	Introducing Natural Gas Facilities ^{2/}	Renewable Energy Investments ^{3/ 4/}	Energy Efficiency and Conservation Initiatives ^{5/}	Total Investment	Total Investment (%GDP) ^{6/}	Average GDP Growth (2006-2015)	Gross Public Debt (% of GDP) ^{6/}
The Bahamas	150	251	70	40	511	5.8	0.4	60.8
Barbados	190	129	80	40	439	9.9	0.6	103.8
Belize		59	-	-	59	3.3	2.6	78.1
Guyana	135	110	5	20	270	8.4	4.4	70.2
Jamaica	400	280	60	120	860	6.2	0.1	127.7
Suriname	100	223	45	10	378	7.5	3.8	36.9
ECCU			421	30	451	9.8	1.2	82.9
Antigua & Barbuda			42	5	47	3.7	1.2	101.9
Dominica			52	5	57	10.6	2.4	79.4
Grenada			88	5	93	9.7	0.7	90.3
St. Kitts and Nevis			87	5	92	10.3	2.0	66.3
St. Lucia			66	5	71	4.9	1.1	82.6
St. Vincent & Gr.			87	5	92	12.0	1.0	77.0
Region Total	975	1,052	681	260	2968	6.9	1.9	80.0

Source: IDB and IMF staff estimates.

1/ Includes cost of building new capacity of natural gas-fired power plants. IDB estimates do not include expansions for generation capacity in Belize, which imports a significant share of its electric power from Mexico. For Guyana and Suriname includes costs for rural electrification.

2/ Includes estimated costs of converting existing plants to natural gas and the construction of regasification facilities.

3/ Includes solar, hydro, wind, and waste-to-energy projects. For the ECCU, reflects cost for geothermal power development.

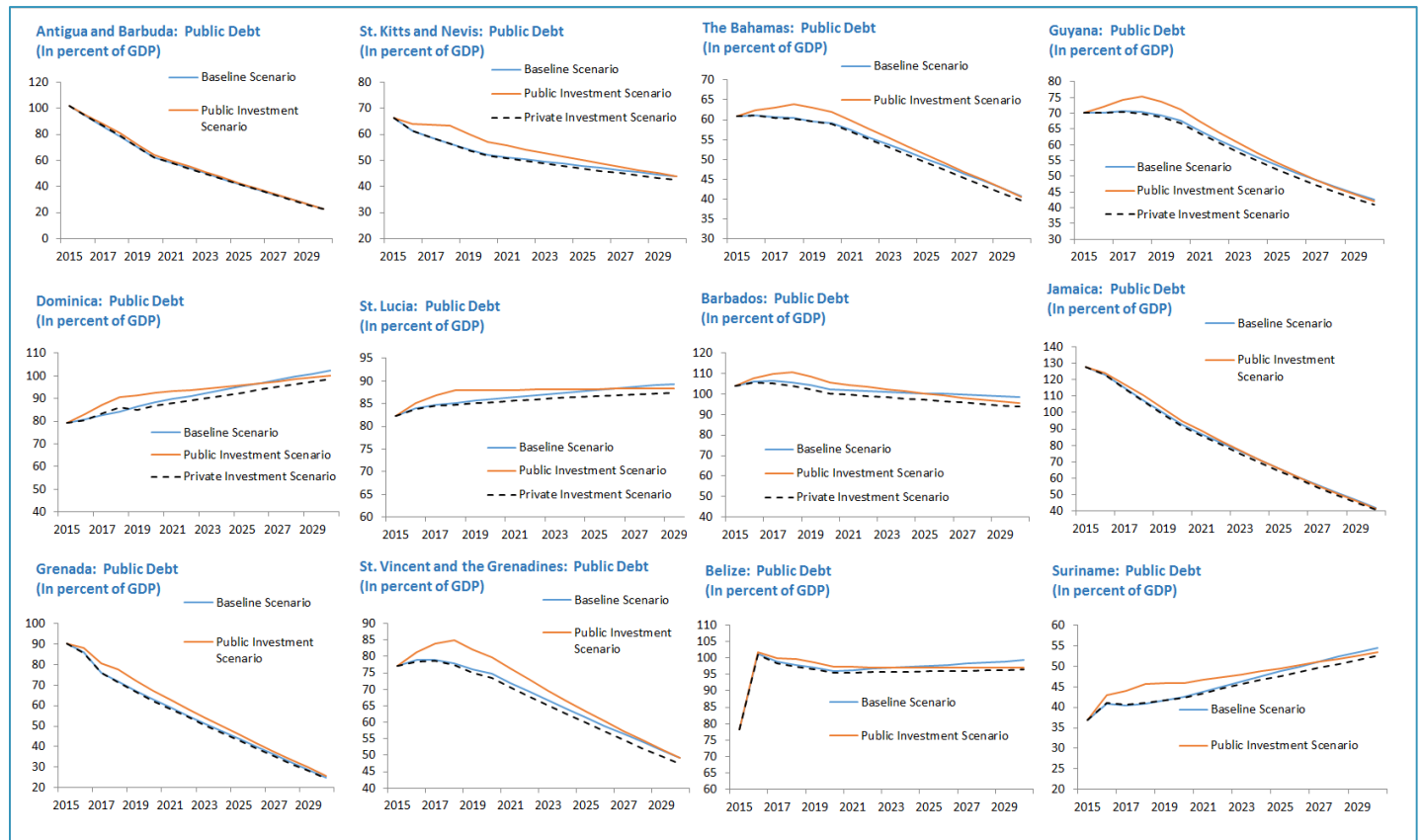
4/ For Antigua and Barbuda, reflects cost estimates for solar and wind power generation of 20 percent by 2020.

5/ Includes cost for solar water heaters, grid loss reduction, street lighting retrofit and smart fund for EE projects.

6/ Based on 2015 estimates

Caribbean Energy: Strategies and Public Debt Sustainability

- Proposed energy investments do not materially alter public debt trajectories in most countries.
- Private participation would keep debt more sustainable.



Caribbean Energy: Summary of Conclusions

- Lowering energy costs can help growth ... though is not “the” panacea.
- The region’s existing plans go in the right direction toward realizing savings and generating growth.
- However ,there are some regulatory gaps, including the lack of a clear framework for Independent power producers and an independent national (or regional) regulatory authority .
- The investment envelope needed to realize these plans is large but not beyond possibility for most governments...
- ... and in particular, for most countries, would not be inconsistent with maintaining debt sustainability.

Caribbean Energy: Some Recommendations

- **Press ahead with country/regional strategies**, but always with reference to debt sustainability and quality of investments.
 - **Caveat:** If public investment is inefficient, with low return, or if collection rates of user fees are poor, then debt sustainability will be more at risk from large investments.
- **Pursue private financing** of alternative energy investments, including through public-private partnerships, as a first best option.
 - **Caveat:** Avoid excessive guarantees and ensure adequate risk sharing.
- **Fill the gaps in the strategies. In particular, regulatory and legislative reforms are low hanging fruit** to create an enabling environment for greater private sector participation.
 1. Net billing schemes and feed-in tariffs
 2. Strong independent national/regional regulators
 3. Incentives for energy efficiency