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مركز الملك عبدالله للدراسات والبحوث البترولية

King Abdullah Petroleum Studies and Research Center

Feasibility of Enhancing India's Nationally Determined Contribution (NDC)

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About King Abdullah Petroleum Studies and Research Center

- KAPSARC is an independent, non-profit institution located in Riyadh, Saudi Arabia.
- The Center was established by the Saudi Council of Ministers, and its facilities were opened in 2013.
- It brings together an international group of expert researchers of more than 15 nationalities.
- KAPSARC's activities are funded in perpetuity by an endowment provided by the Government of Saudi Arabia.

Project Overview

- Evaluate the political feasibility to implement and enhance Nationally Determined Contributions (NDCs) such that the rise of global temperature is limited to 2°C above pre-industrial levels (or less).

- Apply the KAPSARC Toolkit for Behavioral Analysis (KTAB) to simulate the domestic collective decision-making processes (CDMP) within each the top 5 emitters. Six independent, but related studies:
  - China
  - US
  - European Union (EU)
  - India
  - Russia
  - ➢ *We have a related study on the United Arab Emirates (UAE)*

What is the KAPSARC Toolkit for Behavioral Analysis (KTAB)?

- KTAB is a platform to build models of collective decision-making processes (CDMPs).
  - e.g. bargaining, generalized voting models, political decision making, and more.
- The KTAB model used in this study simulates how actors strategically attempt to influence each other to obtain the best possible outcome, from their perspective.
  - Actors include political leaders, advocacy groups, industry players, segments of civil society – i.e. all relevant stakeholders.
  - The simulation utilizes game theoretic and decision theoretic principles to capture the "bargaining" process, i.e. the evolution of advocacy over time with respect to some issue.
- Data are collected through structured interviews with subject matter experts.

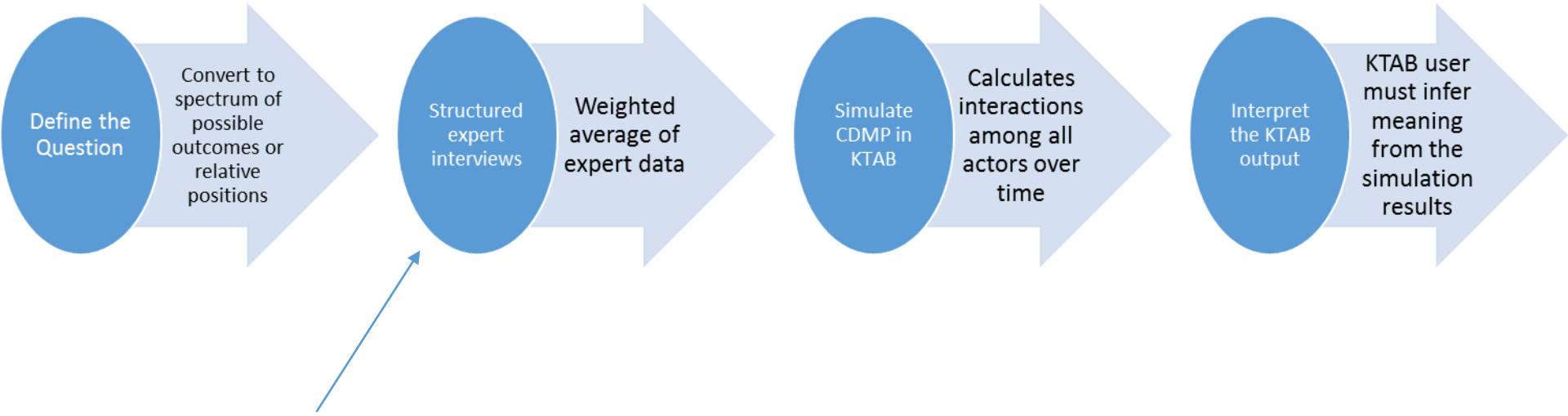
Step 1. Data Collection – The Sources of Data

- Data are almost always collected from subject matter experts
  - Not all domain experts are appropriate for KTAB (broad knowledge versus stakeholder knowledge)
- No clear guidance on the number of experts needed
  - The sources of their expertise should be different
  - It can't hurt to draw on experts with different views of the world
  - Between 5-7 experts, so long as they are "good" experts and their data are highly correlated, tends to be sufficient.

Step 1. Data Collection

- **Actor** is the word we use to describe the people and groups that interact with each other in the CDMP.
  - If a group of individuals, then must behave as a unitary actor.
- Actors will attempt to influence each other to achieve some outcome.
- **Position**. Each actor advocates his or her current negotiation offer. The current stated public position is the desired one.
- Actors adopt different positions based on who they are, their function, responsibilities, duties, past history and the nature of the issue at hand among other things. Even when there is a single stated public position for an entire group
- **Influence** reflects the maximum pressure an actor or group could exert on the issue if fully mobilized.
- **Salience** is an actor's current willingness to devote political, economic, social or military capital when the issue arises.

Typical KTAB Process

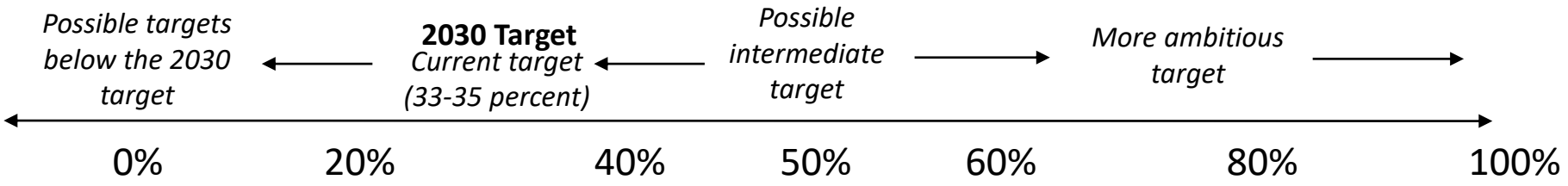


In our case we did average

Defining the Question

- Copenhagen Accord (COP 15), India released a long-term action plan to reduce the emissions intensity of its GDP to 20-25 % by 2020 compared to the 2005 level.
- India revised its NDC announced to reduce the emissions intensity of its GDP by 33 to 35 % by 2030 compared to the 2005 level.
- This study will evaluate the political feasibility of reaching an new agreement on the mid-century target. How ambitious or conservative India's target will be?

What are stakeholders' positions on India's 2050 target to reduce emissions intensity of its GDP?

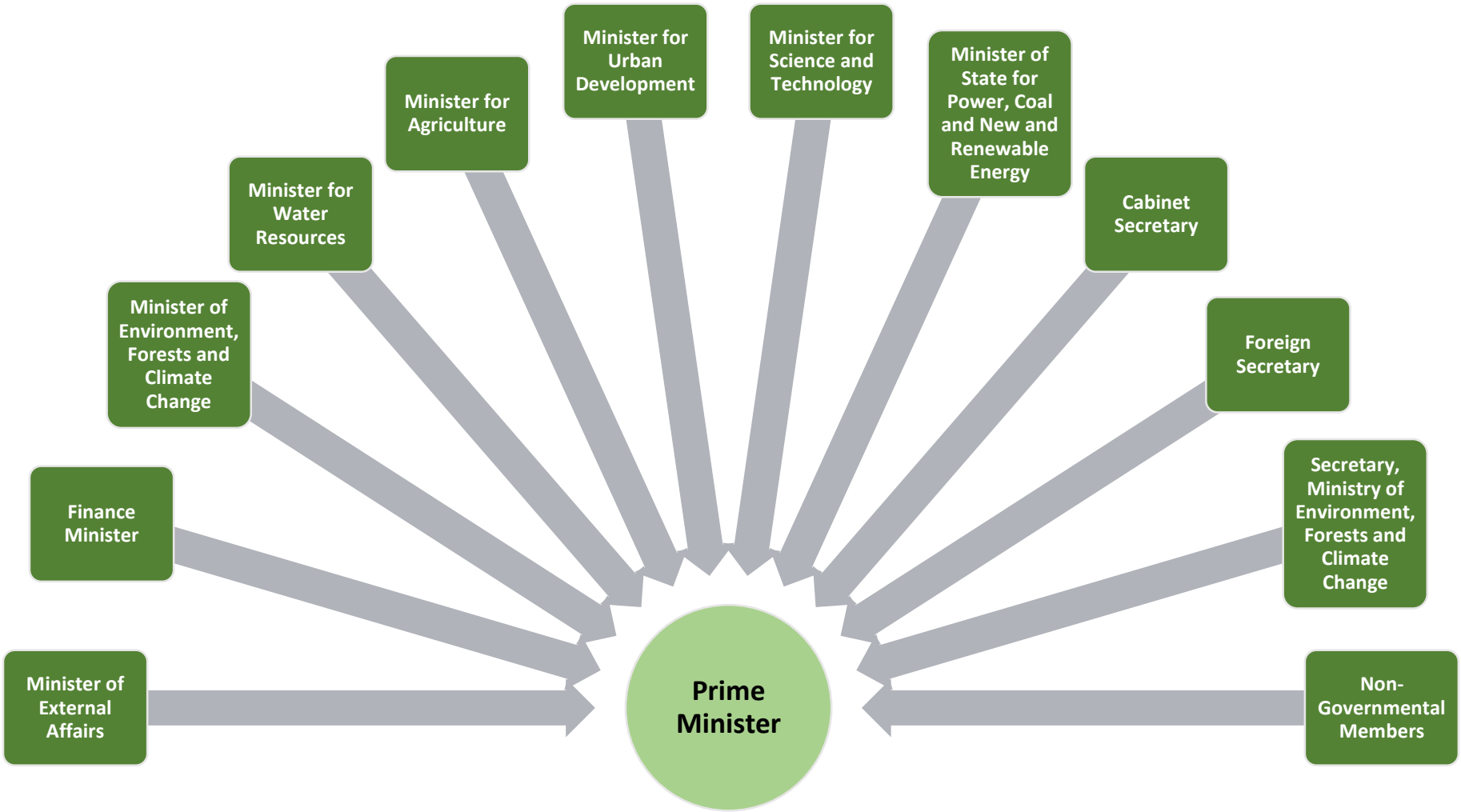


Climate Policies in the India

Salient features India's NDC

1. To reduce the emissions intensity of its GDP by **33 to 35 per cent by 2030** from 2005 level.
2. To achieve about 40 per cent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030.
3. To create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.
4. To better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change.
5. To mobilize domestic and new and additional funds from developed countries to implement the above mitigation and adaptation actions in view of the resource required and the resource gap.
6. To build capacities, create domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and for joint collaborative R&D for such future technologies.
7. To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation.
8. To adopt a climate-friendly and a cleaner path than the one followed hitherto by others at corresponding level of economic development.

India's Decision Making Process- Simplified



Data Collection and Experts Consulted

- Data collected through group interviews and individual structured interviews with subject matter experts in New Delhi from May 14th – May 16th , 2018.
- Subject matter experts included the following:
  - Dr. Atul Kumar, TERI School of Advanced Studies
  - Dr. Navroz K. Dubash, Professor, Centre for Policy Research
  - Dr. Vaibhav Chaturvedi, Research Fellow , Council on Energy, Environment and Water (CEEW)
  - Sanjeev Ahluwalia, Advisor, Observer Research Foundation
  - Mohd. Sahil Ali, Associate, Energy and Sustainability, Brookings India
  - Mr. Puneet Kamboj, Associate, Energy and Sustainability, Brookings India
  - Ministry of Environment, Forest and Climate Change

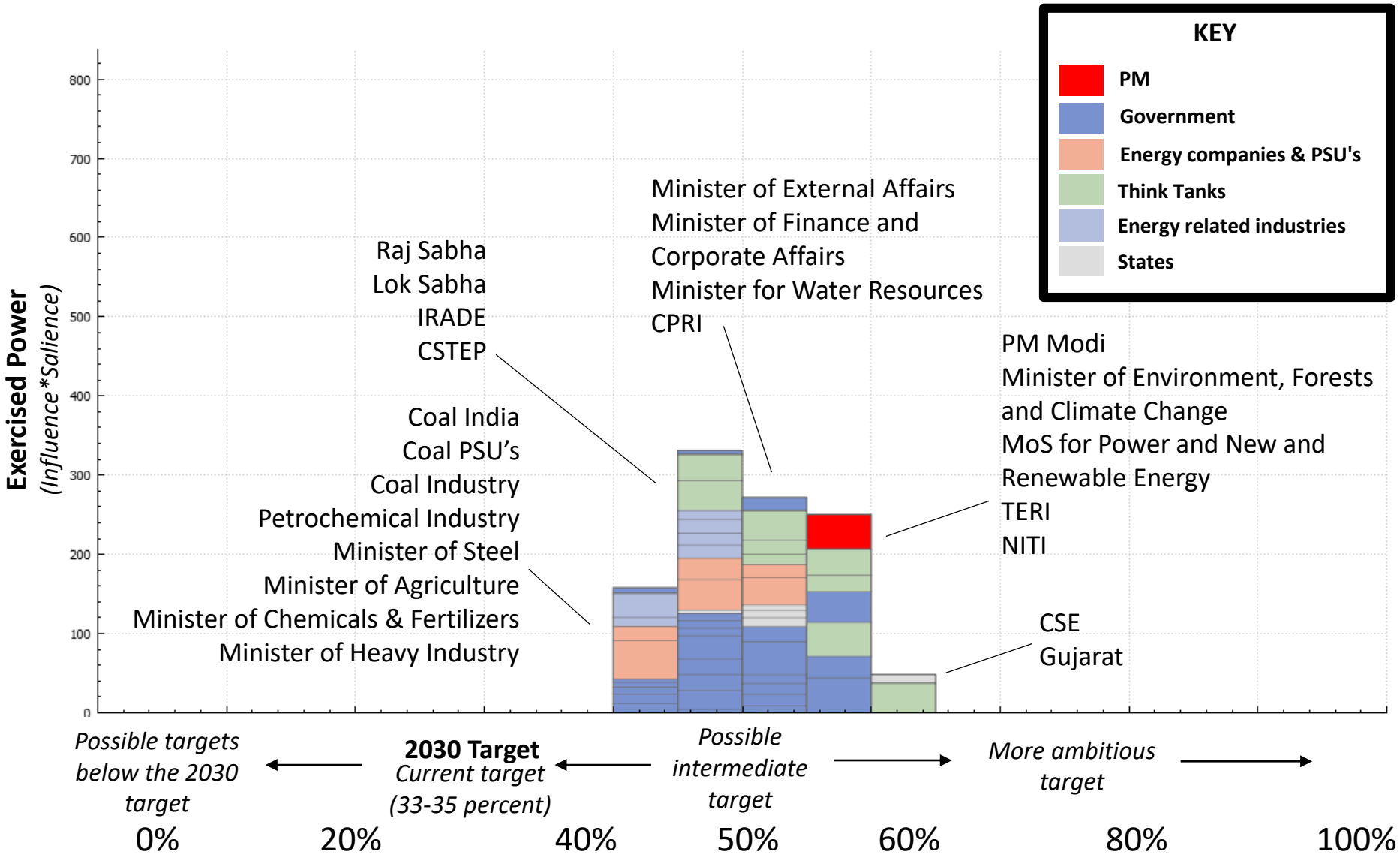
Baseline Dataset: Average of Expert Inputs

Actor	Influence	Position	Salience
President	18.4	45	27.4
Vice President	16.4	45	27.4
Prime Minister	81	55	54
Lok Sabha	74	47	33
Raj Sabha	61	47	32
Bharatiya Janata Party (BJP)	53	54	31.4
Indian National Congress (INC)	34	52	27.4
External Affairs	49	51	29
Commerce and Industry	52	49	39
Finance and Corporate Affairs	42	51	34
Agriculture and Farmers Welfare	30	44.6	23
Human Resource Development	31	52	34
Science and Technology Earth Sciences Environment Forest and Climate Change	68	55.6	65
Coal and Railways	70	51	60
Road Transport and Highways Shipping and Water Resources River Development and Ganga Rejuvenation	48	52	39
Petroleum and Natural Gas and Skill Development and Entrepreneurship	64	47	46
Chemicals and Fertilizers and Parliamentary Affairs	35	43	34
Ministry of Steel	39	43	32
Heavy Industries and Public Enterprises	35	43.4	24
Ministry of Rural Development Ministry of Panchayati Raj Ministry of Mines	27	44	24
MoS Power and New and Renewable Energy	46	55	60
MoS Labour and Employment	34	46	27
MoS Development of North Eastern Region	24	44.5	15
MoS Department of Atomic Energy and Space and Personnel Public Grievances and Pensions and Prime Ministers Office	30	48	32
MoS Ministry of Chemicals and Fertilizers	33	46	27
Gujarat	27	60	39

Baseline Dataset: Average of Expert Inputs

Actor	Influence	Position	Salience
Karnataka	30	53	38
Maharashtra	26	50	35
Tamil Nadu	20	52	36
Uttar Pradesh	17.5	48	26
Coal India	74	43	66
National Thermal Power Corporation	62	47	62
Ministry of Power PSUs	60	52	58
Ministry of Petroleum and Natural Gas PSUs	46	49	58
Ministry of Coal PSUs	35	41.25	51
Department of Atomic Energy PSUs	36	50	44
Petroleum and chemicals industry	27	43	41
Coal industry	47	44	65
Steel industry	38	47	43
Cement industry	36	49	43
Mining industry	34	46	50
Agriculture industry	30	45	38
Central Power Research Institute (CPRI)	34.2	50	39.2
The Energy and Resources Institute (TERI)	60.4	57.2	70.8
National Institution for Transforming India (NITI)	62.1	55.8	62.5
World Wide Fund India (WWF)	32.8	54.7	54.2
Indian Environmental Society (IES)	35.3	57.2	59.2
Centre for Science and Environment (CSE)	53.3	62.2	70.8
Center for Policy Research (CPR)	49.2	55.5	65.8
Center for Study of Science, Technology and Policy (CSTEP)	52.5	48.8	72.5
Integrated Research and Action for Development (IRADE)	46.3	46.3	70
Council On Energy, Environment and Water (CEEW)	48.8	50	75

Turn 0: Position Spectrum of Actors, Weighted by Exercised Power



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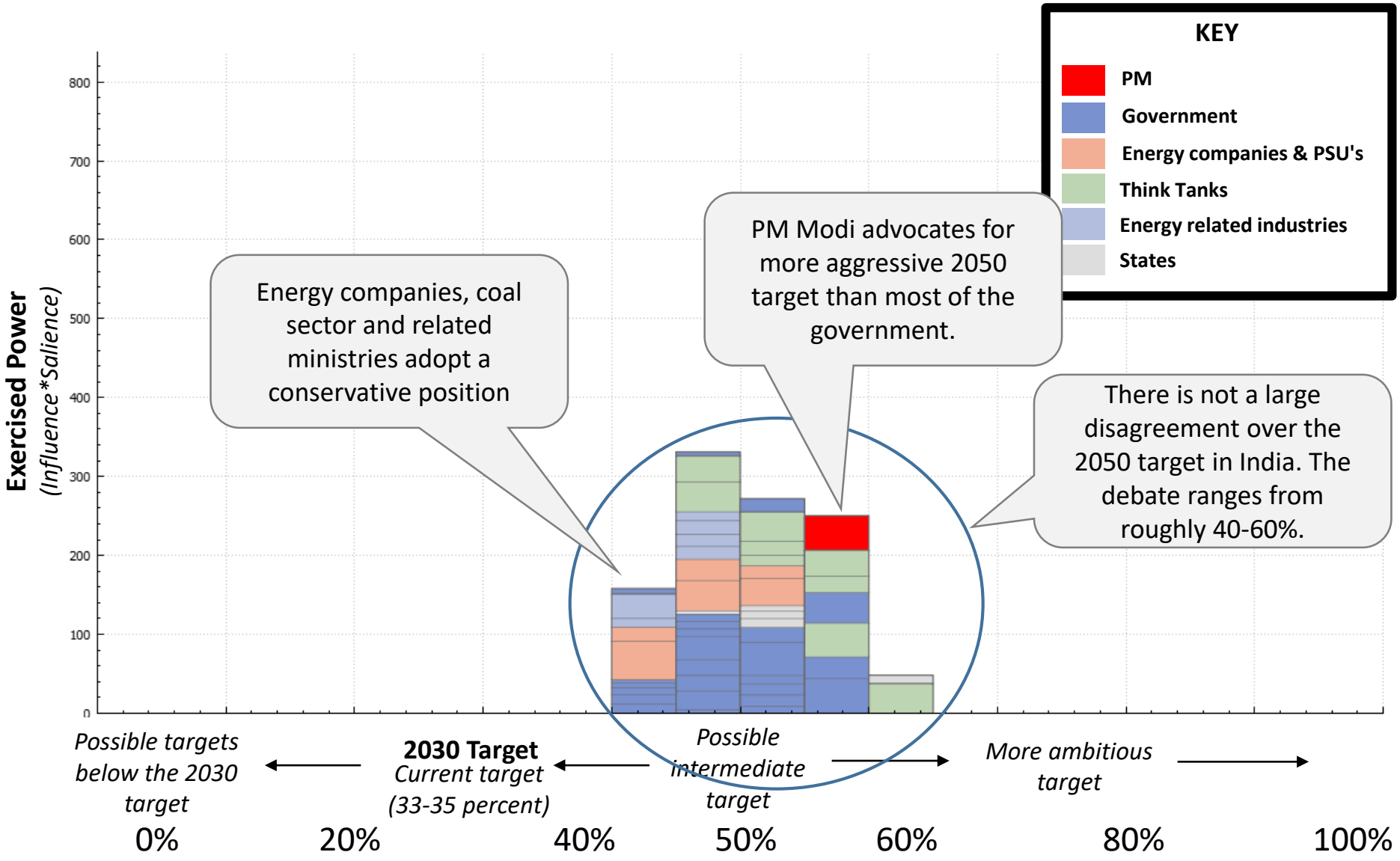
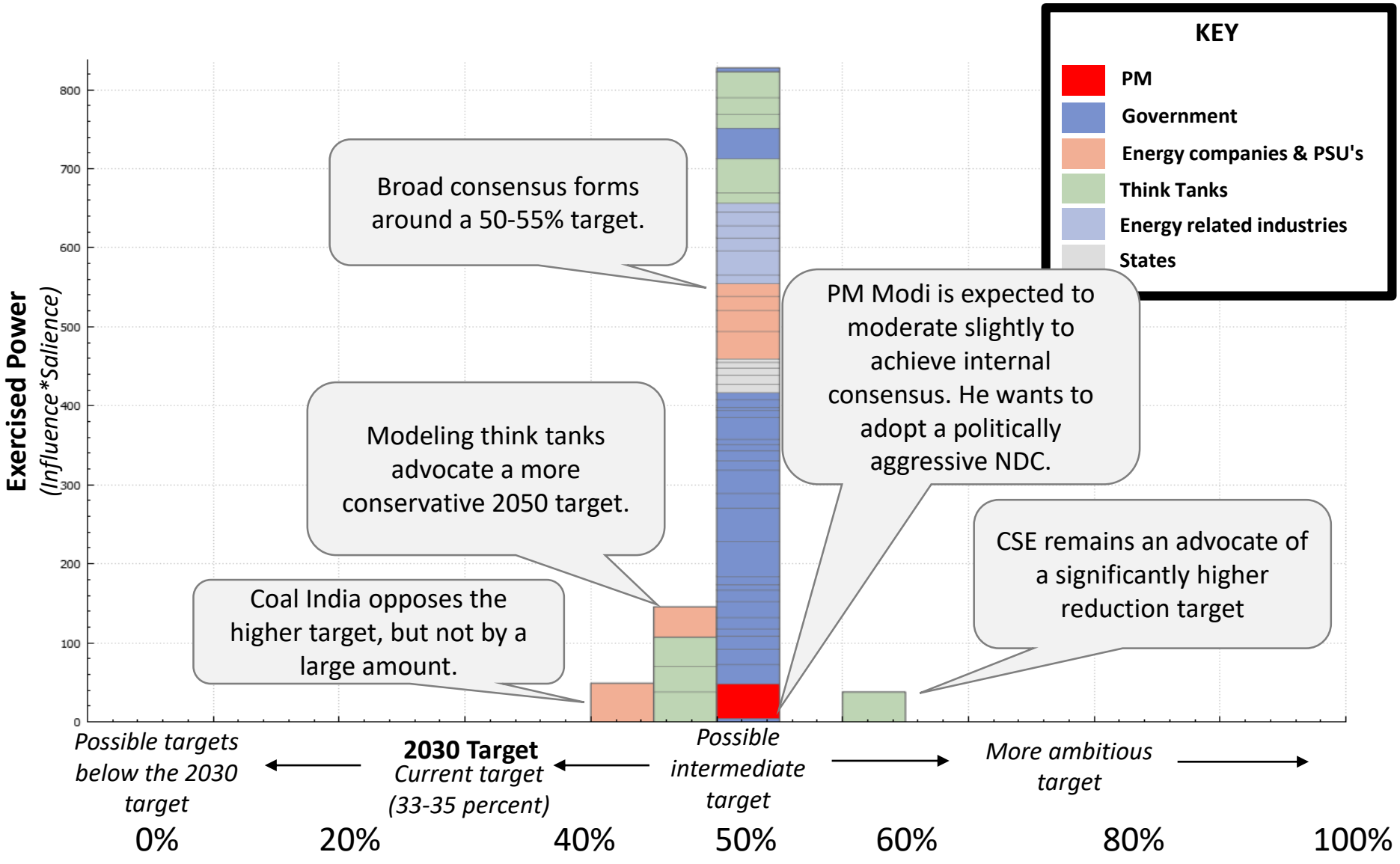
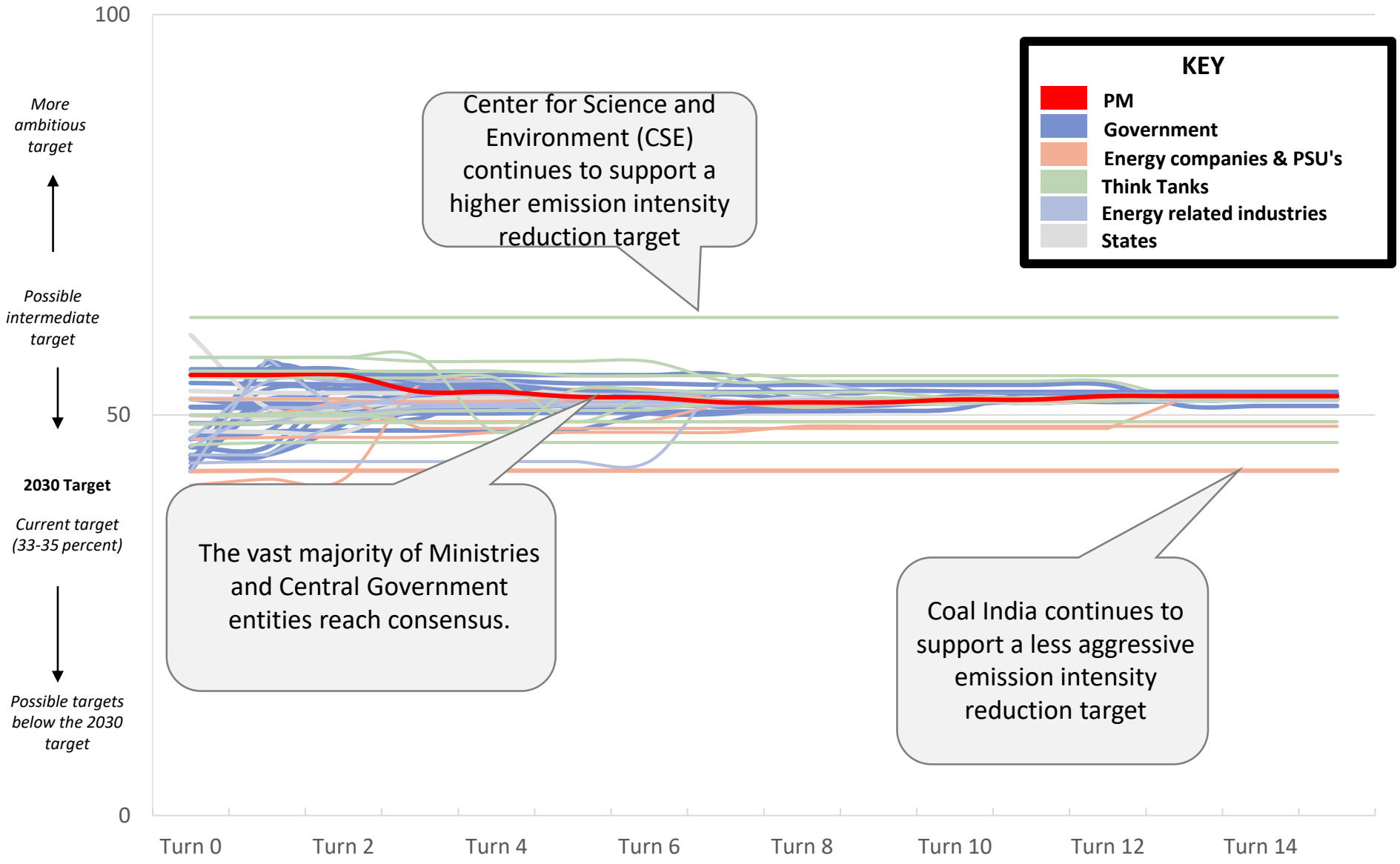


Turn 15: Position Spectrum of Actors, Weighted by Exercised Power



Simulated Change in Actor Positions, by Turn



Conclusions

- **Coal India position remains conservative towards increasing the energy intensity target.**

- **Energy PSUs and energy-intensive sectors initially advocate limited enhancement of the target, but they soon join the consensus with influential actors. (Ministries)**

- **Think Tanks involved in modeling of energy intensity targets argue for a more achievable target. The Prime Minister builds consensus for a more aggressive target because of political ambitions.**

- **As a less influential actor in the policy framework with high salience, CSE remains an advocate for a substantially larger reduction target.**

Other inhouse Models

- **KAPSARC Transport Analysis Framework (KTAF)**
  - The KAPSARC Transport Analysis Framework (KTAF), is a tool for estimating freight transport activity and measuring the impact of transport policy measures using freely available global data sources, satellite images and nighttime lights.
- **KAPSARC Vehicle Fleet Model**
  - A scenario-based model to help policymakers explore the incremental user cost implications of different passenger car powertrain technologies.
- **KAPSARC Energy Model for Saudi Arabia**
  - The KAPSARC Energy Model for Saudi Arabia is a partial economic equilibrium model that represents six major energy producing and consuming sectors in Saudi Arabia.
- **KAPSARC India Renewable Energy Policy Atlas**
  - KAPSARC's India Renewable Energy Policy Atlas provides specific state and national level coverage of energy policies in India.
- **KAPSARC Global Energy Macro- econometric Model**
  - A domestic policy analysis tool that captures the interactions between Saudi Arabia and other global economies.
- Other models and tools (https://www.kapsarc.org/research/data-tools/#kapsarc-india-renewable-energy-policy-atlas)…

Where Can I Learn More About KTAB?

- Freely available for anyone to use and download:
  - KTAB is released as open source under the MIT license
  - KTAB Project page (papers, source code and executables, documentation, examples): http://www.ktab.software
  - Email the KTAB team at ktab@kapsarc.org
- Express your interest to anyone working with KTAB, and we will provide you with a much more detailed understanding of what it is and how it works.