

G20 and Climate Responsive Budgeting

No. 401

11-September-2023

Amandeep Kaur, Ajay Narayan Jha and Lekha
Chakraborty



National Institute of Public Finance and Policy
New Delhi

G20 and Climate Responsive Budgeting

Amandeep Kaur¹
Ajay Narayan Jha
Lekha Chakraborty

Abstract

Against the backdrop of G20, we analyze the climate responsive budgeting as a tool of transparency and accountability towards climate change commitments. The detail Demand for Grants across sectors in India is analyzed for the climate intensive allocations under the identified eight components of adaptation matrices, incorporating crop improvement and research, drought proofing and flood control, forest conservation, poverty alleviation and livelihood preservation, rural education and infrastructure, health, risk financing and disaster management, for the period 2020-21 to 2023-24 for adaptation accountability in India. We found that more than forty sectoral ministries have adaptation related expenditure, accounting for around 5 per cent of GDP in India. The fiscal marksmanship and PEFA scores related to these eight core areas revealed that there are deviations between Budget Estimates and Actual spending across sectors. The template for climate responsive budgeting attempted in the paper has policy contributions to make the climate responsive budgeting matrices sustainable and comparative across G20 countries.

¹ The authors are respectively Economist, former Finance Secretary of Government of India and Professor at NIPFP.

Introduction

As India holds the G-20 presidency this year and convenes the G-20 leaders' summit in September, the country has worked with the best minds and experts to find solutions for the benefit of the global world following the idea of '*Vasudhaiva Kutumbakam*' which translates to 'one Earth, one family, one future'. G-20 is the forum of 19 countries namely Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, United Kingdom and United States and the European Union. Founded in 1999, together these countries which represent 85% of the global GDP and 75% of the global trade, and is the premium forum headed by the heads of the states for international cooperation (PIB, 2022).

Envisioning the next 25 years called as Amrit Kal to mark the centenary of India's independence, the government has projected combating climate change as top most priority to achieve green development and sustainable development goals. Development in this context, implies locating solutions which are environmentally sustainable and promote resilient growth in the future. Projecting the objective of 'Just transition' from fossil-fuels to renewable energy, is looked at as Lifestyle of Environment (LiFE) by building sustainable practices and responsible choices as an individual as well as for the Nationally Determined Goals, Amrit kal is envisioned as the marker of growth in terms of women led development, accelerating the progress of SDGs and other internationally determined objectives (PIB, 2022).

The Climate Transparency report, 2022, that assesses G-20 countries climate action progress, reveals recent developments for India. The stated objective is to achieve a net-zero target by 2070, reducing emissions intensity of GDP by 45% by 2030 from 2005 levels, mobilizing resources for climate finance by achieving 50% of the energy by non-fossil fuel energy resources by 2030 are all highly ambitious goal. Adaptation and Mitigation appear to be two critical pillars for climate action. While there has been a targeted regime for achieving mitigation goals by India, there appears to be no specific goal for adaptation (Climate Action Tracker, 2022).

In order to achieve the above-mentioned targets, there is a rising need of sustainable financing for these strategies. Nevertheless, there has been a growing emphasis on increasing resources to finance both mitigation and adaptation. There have

been continuous efforts to raise resources both internally and externally from developed countries, International Institutions and Banks in the form of green bonds etc. Following this, it is observed that external sources are plugged in for developing the renewable energy sources in India. In that case, adaptation is left for the country to be channelized through public resources internally. However, there is an equal need to mobilize financing for adaptation strategies.

We in this paper focus on using Public Financial Management practices to review quantum of the resources in the country available through dedicated National schemes/programs launched by the Union Government to cover up for climate change losses and risks and specifically covering adaptation practices in India. It is common knowledge now that Climate change related losses have been rising at an unprecedented scale due to both uncertainty and magnitude of intensity of events such as floods, heat waves, cyclones. Weather forecasts have not helped the poor and vulnerable farmers in their produce reducing productivity. Hence, there is a growing pressure on the government to take cognizance of climate related risks and their implications in the national budgeting process (UNDP, 2021) and adapt to climate change.

To put things in perspective, two significant features of Public Financial Management (PFM) through a climate change need to be articulated. Firstly, the budgets are organised into (a) annual allocations (b) setting annual targets (c) implementation (d) monitoring and (e) review. Secondly, the mechanism offers a degree of stability and predictability to all stakeholders - state, local governments, individuals, corporates etc. We analyse the plausibility of Climate Responsive Budgeting as a PFM tool to address climate change commitments. In India, targeted budget mapping has been conducted in the past in Grants in aid Salaries, General, capital, SC/ST budgets, Gender Budgeting, Autonomous Bodies, and Capex. However, the importance of integrating climate change in to the macro-fiscal framework has been gaining recognition only recently.

The rest of the paper is organized into sections. Section provides analytical framework, while section 2, we conduct a public expenditure review of the Union government for the Budget 2023-24 to locate quantum of resources aimed for adaptation strategies. We categorize the direct or indirect expenditures on adaptation into eight priority sectors and further analyze variations in public spending over the years and in each priority sector as well. Later in section 3, we examine the budget credibility in section

3 through a Fiscal Marksmanship analysis followed by discussion based on the study in section 4.

1. Integrating Climate Change into Macro-fiscal Framework

Climate Change related risks have the capacity to create fateful moments in macroeconomic stability and fiscal policy framework. A fiscal policy without considering the risks of climate change will have bias in its revenue projections (UNDP, 2021). As a result, governments shall either opt for budget cuts or be in debt owing to the fiscal implications of the same at the macro-level. At the micro-level, the fiscal implications enter a vicious cycle affecting the marginalized the most by reducing access to key essential services. Hence, at the national level, for the government, in order to accelerate the progress in addressing such challenges, such risks should be well taken into consideration and translated into the budget document. Integrating climate change into budgeting anchors accountability on the part of the government for environmental stewardship (Petrie, M., & Petrie, M., 2021).

Petrie, M., & Petrie, M. (2021) advocate that mainstreaming climate change through Greening Fiscal policy aims at not overlooking economic and social objectives but to ensure that environmental considerations are transparently incorporated into the budgeting framework at the national level for a country. In this context, Budgeting remains a critical tool that presents the government commitments and actions to achieve the goals that are nationally and internationally determined (UNICEF, 2022). In the present scenario, it is critical to address the environmental goals of the country through a climate responsive budgeting framework.

1.1 Climate Responsive Budgeting

Petrie, M., & Petrie, M. (2021) provide a comprehensive review about the evolution of Climate Budgeting. The Brundtland commission of 1987 forwarded the idea of regular reportage of impact of budgets on the environmental sustainability. But the idea of climate budgeting has developed keen interest since 2010. Climate Change Public

Expenditure and Institutional Review Sourcebook by World Bank in 2014² provides a review on Budget planning, expenditure management, and budget classification.

Essentially, Climate budgeting is an exercise that runs parallel to the government budget but comes as a separate climate budget document. This implies tagging expenditures that are beneficial for the environment or could be expenditure on adaptation for climate change. So far, many countries have sorted to climate budgeting first being in the world is Nepal. In India, Odisha and Gujarat have introduced climate budget. However, Climate related expenditures are cross-cutting in nature. Building a national framework aligns the national objectives at the union and state government levels. Conceptualizing climate budget at the national level brings together a strong enforcement channel and envisages as a torch bearer to do the same.

Hence, in the next section, we do a preliminary analysis of the expenditure budget of the Union Government of India for the budget 2023-24 specifically looking for allocations earmarked for adaptation measures for climate change.

1.2 Integration Climate Change into Fiscal Policy - An Analysis

Chasing the UNFCCC requirements and Nationally Determined Contributions (NDC) into National Planning has become more challenging and crucial after 2020. Even though the governments may try to find external source of funding for mitigation purposes, the demand for climate actions from national public funding has been crucial (World Bank, 2014b). In this paper, we use the expenditure budget of the Union government for the year 2023-24 and examine the expenditure allocations dedicated for the purpose of adaptation³ from 102 demand for grants and 56 ministries.

The Adaptation Gap Report, 2022, published by United Nations Environment Programme, reveals that although adaptation measures are funded internationally through Green Climate fund, Global Environment Facility, least Developed countries fund, Adaptation Fund and Special Climate Change Fund. But adaptation finance gap is 5-10

² In the references as World Bank. (2014a). Climate change public expenditure and institutional review sourcebook.

³ Adaptation measures are those programs that could reduce the economic value of expected losses (UNDP 2022). IPCC (2022) defines adaptation as a process of adjustment to the existing or expected climate change and moderate harm from these climatic effects.

times higher in the developing countries and continues to enlarge. Even the external funding rate is lower for the developing countries and is dedicated for a specific purpose. Majority of the adaptative measures are taken up to reduce the vulnerability, increase adaptive capacity⁴ and build resilience to shocks resulting from climate change. Such measures shall then include risk-reduction for specific hazards, capacity-building, governance mechanism etc. addressing the root cause of vulnerability (UNEP, 2022).

With this perspective, we categorize these allocations dedicated for adaptation for climate change under eight priorities which are, i) Crop Improvement and Research, ii) Drought Proofing and Flood Control, iii) Forest Conservation, iv) Poverty Alleviation and Livelihood Preservation, v) Rural Education, vi) Infrastructure, vii) Health, viii) Risk Financing and Disaster Management. We then unpack allocations into these heads and analyse the overall allocations. This is a preliminary analysis where we have not categorised adaptation measures in terms of share of their contribution. For now, we take them as total and not further differentiate into direct and indirect expenditures.

2. Integration Climate Change into fiscal Policy - An Analysis⁵

2.1 Crop Improvement and Research (CIR)

The Climate Transparency Report 2022 reports that the rising temperatures in India, in the range of 1-4 degree Celsius, can reduce rice production by 10-30% and maize production by 25-70%. Hence, adapting strategies that reduce the exposure of excessive heat and warming need to be sorted. Here in, we include those programs that help build better mechanisms for crop research and improvement. Also, this includes institutional mechanism and their role as capacity-builders. The component, Crop improvement and research includes expenditure allocations dedicated to the improvement of crops, and expenditure allocations for the purpose of research that can further enhance the crop improvement and build strategies for resilient farming. These expenditures are incurred by the Ministry of Agriculture and Farmers Welfare, Department of Atomic Energy, Ayush, Ministry of Chemicals and Fertilisers, Ministry of Commerce and Industry, Ministry of Consumer Affairs, Food and Public Distribution, Ministry of Fisheries, Animal Husbandry

⁴ The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences (IPCC, 2022).

⁵

and Dairying, Ministry of Cooperation, Ministry of Education, Finance, Home Affairs and Textiles. As presented in table 1, the expenditure allocations of the select ministries incurring expenditures for crop improvement and research are listed.

Table 1: Ministry wise allocation (as a % of TE) on Crop Improvement and Research

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-1	Ministry of Agriculture and Farmers Welfare	Department of Agriculture and Farmers Welfare	4.86	1.17	4.84	13.14	0.00	13.01	5.16	0.00	5.13	4.09	0.00	4.06
D-2	Ministry of Agriculture and Farmers Welfare	Department of Agricultural Research and Education	4.35	0.00	4.33	5.86	0.00	5.80	3.27	0.00	3.25	4.51	0.00	4.47
D-3	Department of Atomic Energy	Atomic energy	0.00	98.06	0.58	0.00	98.78	1.01	0.00	98.79	0.54	0.00	97.71	0.79
D-4	Ministry of Ayush	Ministry of Ayush	0.27	0.00	0.26	0.61	0.00	0.60	0.28	0.00	0.27	0.62	0.00	0.62
D-6	Ministry of Chemicals and Fertilisers	Department of Fertilisers	83.32	0.00	82.83	75.79	0.00	75.01	88.91	0.00	88.43	87.58	0.01	86.87
D-10	Ministry of Commerce and Industry	Department of Commerce	0.32	0.00	0.32	0.45	0.00	0.45	0.25	0.00	0.25	0.32	0.00	0.31
D-15	Ministry of Consumer Affairs, Food and Public Distribution	Department of Food and Public Distribution	3.36	0.00	3.34	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
D-16	Ministry of Cooperation	Ministry of Cooperation	0.00	0.00	0.00	0.04	0.00	0.04	0.26	0.00	0.26	0.00	0.00	0.00
D-26	Ministry of Education	Department of Higher Education	0.90	0.00	0.90	1.56	0.00	1.54	0.89	0.00	0.89	1.15	0.00	1.14
D-30	Ministry of Finance	Department of Economic Affairs	0.56	0.00	0.56	0.09	0.00	0.09	0.05	0.00	0.05	0.07	0.00	0.07
D-32	Ministry of Finance	Department of Financial Services	1.08	0.00	1.08	0.36	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
D-44	Ministry of Fisheries, Animal Husbandry and Dairying	Department of Animal Husbandry and Dairying	0.50	0.09	0.50	1.46	0.10	1.45	0.56	0.10	0.56	1.19	0.20	1.18
D-52	Ministry of Home Affairs	Ministry of Home Affairs (Andaman and Nicobar Islands)	0.00	0.57	0.01	0.01	0.60	0.01	0.00	0.64	0.01	0.01	0.97	0.01
D-54	Ministry of Home Affairs	Ministry of Home Affairs (Dadra and Nagar Haveli and Daman and Diu)	0.00	0.02	0.00	0.00	0.21	0.01	0.00	0.22	0.00	0.00	1.00	0.01
D-56	Ministry of Home Affairs	Ministry of Home Affairs (Lakshadweep)	0.00	0.09	0.00	0.01	0.30	0.01	0.00	0.24	0.00	0.00	0.11	0.00
D-98	Ministry of Textiles	Ministry of Textiles	0.46	0.00	0.46	0.63	0.00	0.62	0.35	0.00	0.34	0.46	0.00	0.46

Source: Author's calculations from Detail Demand for Grants (various years)

2.2 Drought Proofing and Flood Control (DPFC)

Droughts over the years have intensified. The Climate Tracker (2022) reports that around 33% of the areas in India are drought prone out of which 50% of them are chronic droughts. Even more, expected damage from floods shall increase with the rising temperatures. Measures for drought proofing and flood control come from the expenditure allocations made by the Ministry of Earth Sciences, Electronics and Information Technology, Fisheries, Animal Husbandry and Dairying, Home Affairs, Jal Shakti, Rural Development and Space. These allocations include expenditures on river conservation plans, watershed development programs and expenditures on building technologies for effective weather forecast and awareness. The expenditure allocations from these ministries are presented in Table 2. Department of Water Resources, River Development and Ganga Rejuvenation under the Ministry of Jal Shakti, contributes around 50 % of the allocations for Drought proofing and flood control for 2023-24 BE. Ministry of Space takes the second place (around 33% of total allocations) for 2023-24. These allocations are based on expenditures budgeted for building space technology, space applications, and satellite systems for weather forecasting and disaster warnings. Ministry of Earth Sciences contributes around 7% of the total allocations for BE 2023-24. These largely cover central sector schemes like Deep Ocean Mission and other climate research activities.

2.3 Forest Conservation

Majority of the allocations for forest conservations are from Ministry of Environment, Forests and Climate Change. Other relevant department making allocations for adaptation measures specifically for forest, ecology conservation are Ministry of Finance, Home Affairs, Mines and Science and Technology. The point to be emphasized here is that ministries of Finance and Home are basically are nodal ministries and only route funds to implementation agencies to achieve climate change commitments. For the year 2023-24 BE, around 70% of the total expenditure allocations for forest conservation are budgeted to be incurred by Ministry of Environment, Forests and Climate Change. Around 25% of the total expenditures are budgeted to incurred by Ministry of Mines. These expenditures include expenditures on geological survey and Indian Bureau of Mines. For the actuals 2021-22, BE and RE of 2022-2023 these ministries remain the

largest contributors. Expenditure incurred by Ministry of Home Affairs include expenditures which are grants for forestry and wildlife for the UTs.

2.4 Poverty Alleviation and Livelihood Preservation (PALP)

It is critical to reduce the vulnerabilities related to climate change for which poverty reduction and sustaining livelihoods remains essential. Expenditure allocations for this component are incurred by Ministry of Agriculture and Farmers Welfare, Consumer Affairs, Food and Public Distribution, Housing and Urban Affairs, Labour and Employment, Micro, Small and Medium Enterprises, Minority Affairs, Rural Development, Social Justice and Empowerment, Tribal Affairs, Women and Child Development. The major initiatives include Mahatma Gandhi National Rural Employment Guarantee programme, National Livelihood Mission, PM Vanbandhu Kalyan Yojna, social assistance to the marginalised etc. Department of Food and Public Distribution with the Ministry of Consumer Affairs, Food and Public Distribution contributes around 54% of total expenditures for the year 2023-24 BE. Department of Rural Development with the Ministry of Rural Development contribution is around 20%. Major scheme is National Social Assistance Program under this department. PM-Kisan program executed by Department of Agriculture and Farmer Welfare (Ministry of Agriculture and Farmers Welfare) contribution is around 16% for BE 2023-24. Prime Minister Employment Generation Programme (PMEGP) and Other Credit Support Schemes with the Ministry of Micro, Small and Medium Enterprises is budgeted to be 4.8% of the total expenditures for this component in the year 2023-24. Poverty alleviation programs for the poor, vulnerable and rural population is covered by Ministry of Tribal affairs through Vanbandhu Kalyan Yojana accounts for 1 % of the total expenditures for the year 2023-24. Aatmanirbhar Bharat Rojgar Yojana executed by Ministry of Labour and Employment accounts for 0.6% of the total expenditure allocations. Mission Shakti and Mission Vatsalya with the Ministry of Women and Development account for 1.28% of total allocations for this component for the year 2023-24 BE.

Table 2: Ministry wise allocation (as a % of TE) on Drought Proofing and Flood Control

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-24	Ministry of Earth Sciences	Ministry of Earth Sciences	5.58	1.59	4.76	6.86	5.59	6.58	7.40	3.89	6.77	5.24	9.41	7.39
D-27	Ministry of Electronics and Information Technology	Ministry of Electronics and Information Technology	0.15	0.00	0.12	0.35	0.00	0.27	0.33	0.00	0.27	0.16	0.00	0.13
D-43	Ministry of Fisheries, Animal Husbandry and Dairying	Department of Fisheries	4.90	0.00	3.89	6.64	0.00	5.18	6.49	0.00	5.31	7.50	0.00	5.80
D-52	Ministry of Home Affairs	Ministry of Home Affairs (Andaman and Nicobar Islands)	0.10	1.58	0.40	0.09	0.87	0.26	0.18	1.07	0.34	0.26	0.99	0.40
D-56	Ministry of Home Affairs	Ministry of Home Affairs (Lakshadweep)	0.09	0.52	0.18	0.03	0.52	0.14	0.03	0.85	0.18	-0.02	0.87	0.16
D-58	Ministry of Home Affairs	Transfers to Jammu and Kashmir	0.00	0.00	0.00	0.96	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00
D-59	Ministry of Home Affairs	Transfers to Puducherry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-62	Ministry of Jal Shakti	Department of Water Resources, River Development and Ganga Rejuvenation	66.20	0.30	52.65	59.87	0.52	46.81	57.19	0.67	46.97	66.97	0.56	52.76
D-88	Ministry of Rural Development	Department of Land Resources	3.90	0.00	3.09	7.01	0.00	5.46	4.55	0.00	3.72	0.00	0.00	0.00
D-95	Department of Space	Department of Space	19.08	96.00	34.90	18.19	92.51	34.54	23.82	93.51	36.42	19.88	88.17	33.35

Source: Author's calculations from Detail Demand for Grants (various years)

Table 3: Ministry wise allocation (as a % of TE) on Forest Conservation

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-28	Ministry of Environment, Forests and Climate Change	Ministry of Environment, Forests and Climate Change	70.40	41.12	69.78	74.81	67.68	74.53	69.78	57.32	69.36	70.67	70.78	70.68
D-30	Ministry of Finance	Department of Economic Affairs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-52	Ministry of Home Affairs	Ministry of Home Affairs (Andaman and Nicobar Islands)	0.13	34.55	0.86	0.34	18.46	1.07	0.24	25.04	1.08	0.20	18.81	1.19
D-53	Ministry of Home Affairs	Chandigarh	1.16	3.97	1.22	1.01	1.65	1.03	1.01	2.49	1.06	1.05	1.29	1.06
D-54	Ministry of Home Affairs	Ministry of Home Affairs (Dadra and Nagar Haveli and Daman and Diu)	0.67	18.61	1.05	0.58	9.95	0.96	0.67	13.83	1.12	0.65	8.61	1.07
D-55	Ministry of Home Affairs	Ministry of Home Affairs (Ladakh)	0.02	0.94	0.04	0.11	0.07	0.11	0.12	0.09	0.12	0.10	0.09	0.10
D-56	Ministry of Home Affairs	Ministry of Home Affairs (Lakshadweep)	0.05	0.74	0.07	0.05	1.84	0.12	0.05	0.76	0.08	0.05	0.14	0.05
D-69	Ministry of Mines	Ministry of Mines	27.56	0.00	26.98	23.10	0.00	22.17	28.13	0.00	27.18	27.28	0.00	25.83
D-91	Ministry of Science and Technology	Department of Scientific and Industrial Research	0.00	0.06	0.00	0.00	0.34	0.01	0.00	0.47	0.02	0.00	0.28	0.01

Source: Author's calculations from Detail Demand for Grants (various years)

Table 4: Ministry wise allocation (as a % of TE) on Poverty Alleviation and Livelihood Preservation

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-1	Ministry of Agriculture and Farmers Welfare	Department of Agriculture and Farmers Welfare	13.35	0.00	13.34	16.74	0.00	16.73	12.34	0.00	12.33	16.66	0.00	16.66
D-15	Ministry of Consumer Affairs, Food and Public Distribution	Department of Food and Public Distribution	58.86	0.00	58.85	50.83	0.00	50.81	59.01	0.00	58.99	54.71	0.00	54.70
D-14	Ministry of Consumer Affairs, Food and Public Distribution	Department of Consumer Affairs	0.41	0.00	0.41	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00
D-60	Ministry of Housing and Urban Affairs	Ministry of Housing and Urban Affairs	0.16	0.00	0.16	0.22	0.00	0.22	0.11	0.00	0.11	0.00	0.00	0.00
D-64	Ministry of Labour and Employment	Ministry of Labour and Employment	0.79	0.00	0.78	1.58	0.00	1.57	1.18	0.00	1.18	0.63	0.00	0.63
D-68	Ministry of Micro, Small and Medium Enterprises	Ministry of Micro, Small and Medium Enterprises	2.42	0.00	2.41	4.35	0.00	4.35	2.69	0.00	2.69	4.83	0.00	4.83
D-70	Ministry of Minority Affairs	Ministry of Minority Affairs	0.08	100.00	0.10	0.08	100.00	0.12	0.04	100.00	0.07	0.00	100.00	0.02
D-87	Ministry of Rural Development	Department of Rural Development	23.17	0.00	23.16	23.63	0.00	23.62	23.11	0.00	23.10	20.59	0.00	20.58

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
D-93	Ministry of Social Justice and Empowerment	Department of Social Justice and Empowerment	0.02	0.00	0.02	0.05	0.00	0.05	0.04	0.00	0.04	0.10	0.00	0.10
D-100	Ministry of Tribal Affairs	Ministry of Tribal Affairs	0.23	0.00	0.23	1.01	0.00	1.01	0.80	0.00	0.80	1.19	0.00	1.19
D-101	Ministry of Women and Child Development	Ministry of Women and Child Development	0.53	0.00	0.53	1.15	0.00	1.15	0.69	0.00	0.69	1.28	0.00	1.28

Source: Author's calculations from Detail Demand for Grants (various years)

2.5 Rural Education (RE)

Rural education and climate resilient strategies are closely related⁶. Relevant expenditure allocations are from Ministry of Agriculture and Farmers Welfare, Education, Minority Affairs, Panchayati Raj, Skill Development and Entrepreneurship, Social Justice and Empowerment and tribal affairs. Department of School Education and Literacy under Ministry of Education contributes around 72% of the allocations for BE 2023-24. National Education Mission continues the major mission for rural education (see table 5). Department of Social Justice and Empowerment with the Ministry of Social Justice and Empowerment executes Umbrella scheme for development of scheduled casts which includes scholarships for both SCs and other vulnerable groups. These allocations account for 26% of the total expenditure on rural education budgeted for the year 2023-24. Ministry of Skill Development and Entrepreneurship executed program named Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 2.0 (2016-20) which is the flagship program of the ministry. The program was launched to promote skill development in the country. PMKVY 3.0 (2020-21) was launched for the year 2020-21 which contributed around 4% for the year 2021-22. PMKVY 4.0 was launched for the year 2022-2023 which was budgeted to be 4.5% in BE of 2022-2023.

2.6 Infrastructure (INFRA)

Building Infrastructure is imperative for economic growth and development⁷. The expenditure allocations under this component includes expenditures on roads, health, housing, and development of north-eastern region. The relevant ministries are Agriculture and Farmers Welfare, Ministry of Development of North Eastern Region Finance, Fisheries, Animal Husbandry and Dairying, Food Processing Industries, Health and Family welfare, Home Affairs, Housing and Urban Affairs, Information and Broadcasting, Micro, Small and medium enterprises, New and Renewable Energy, Planning, Power, Railways, Road Transport and Highways, Rural Development, Textiles, Tourism (see table 6). Ministry of Road Transport and Highways have budgeted allocations of 64% of total allocations for the year 2023-24. These expenditures are mainly on building of roads, transfers to National Highway Authority of India. Followed by

⁶ [giz2020_en_Climate change and rural development_SV Nachhaltige Landwirtschaft.pdf](#)

⁷ [New report reveals how infrastructure defines our climate \(unep.org\)](#)

Ministry of Rural Development contributing around 17 % of total allocations for the year 2023-24. Pradhan Mantri Gram Sadak Yojana, Pradhan Mantri Awas Yojana (PMAY-Rural) are the major contributors from this Ministry. Ministry of Housing affairs execute PMAY-Urban Mission and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) as smart cities mission accounting for 9% of total allocations for the year 2023-24. Transfers to Central Road and Infrastructure Fund with the Ministry of Railways account for 3% of total allocations for BE 2023-24. Ministry of Health and Family Welfare incurs expenditure on Infrastructure Development for Health Research which accounts for around 2% of total allocations for the year 2023-24.

2.7 Health

The expenditures on health are cross-cutting and include initiatives such as Jal Jeevan Mission, Swatch Bharat Mission, DBT for LPG, central government health scheme etc. Ministry of Education, Health and Family welfare, Home Affairs, Housing and Urban Affairs, Jal Shakti, Petroleum and Natural Gas (see table 7). Ministry of Health and Family Welfare accounts for 31% of allocations as budgeted for the year 2023-24. For the same year, Department of Drinking Water and Sanitation with the Ministry of Jal Shakti have budgeted allocation of around 64% for BE 2023-24. These allocations include Jal Jeevan Mission, Swatch Bharat Mission(rural) as major contributors for Health expenditures. Swatch Bharat Mission(Urban) is executed by Ministry of Housing and Urban Affairs which accounts for around 4% of total allocations for the year 2023-24.

2.8 Risk Financing and Disaster Management (RFDM)

Building resilience is the key element to deal with climate change. The risk associated with these changes demands resources for financing and training to prepare for such risks. Majority of the allocations under this head includes crop insurance schemes, assistance for state disaster response fund and management. Line ministries are Ministry of Agriculture and Farmers Welfare, Finance, Health and Family welfare, Home Affairs (see table 8). Major allocations are from the Ministry of Agriculture and Family Welfare on Crop Insurance Scheme which account for 58% of total allocations made for this component in the BE 2023-24. Another major contribution is transfers made to State Disaster Response Fund from National Disaster Response Fund (NDRF) and National Disaster Mitigation Fund (NDMF) by Ministry of Finance. These allocations are budgeted

to be around 38% of total allocations for the year 2023-24. Ministry of Home Affairs incurs similar expenditure for the UTs which account for 3.5% of total allocations for BE 2023-24.

3. Comparative Analysis of the 8 Priority Sectors for Adaptation matrices

Further, in this section, we observe, comparatively, the total expenditure allocations on these priority sectors for adaptation over Actuals 2021-22, 2022-23 RE and BE 2023-24. Table 9 provides the distribution of allocations on these sectors over these years⁸ in Table 9. Having discussed each component separately, Table 9 provides an overview of the total expenditure allocations under each component for the expenditure budget of 2023-24 of the Union Government. Since these components are disaggregated adaptive expenditures, the distribution covers the variability in prioritizing components one over the other as a % of total expenditure allocations for the given year.

⁸ The analysis is open-ended. It is to be noted here that Government introduces new schemes, rename the existing or merge few schemes for better monitoring and execution. However, there could be a case where allocations under one theme is higher for a particular year and could have no allocations for the next year due to some specific emergency episodes in that respective year. Few examples could be Covid-19 concerning rehabilitation services for livelihoods, cyclones, or droughts etc.

Table 5: Ministry wise allocation Ministry wise allocation (as a % of TE) on Rural Education

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-1	Ministry of Agriculture and Farmers Welfare	Department of Agriculture and Farmers Welfare	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01
D-25	Ministry of Education	Department of School Education and Literacy	63.05	0.00	63.05	68.25	0.00	68.25	70.42	0.00	70.42	72.08	0.00	72.08
D-70	Ministry of Minority Affairs	Ministry of Minority Affairs	8.77	0.00	8.77	7.59	0.00	7.59	4.47	0.00	4.47	4.42	0.00	4.42
D-72	Ministry of Panchayati Raj	Ministry of Panchayati Raj	1.65	0.00	1.65	1.16	0.00	1.16	1.61	0.00	1.61	1.72	100.00	1.72
D-92	Ministry of Skill Development and Entrepreneurship	Ministry of Skill Development and Entrepreneurship	4.40	100.00	4.40	4.58	100.00	4.58	3.41	100.00	3.41	0.00	0.00	0.00
D-93	Ministry of Social Justice and Empowerment	Department of Social Justice and Empowerment	15.80	0.00	15.80	18.40	0.00	18.40	20.08	0.00	20.08	21.76	0.00	21.76
D-100	Ministry of Tribal Affairs	Ministry of Tribal Affairs	6.32	0.00	6.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Author's calculations from Detail Demand for Grants (various years)

Table 6: Ministry wise allocation Ministry wise allocation (as a % of TE) on Infrastructure

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-1	Ministry of Agriculture and Farmers Welfare	Department of Agriculture and Farmers Welfare	0.46	0.00	0.20	0.45	0.00	0.14	0.11	0.00	0.04	0.35	0.00	0.12
D-23	Ministry of Development of North Eastern Region	Ministry of Development of North Eastern Region	0.90	0.33	0.58	1.22	0.26	0.56	0.84	0.18	0.44	0.03	0.91	0.61
D-32	Ministry of Finance	Department of Financial Services	0.00	10.05	5.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-44	Ministry of Fisheries, Animal Husbandry and Dairying	Department of Animal Husbandry and Dairying	0.35	0.00	0.15	0.66	0.00	0.20	0.48	0.00	0.19	0.53	0.00	0.18
D-45	Ministry of Food Processing Industries	Ministry of Food Processing Industries	0.68	0.00	0.29	1.63	0.00	0.51	0.70	0.00	0.28	1.09	0.00	0.37
D-45	Ministry of Health and Family Welfare	Department of Health and Family Welfare	4.63	0.00	2.02	6.27	0.17	2.07	5.20	0.02	2.07	5.13	0.04	1.78
D-46	Ministry of Health and Family Welfare	Department of Health Research	0.17	0.00	0.07	0.79	0.00	0.24	0.38	0.00	0.15	0.33	0.00	0.11
D-51	Ministry of Home Affairs	Police	2.36	1.20	1.70	2.66	1.03	1.54	1.77	1.65	1.70	2.61	1.16	1.65
D-60	Ministry of Housing and Urban Affairs	Ministry of Housing and Urban Affairs	48.00	0.00	20.93	38.21	0.00	11.89	31.83	0.00	12.63	28.79	0.00	9.81
D-61	Ministry of Information and Broadcasting	Ministry of Information and Broadcasting	0.11	0.00	0.05	0.29	0.00	0.09	0.23	0.00	0.09	0.00	0.00	0.00

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
D-68	Ministry of Micro, Small and Medium Enterprises	Ministry of Micro, Small and Medium Enterprises	0.16	0.00	0.07	0.52	0.01	0.17	0.21	0.00	0.08	0.00	0.00	0.00
D-71	Ministry of New and Renewable Energy	Ministry of New And Renewable Energy	0.26	0.00	0.12	1.56	0.00	0.48	0.96	0.00	0.38	1.40	0.00	0.48
D-77	Ministry of Planning	Ministry of Planning	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.14	0.30	0.00	0.10
D-79	Ministry of Power	Ministry of Power	6.71	1.41	3.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-85	Ministry of Railways	Ministry of Railways	0.00	30.01	16.92	0.00	21.60	14.88	0.00	0.00	0.00	0.00	4.36	2.87
D-86	Ministry of Road Transport and Highways	Ministry of Road Transport and Highways	6.47	56.99	34.96	9.87	76.93	56.07	7.46	98.15	62.16	7.95	93.54	64.39
D-87	Ministry of Rural Development	Department of Rural Development	28.73	0.00	12.53	35.89	0.00	11.17	49.47	0.00	19.63	51.48	0.00	17.53
D-98	Ministry of Textiles	Ministry of Textiles	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-99	Ministry of Tourism	Ministry of Tourism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Author's calculations from Detail Demand for Grants (various years)

Table 7: Ministry wise allocation Ministry wise allocation (as a % of TE) on Health

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-25	Ministry of Education	Department of School Education and Literacy	9.99	0.00	9.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-46	Ministry of Health and Family Welfare	Department of Health and Family Welfare	22.57	54.04	22.70	34.15	17.43	34.09	33.84	18.19	33.79	31.05	19.46	31.01
D-46	Ministry of Health and Family Welfare	Department of Health Research	0.54	0.00	0.53	0.08	0.00	0.08	0.09	0.00	0.09	0.08	0.00	0.08
D-52	Ministry of Home Affairs	Ministry of Home Affairs (Andaman and Nicobar Islands)	0.10	6.02	0.12	0.09	6.99	0.11	0.09	8.07	0.12	0.08	7.43	0.11
D-53	Ministry of Home Affairs	Chandigarh	0.00	10.81	0.04	0.00	17.23	0.06	0.00	17.32	0.06	0.00	16.20	0.06
D-54	Ministry of Home Affairs	Ministry of Home Affairs (Dadra and Nagar Haveli and Daman and Diu)	0.02	27.58	0.13	0.01	42.93	0.16	0.02	51.26	0.20	0.01	45.21	0.17
D-55	Ministry of Home Affairs	Ministry of Home Affairs (Ladakh)	0.01	0.57	0.01	0.00	0.15	0.01	0.00	0.50	0.01	0.00	0.05	0.00

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-56	Ministry of Home Affairs	Ministry of Home Affairs (Lakshadweep)	0.04	0.99	0.04	0.04	15.26	0.09	0.04	4.66	0.06	0.03	11.65	0.07
D-60	Ministry of Housing and Urban Affairs	MINISTRY OF HOUSING AND URBAN AFFAIRS	1.91	0.00	1.90	2.06	0.00	2.05	2.12	0.00	2.11	4.17	0.00	4.16
D-63	Ministry of Jal Shakti	Department of Drinking Water and Sanitation	64.66	0.00	64.40	60.00	0.00	59.79	63.60	0.00	63.37	64.43	0.00	64.20
D-76	Ministry of Petroleum and Natural Gas	Ministry of Petroleum and Natural Gas	0.17	0.00	0.17	3.57	0.00	3.56	0.19	0.00	0.19	0.15	0.00	0.15

Source: Author's calculations from Detail Demand for Grants (various years)

Table 8: Ministry wise allocation Ministry wise allocation (as a % of TE) on Risk Financing and Disaster Management

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-1	Ministry of Agriculture and Farmers Welfare	Department of Agriculture and Farmers Welfare	63.63	0.00	63.39	57.12	0.00	56.93	63.68	0.00	63.46	57.95	0.00	57.65
D-32	Ministry of Finance	Department of Financial Services	0.00	0.00	0.00	0.16	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00
D-42	Ministry of Finance	Transfers to States	32.89	0.00	32.77	39.50	0.00	39.37	33.08	0.00	32.96	38.69	0.00	38.49
D-45	Ministry of Health and Family Welfare	Department of Health and Family Welfare	0.05	0.00	0.05	0.12	24.75	0.20	0.10	10.38	0.13	0.12	16.10	0.20
D-49	Ministry of Home Affairs	Ministry of Home Affairs	2.76	97.57	3.13	2.61	74.54	2.85	2.57	88.82	2.86	2.72	83.85	3.14
D-52	Ministry of Home Affairs	Ministry of Home Affairs (Andaman and Nicobar Islands)	0.00	2.43	0.01	0.00	0.71	0.00	0.00	0.80	0.00	0.00	0.05	0.00
D-54	Ministry of Home Affairs	Ministry of Home Affairs (Dadra and Nagar Haveli and Daman and Diu)	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-55	Ministry of Home Affairs	Ministry of Home Affairs (Ladakh)	0.03	0.00	0.03	0.02	0.00	0.02	0.04	0.00	0.04	0.04	0.00	0.04

D.no	Ministry	Department	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
D-56	Ministry of Home Affairs	Ministry of Home Affairs (Lakshadweep)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D-57	Ministry of Home Affairs	Ministry of Home Affairs (Transfers to Delhi)	0.13	0.00	0.13	0.02	0.00	0.02	0.03	0.00	0.03	0.02	0.00	0.02
D-58	Ministry of Home Affairs	Transfers to Jammu and Kashmir	0.48	0.00	0.47	0.44	0.00	0.44	0.50	0.00	0.49	0.44	0.00	0.44
D-59	Ministry of Home Affairs	Transfers to Puducherry	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01

Source: Author's calculations from Detail Demand for Grants (various years)

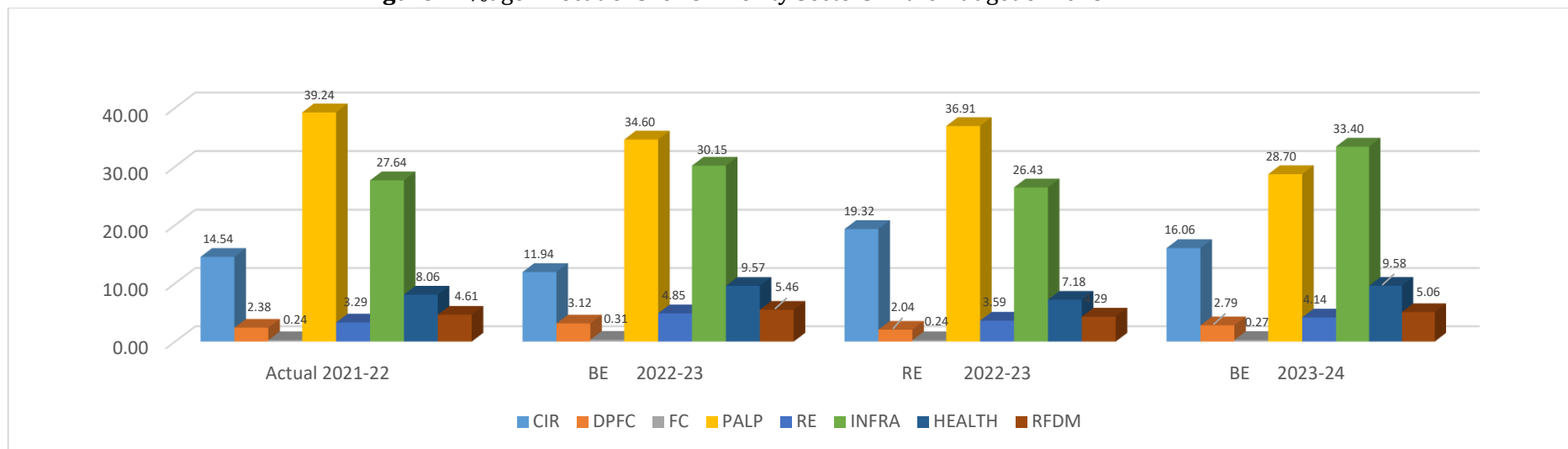
Table 9: Expenditure Allocations under 8 Priority Sectors (as a % of TE on Adaptation)

No.	Code	Components	Actual 2021-22			BE 2022-23			RE 2022-23			BE 2023-24		
			Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
1	CIR	Crop Improvement and Research	17.26	0.53	14.54	15.09	0.56	11.94	23.01	0.64	19.32	20.65	0.57	16.06
2	DPFC	Drought Proofing and Flood Control	2.26	3.02	2.38	3.10	3.16	3.12	2.00	2.24	2.04	2.80	2.49	2.79
3	FC	Forest Conservation	0.29	0.03	0.24	0.38	0.06	0.31	0.28	0.05	0.24	0.33	0.06	0.27
4	PALP	Poverty Alleviation and Livelihood Preservation	46.83	0.05	39.24	44.15	0.06	34.60	44.18	0.07	36.91	37.20	0.02	28.70
5	RE	Rural Education	3.92	0.00	3.29	6.19	0.00	4.85	4.30	0.00	3.59	5.37	0.00	4.14
6	INFRA	Infrastructure	14.39	96.05	27.64	11.97	95.91	30.15	12.56	96.76	26.43	14.75	96.59	33.40
7	HEALTH	Health	9.58	0.21	8.06	12.17	0.15	9.57	8.57	0.16	7.18	12.38	0.15	9.58
8	RFDM	Risk Financing and Disaster Management	5.48	0.11	4.61	6.94	0.08	5.46	5.12	0.09	4.29	6.53	0.11	5.06

Source: Author's calculations from Detail Demand for Grants (various years)

The total expenditure allocations constitute around 5 % of GDP as per the NIPFP study titled “COP27 and public expenditure commitments for first national adaptation communication in India” (Chakraborty, Jha. Kaur, Yadav and Balamuraly, 2022).

Figure 1: %age Allocations for 8 Priority Sectors in the Budget of 2023-24



Source: Author’s calculations from Detail Demand for Grants (various years)

The pictorial description of the Actuals of the year 2021-22(fig. 1) portrays that the expenditure priority on Poverty alleviation and livelihood preservation have had highest allocations followed by Infrastructure projects. Health being at the fourth place after allocations on crop improvement and research. The lowest allocations are for forest conservation. Overall, expenditures on Poverty alleviation remains an important objective for the government which increasingly became more critical during the Covid-19 crises and its impacts that hovered for almost two years.

Observing the allocations from the revised estimates of the year 2022-23, the scenario remains largely the same as Actuals 2021-22(see fig. 1). The highest allocations are for poverty alleviation and livelihood preservation and least on Forest Conservation. However, India's growing focus to 'build back better' is showcased in the Budget Estimates for the year 2023-24. The government unfettered goal to revive the economy from Covid-19 induced crises through increasing investment growth particularly through infrastructure investment is well reflected.

Hence, the budget analysis for the Union Budget of 2023-24 reflects the government priorities over the years. However, concerning is that forest conservation remains the lowest among allocations for adaptation. Although, climate change interventions for adaptation are cross-cutting, still, we cannot stress enough the importance of the forest's conservation in the long-run. Another element, CAMPA component is beyond the scope of present study, however this analysis is informed of CAMPA.

4. Fiscal Marksmanship Analysis of Climate Responsive Budgeting

An accurate budget forecast helps in better fiscal management and infers accurate forecasts of revenue and expenditures. Following the paper by (Chakraborty et al. (2020)), a credible budget forecast is the one when the budgeted variables do not deviate from their actual values. Generally, there is a deviation between variables implying errors in estimation which could be systemic or random in nature. The systemic errors if they exist can be corrected through better forecasting methods. A score (values of ratios of budgeted/ Revised by Actuals) of above 1, on an average, implies over-estimation of the macro-fiscal variables. It also reflects poor implementation. A score less than 1 is under-estimation of the same.

In this section, we calculate the fiscal marksmanship ratio using the Revised Estimates & Budget Estimates of year 2022-2023 of the total expenditure allocations for the select ministries on the priority sectors for adaptation. The fiscal marksmanship of these priority sectors is presented in Table 10.

Table 10: Fiscal Marksmanship Analysis of the Eight Priority Sectors for the year 2022-2023

			FM ratio
No.	Code	Components	BE/RE
			Total
1	CIR	Crop Improvement and Research	0.55
2	DPFC	Drought Proofing and Flood Control	1.36
3	FC	Forest Conservation	1.16
4	PALP	Poverty Alleviation and Livelihood Preservation	0.84
5	RE	Rural Education	1.20
6	INFRA	Infrastructure	1.02
7	HEALTH	Health	1.19
8	RFDM	Risk Financing and Disaster Management	1.13
		Total	0.89

Source: Author's calculations from Detail Demand for Grants (various years)

Observing the Fiscal Marksmanship ratio of the priority sectors, expenditure allocations for six of them are overly estimated. While Crop Improvement and Research and Poverty alleviation and livelihood preservation have a ratio of less than 1 implying under-utilisation of resources. Overall, the Marksmanship ratio of total expenditure allocations on all eight components have a ratio of less than 1. Fiscal Marksmanship analysis for each component can be also conducted.

5. Public Expenditure and Financial Accountability (PEFA) Analysis of Climate Responsive Budgeting

Public Expenditure and Financial Accountability (PEFA) framework, which also serves as a key indicator to measure Budget Credibility is another Public Financial Management tool that can contribute in achieving aggregate fiscal discipline, strategic allocation of resources and efficient service delivery (PEFA (2018)). A score of 'A' is given if the Actuals expenditures outturn lies between 95% and 105% of the Budgeted expenditure. A score of 'B' is allotted when the actual expenditure outturn lies between 90-110% of the approved budgeted expenditures. A score of 'C' is given if it is within 85-

115% while score of 'D' is given if performance is less than required for a C score (PEFA (2018)). In other words, Budget credibility is tested based on the score A to D, wherein 5% variation is marked as score A while a 10% variation is allotted score 'B'. Similarly, 15% variation is allotted a score of 'C' and anything more than that is given a score of 'D' (Jena & Sikdar (2019)).

Here in, we do the PEFA analysis for the year 2022-23 using the budget estimates and the revised estimates. Although PEFA analysis is conducted using the actuals, we, in this exercise, try to examine the extent of variability in the RE from BE for 2022-23 (see table 11).

Table 11: PEFA Analysis of the eight priority sectors for the year 2022-2023

No.		Components	%age Deviation			PEFA Score		
			Revenue	Capital	Total	Revenue	Capital	Total
1	CIR	Crop Improvement and Research	82.45	3.17	81.57	D	A	D
2	DPFC	Drought Proofing and Flood Control	22.96	39.70	26.64	D	D	D
3	FC	Forest Conservation	13.51	28.02	14.09	C	D	C
4	PALP	Poverty Alleviation and Livelihood Preservation	19.72	0.00	19.71	D	A	D
5	RE	Rural Education	17.00	58.82	17.00	D	D	D
6	INFRA	Infrastructure	25.49	13.86	1.62	D	C	A
7	HEALTH	Health	15.76	12.76	15.75	D	C	D
8	RFDM	Risk Financing and Disaster Management	11.84	9.71	11.83	C	B	C
		Total Expenditure	19.64	14.62	12.22	D	C	C

Source: Author's calculations from Detail Demand for Grants (various years)

Focusing on the total allocations, we observe that PEFA score is C which implies deviations are more than 10% from the budgeted allocations. Highest deviations are noted for Crop Improvement and Research followed by Drought Proofing and Flood Control; Poverty alleviation and Livelihood Preservation; Rural Education and Health which score a 'D'. An 'A' is scored by the component of Infrastructure while forest conservation and Risk Financing and disaster management score a 'C' marking deviations are between 10-15% from the budgeted allocations. We also note deviations for the revenue and capital component of these sectors.

6. Templates and Matrices for Sustainable Climate Responsive Budgeting

Table 12 and 13 are the analytical matrices for sustainable climate responsive budgeting within the comparable templates across G20 countries.

Table 12: Public Expenditure Directly on Adaptative Measures
 Ministry/Department of -----
 Demand for Grant No: -----

Name of the programme	Budget Head/Account Head/Component No.	2021-22 (Actuals)	2022-23 (BE)	2022-2023 (RE)	2023-2024 (BE)
1. -----					
2. -----					
3. -----					
4. -----					
5. -----					
Total					

Table 13: Analytical Framework for Climate Financing (B). Public Expenditure Indirectly spent on Adaptation
 Ministry/Department of -----
 Demand for Grant No: -----

Name of the programme	denote the % (proportion spent on Adaptation) (II)	Climate Expenditure (in Rs crores) (I*II/100)	2021-22 (Actuals)	denote the % (proportion spent on climate) (II)	Climate Expenditure (in Rs crores) (I*II/100)	2020-2021 (Actuals)
1.						
2.						
3.						
4.						
5.						
Total						

7. Conclusion

Against the backdrop of G20, we analyze the climate responsive budgeting as a tool of transparency and accountability towards climate change commitments. The detail Demand for Grants across sectors in India is analyzed for the climate intensive allocations under the identified eight components of adaptation matrices, incorporating crop improvement and research, drought proofing and flood control, forest conservation, poverty alleviation and livelihood preservation, rural education and infrastructure, health, risk financing and disaster management, for the period 2020-21 to 2023-24 for adaptation accountability in India. We found that more than forty sectoral ministries have adaptation related expenditure, accounting for around 5 per cent of GDP in India.

Adaptation to climate change cuts across different sectors and must not be observed in isolation. As cited by IUCN, I., & Livelihoods, S. E. I. (2003), the key to adaptation means understanding of what is being adapted given the development trajectories of the country and how can these activities be better targeted for equity and linked effectively. Keeping this in perspective, this study reinforces the importance of Budgeting in implementation of adaptation strategies by the government. This exercise is an effort to relook at the budgeting frameworks to reassess the existing resources, spent under the listed eight priority sectors, to reach the larger goal of adaptation. These expenditure allocations include both the programs that affect directly or indirectly to adaptation as a positive externality. This study serves as a preliminary exercise that reflects the amount of expenditures incurred by the Union Government of India in the BE of 2023-24 on adaptation front.

The analysis portrays the disaggregated expenditures to reflect upon the prioritisation of these themes for the given years. There is seen higher prioritisation for Poverty Alleviation and Livelihood Preservation for the year 2021-22 and 2022-2023. This could be owing to expenditures related to Covid-19 and dealing with its aftermath affects. The period 2021-2022 is marked as the period of recovery from the Covid crises for the country. The priority for the year 2023-24 is Infrastructural development. This is indeed imperative for nation building and to bring about a structural change. However, we also note that forest conservation expenditures remain the lowest in all these years under observation. This component remains critical as majority of the poor living in the tribal regions find it as a major source of livelihood. It is therefore needed not only increase investments for mitigation but also adaptation. Expenditures on forest conservation could be done by remobilising funds to National Adaptation funds which could be then channelised effectively for missions related to Green India, research and development and other capacity-building programs. We also, in this exercise, assesses the budget credibility of each component through PEFA and Fiscal Marksmanship framework for the eight priority sectors.

To conclude, this study serves as a preliminary exercise and a template to relook at expenditures incurred by the Union Government from the Adaptation front. This shall help in elevating country's commitments towards climate change in an effective manner and remobilise resources that demand attention. Building a national level framework for climate adaptation shall fill the gaps in the state and national processes and channelise

government commitments to action effectively. The fiscal marksmanship and PEFA scores related to these eight core areas revealed that there are deviations between Budget Estimates and Actual spending across sectors. The template for climate responsive budgeting attempted in the paper has policy contributions to make the climate responsive budgeting matrices sustainable and comparative across G20 countries.

References

- Chakraborty, Lekha, Pinaki Chakraborty and Ruzel Shrestha. 2020. "Budget Credibility of Subnational Governments: Analyzing the Fiscal Forecasting Errors of 28 States in India" Levy Economics Institute Working Paper No. 964. New York.
- Climate Action Tracker, 2022. Climate Action Tracker Country Assessments. India profile <https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-India-Web.pdf>
- IPCC, (2022. Annex II: Glossary [Möller, V., R. van Diemen, J.B.R. Matthews, C. Méndez, S. Semenov, J.S. Fuglestvedt, A. Reisinger (eds.)]. in: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2897–2930, doi:10.1017/9781009325844.029.
- IUCN, I., & Livelihoods, S. E. I., 2003. Combining disaster risk reduction, natural resource management and climate change adaptation in a new approach to the reduction of vulnerability and poverty. A conceptual framework paper prepared by the task force on climate change, vulnerable communities and adaptation. International Institute for Sustainable Development, Winnepeg, Canada.
- Jena, P. R., & Sikdar, S., 2019. Budget Credibility in India: Assessment through PEFA Framework. National Institute of Public Finance and Policy. WP No. 284.
- PEFA, 2018. PEFA Handbook. Volume II: PEFA Assessment Fieldguide (second edition). PEFA Secretariat. Washington DC. December. Read at: Volume II: PEFA Assessment Fieldguide (Second Edition) | Public Expenditure and Financial Accountability (PEFA)
- Petrie, M., & Petrie, M., 2021. Mainstreaming Environmental Stewardship in Government Strategy and Policy. *Environmental Governance and Greening Fiscal Policy: Government Accountability for Environmental Stewardship*, 43-60.
- Petrie, M., & Petrie, M., 2021. The evolution of green budgeting. *Environmental Governance and Greening Fiscal Policy: Government Accountability for Environmental Stewardship*, 61-108.
- PIB, 2022. G-20 and India's Presidency. Press Information Bureau, Ministry of External Affairs. December 9, 2022. <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1882356>
- UNDP, 2021. Budgeting for Climate Change. A Guidance note for Governments to integrate Climate Change into Budgeting. *Budgeting for Climate Change: A Guidance Note for Governments to Integrate Climate Change into Budgeting* | United Nations Development Programme (undp.org)
- UNEP, 2022. Too Little, Too Slow: Climate adaptation failure puts world at risk. *Adaptation Gap Report*.

UNICEF, 2022. Budgets for Climate, Sustainability and Social Inclusion: A Rapid Review of Approaches and tools. Budgets for climate, sustainability, and social inclusion | UNICEF

World Bank, 2014a. Climate change public expenditure and institutional review sourcebook.

World Bank, 2014b. Moving towards Climate Budgeting. Policy Note

MORE IN THE SERIES

- Bhattacharya, Rudrani, Manish Gupta, Dinesh Kumar Nayak, Radhika Pandey In Association With Sudipto Mundle (2023). [How is India Doing? Mid Year Macroeconomic Review](#), W.P. No. 400 (September).
Amandeep Kaur, is Economist, NIPFP
Email: amandeep.kaur@nipfp.org.in
- Datta, Pratik, Radhika Pandey, Ila Patnaik and Ajay Shah, (2023). [Understanding deviations from the fiscal responsibility law in India](#), WP No. 399 (August).
Ajay Narayan Jha, is former Finance Secretary of Government of India
- Chakraborty, Lekha, Amandeep Kaur, Jitesh Yadav, and Balamuraly B., (2023). [OECD Policy Evaluation of Child Protection Schemes: Evidence from Odisha, India](#), WP No. 398 (August).
Lekha Chakraborty, is Professor, NIPFP
Email: lekha.chakraborty@nipfp.org.in



National Institute of Public Finance and Policy,
18/2, Satsang Vihar Marg,
Special Institutional Area (Near JNU),
New Delhi 110067
Tel. No. 26569303, 26569780, 26569784
Fax: 91-11-26852548