

India's Energy and Fiscal Transition

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Introduction

- India will go through a significant energy transition from fossil fuels towards renewable energy over the next few decades
- Together coal, oil and natural gas account for large share of Indian government revenues, and this has been growing steadily
- Therefore India's energy transition will impact government revenues from fossil fuels significantly
- The transition is also important for India's energy security
- We investigate how much will the expected energy transition impact India's fisc and in what manner

The IEA Scenarios: A Brief Discussion

- **The International Energy Association (2021)** has come up with different possible scenarios of India's energy transition
 - **The Stated Policy Scenario** that is based on the current policy statements by the government and builds in constraints that it will face, these predominantly are related to increasing capacities of renewable and limited in coal
 - **The India Vision Case** is based on a more 'complete realisation of India's stated energy policy objectives, in India's case this is not very different from the Stated Policy Scenario.
 - **The Sustainable Development Scenario** is one where the country invests significantly to reduce its carbon footprint. The IEA has assumed significant increase in use of Natural Gas and reduction in Coal

IEA Scenarios for India (Assume 5.4% GDP Growth)

SCENARIOS	STATED POLICY SCENARIO			SUSTAINABLE DEVELOPMENT SCENARIO			INDIA VISION CASE		
Source	2019	2030	2040	2019	2030	2040	2019	2030	2040
Coal	413	498	541	413	318	209	413	463	497
Oil	242	335	411	242	292	268	242	325	379
Natural Gas	55	113	173	55	124	181	55	129	215
Nuclear	10	28	58	10	28	64	10	28	58
Hydro	15	19	26	15	22	31	15	19	26
Bioenergy	182	188	204	182	120	169	182	116	158
Other Ren.	11	54	160	11	90	225	11	72	188
TOTAL	928	1235	1573	928	994	1147	928	1152	1521

Million Ton Oil Equivalent (MTOE)

Less primary energy required in Sustainable development scenario as it requires small quantity of coal

Estimating impact on fossil revenues

- For all fossil fuels: Coal, Lignite, Petroleum products including diesel and petrol, natural gas
- Many different kinds of tax revenues, different ones apply on different products
- Include both tax and non tax revenues
- Coal: Around 16 different taxes like GST, National mining exploration tax (NMET), excise duty, clean energy cess, royalty, district mineral fund etc.
- Clean energy cess, Royalties, Dividends and Corporate tax forms the major share of total revenues from coal. Royalties mostly goes to states and dividends to the Center.
- Oil and Natural Gas: Cess, Basic custom duty, additional custom duty, Excise duty, VAT, royalty, dividends etc.
- Excise duty (66 percent) for center and VAT (90 percent) for states are the biggest revenue sources.

Estimating impact on fossil revenues

- Contribution of excise duty increased by 53 percent between 2016-17 to 2020-21
- VAT varies widely across states both for petrol and diesel.
- Custom duty, Dividends and Royalties are other major sources
- Separately for state (sub-national) and central (national) governments
- Ceteris paribus assumptions
- Compare against, GDP, and government revenues and expenditures

Revenue Challenges (Stated Policy Scenario)

Government Revenues from Fossil Fuels (Stated Policy Scenario)				
	In Rs Billion	As share of India's GDP	As Share of Government Expenditure	As Share of Government revenue
(1)	(2)	(3)	(4)	(5)
Central Government Fossil Revenue				
2019	4,047.49	2	15	20.8
2030	7,030.30	1.1	10.8	10.7
2040	9,953.68	0.6	4.5	6.3
State Government Fossil Revenue				
2019	2,427.14	1.2	6.2	8.3
2030	4,347.49	0.7	5.4	5.1
2040	6,253.78	0.4	2	2.6
Total Central and State Government Fossil Revenues				
2019	6,474.63	3.2	9.8	13.3
2030	11,377.80	1.8	7.8	7.6
2040	16,207.46	1	3	4.1

Revenues from Fossil Fuel: A discussion

- Currently fossil fuel revenues are about 3.2 percent of India's GDP, and have been growing
- They account for many multiples of the health budget
- And greater than all of India's defense budget
- Comparable to India's complete education budget
- For both central and state governments the revenues will more than double over the next two decades in the base scenario
- However as a share of budgetary expenditures, revenues and overall GDP they will fall significantly

How Revenues will differ across different scenarios

Government Revenues from Fossil Fuels as a Share of Government Revenues			
	BASE CASE - Stated Policy Scenario	Sustainable Development Case	India Vision Case
Total Central and State Government Fossil Revenue			
2019	13.3	13.3	13.3
2030	7.6	7.6	8.2
2040	4.1	3.8	4.7
State Government Fossil Revenue			
2019	8.3	8.3	8.3
2030	5.1	5.2	5.6
2040	2.6	2.5	3.1
Central Government Fossil Revenue			
2019	20.8	20.8	20.8
2030	10.7	10.7	11.6
2040	6.3	5.7	7.3

Carbon Tax: An exercise

- Using Parry et. al. (2017), revenues from carbon tax would be half as much as generated in the current taxation regime in 2019
- Even if we increase the rate of carbon tax progressively, in 2030 and 2040 the revenue generated from carbon tax and current regime would be comparable

	2019	2030	2040
Revenue from existing tax sources	3.2	1.8	1.0
Coal	0.5	0.2	0.1
Oil and natural gas	2.7	1.6	0.9
Revenue from Carbon tax	1.4	2.3	1.2
Coal	0.6	0.8	0.4
Oil and natural gas	0.7	1.5	0.8
<i>Assumptions: In 2019, carbon tax of USD 10/ton CO2 and in 2030 and 2040 of USD 35/ton CO2 and exchange rate Rs 65/USD</i>			

Conclusion...1

- Taxes on petroleum and products account for the bulk of the taxes
- On a unit basis, natural gas is also taxed fairly heavily
- Coal is taxed the least and accounts for a relatively low share of revenues
- The Central government far more dependent on fossil fuel revenues than state governments
- Total fossil fuel revenues are expected to consistently increase, even in a no-carbon tax scenario under most likely scenarios
- However as a share of revenues, expenditures, and even GDP, they will fall significantly
- Governments cannot depend upon energy to meet growing expenditure needs, and will need to find other avenues

Conclusion...2

- Fiscally constrained governments at center and state will have difficulty in investing in energy infrastructure
- Subsidies on renewable energy are even less feasible on a large scale
- Energy subsidies in fossil fuels are falling and are increasingly insignificant
- Subsidy on Coal, oil and gas fell from 1.8 percent of GDP in FY2014 to 0.5 percent in FY2020
- Political economy implications because of differential impact on States
- Net Zero commitments at 2070 likely to have insignificant impact till 2040, and will impact only beyond that
- Carbon taxes may have a significant impact depending upon the extent of tax and timeframe
- Inflationary and growth reducing impacts of carbon taxes not studied

Thank you