



Government of Odisha

**CLIMATE CHANGE
INNOVATION PROGRAMME**

Climate Change Budget Coding in Odisha

**Forest and Environment
Department**

June 2018

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about 70-75 percent of state's population is rural and depends upon agriculture

Abbreviations and acronyms

ACT	Action on Climate Today
AIBP	Accelerated Irrigation Benefit Programme
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BAIF	Bharatiya Agro Industries Foundation
BASUDHA	Buxi Jagabandhu Assured Water Supply to Habitations
BBSR	Bhubaneshwar
BGGY	Biju Gaon Gaadi Yojana
BKKY	Biju Krushak Kalyan Yojana
BKY	Biju KBK Yojana
BSY	Biju Setu Yojana
CCBS	Climate Change Benefit Share
CCFF	Climate Change Financing Framework
CCIA	Climate Change Impact Appraisal
CCIP	Climate Change Innovation Programme
CCRS	Climate Change Relevance Share
CCSS	Climate Change Sensitivity Share
CPEIR	Climate Public Expenditure and Institutional Review
DAC	Development Assistance Committee
DoWR	Department of Water Resources
EAP	Externally Aided Project
F&ARD	Fisheries and Animal Resources Development
F&E	Forests and Environment
FY	Financial Year
ICZMP	Integrated Coastal Zone Management Programme
IDWH	Integrated Development of Wildlife Habitats

IEC	Information Education Communication
ISBIG	Incentivising Scheme for Bridging Irrigation Gap
IWMP	Integrated Watershed Management Programme
JBIC	Japan Bank for International Cooperation
MATY	Mukhyamantri Adibandha Tiari Yojana
MDB	Multilateral Development Banks
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoEF&CC	Ministry of Environment, Forest & Climate Change
NAP	National Afforestation Programme
NDC	Nationally Determined Contribution
NFDB	National Fisheries Development Board
NFSM	National Food Security Mission
NHM	National Horticulture Mission
NICRA	National Innovations on Climate Resilient Agriculture
NLMP	National Livestock Management Programme
NMAET	National Mission on Agriculture Extension and Technology
NMOOP	National Mission on Oil Seeds and Oil Palm
NRDWP	National Rural Drinking Water Programme
NRLM	National Rural Livelihood Mission
NTFP	Non-Timber Forest Product
OCCAP	Odisha Climate Change Action Plan
OECD	Organisation for Economic Cooperation and Development
OIIPRA	Odisha Integrated Irrigation Project for Climate Change Resilient Agriculture
PKVY	Paramparagat Krishi Vikash Yojana
PMAY	Pradhan Mantri Awaas Yojana
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMKSY	Pradhan Mantri Krishi Sinchai Yojana
RIDF	Rural Infrastructure Development Fund
RKVY	Rashtriya Krushi Vikas Yojana
RTO	Regional Transport Office
SAPCC	State Action Plan on Climate Change
SAPFIN	State Action Plan Financing Frameworks
SBM	Swachh Bharat Mission
SDG	Sustainable Development Goals
SHG	Self Help Group
SRI	System of Rice Intensification
TRS	Thousand Rupees
UNDP	United Nations Development Programme
UNNATI	Urban Transformation Initiative
WALMI	Water and Land Management Institute
WSIDP	Water Sector Infrastructure Development Programme



Executive summary

This study aims to inform planners in the State Government of the current climate change relevance and sensitivity of public expenditure in sectors outlined in Odisha's SAPCC, through a detailed budget coding exercise. The purpose of this analysis is to assist the Government in first identifying which sectors and schemes to focus on to improve climate resilience and mitigation outcomes, and secondly to support government in deciding whether programmes need re-designing or additional funding to accommodate changes needed to deliver climate benefits and / or safeguard projects from the impacts of climate change. This would therefore support the State Government in securing broader development benefits of large scale investments being made, and would help avoid potential future losses that climate change would exacerbate, thereby helping to achieve Odisha's climate response agenda.

FULL SUMMARY

The importance of undertaking an analysis of public expenditure in sectors critical for achieving Odisha's climate response agenda stems from the need to **secure development benefits of large scale funding programmes from potential future losses that climate change would exacerbate**. Subsequently, a Phased Climate Change Impact Appraisal (CCIA) analysis has been conducted, highlighting two major dimensions of programme-level linkages with climate change:

1. How benefits from development programmes **additionally contribute to improving resilience** to climate change
2. How programme benefits are likely **to be impacted by climate change** itself in the absence of climate change specific planning interventions

The former has been captured as the **Climate Change Relevance Share (CCRS)**, while the latter as **Climate Change Sensitivity Share (CCSS)**. These are applied as percentages to the outlay of different schemes (and therefore collectively to an entire sectoral budget), to gauge the relative extent of climate proofing effort that has to be undertaken to prevent loss of intended benefits through

development plans. **A brief analysis of the top ten schemes (by budgetary allocation) has been presented in every sector** on their relevance and sensitivity levels indicating the scope for realignment over a significant portion of the department’s expenditure. Additionally, all the schemes analysed have been **ranked based on their CCRS for the purpose of prioritisation** by policy makers at the time of budget allocations to ensure maximum climate as well as welfare benefits. This list is provided in Annex 1.

The Phased CCIA analyses reveal that multiple combinations of relevance and sensitivity emerge across schemes of each sector. The critical inputs from this exercise, by capturing linkages with climate change, are as follows:

1. Identification of schemes/programmes that need to be prioritised within a sector for further action, to improve resilience/adaptation or mitigation responses
2. Identification of components/interventions within the prioritised scheme/programme which are more vulnerable, and require either additional proofing effort, or reduced investment (hence the planners could deliberate upon technical vis-à-vis financial adjustments based on the nature of activities and their benefits)
3. Schemes within every sector can be categorised based on the budget coding framework into High and Low in terms of relevance and sensitivity. The four combinations (high relevance & high sensitivity, high relevance & low sensitivity, low relevance & high sensitivity, and low relevance & low sensitivity) have been elucidated using illustrations from four sectors: Agriculture, Fisheries & Animal Resources Development, Forests & Environment and Water Resources which are the key sectors for delivering development benefits
4. While schemes that adopt a holistic approach of development (irrespective of the sector) to include livelihood enhancements, training and capacity building have fared as moderate-high scores in terms of relevance and sensitivity, others which have a lean focus on natural resource management or agriculture, have been estimated to show relatively more extreme scores.

A typical guide to applying the above logic is shown in the matrix below.

Table 1: Matrix of climate relevance and sensitivity

Phased CCIA Score		Climate Relevance (resilience building/adaptation/mitigation)	
		High	Low
Climate Sensitivity (loss and damage due to floods/ cyclones/ droughts)	High	A high priority for scrutiny: Retain benefits with positive climate sensitivity Climate-proof benefits with negative sensitivity	Design changes to enhance climate resilience and also more climate proofing effort to insure against welfare losses from climate hazards (in case of negative sensitivity) In case of positive sensitivity, enhancing climate resilience would reap dual benefits
	Low	Climate change benefits accrue with relatively less impact (or loss) from climate risks – low hanging fruits	Regular monitoring and review effort – To explore the future scope of mainstreaming climate concerns. Comprehensive assessments needed to evaluate allocations in such programmes

The sectoral analysis reveals that expenditure from the **Departments of Water Resources, Energy, Agriculture and Forests and Environment** show relatively **higher climate change relevance**. This indicates significant opportunities to incorporate adaptation and/or mitigation actions. On the other hand, **vulnerability to climate risks are high for expenditures in Water Resources, followed**

by Energy, Panchayati Raj, Fisheries and Agriculture. A sector-wise scrutiny would inform policy makers of specific interventions that require significant attention for climate proofing and enhancing resilience.

Table 2: Sector level snapshot of climate relevance and sensitivity

Phased CCIA Score		Climate Relevance (resilience building/adaptation/mitigation)	
		High (>= 45%)	Low (< 45%)
Climate Sensitivity (loss and damage due to floods/ cyclones/droughts)	High (>= 40%)	Water Resources Energy Agriculture Panchayati Raj	Fisheries & Animal Resource Development
	Low (< 40%)	Forestry Urban Development Coasts & Disaster Management	Rural Development Health Transport

NOTE: Based on the results and the range obtained for CCRS and CCSS (Table 3.1), 45% has been chosen as the threshold for relevance and 40% for sensitivity.

Using the phased CCIA approach, the CCRS and CCSS scores of the different schemes with different degrees of relevance and sensitivity to climate change can be compared within each sector. This could potentially form the basis for a concerted mainstreaming and climate proofing initiative by the concerned State Departments. Integration of a simple yet relatively objective budget coding template with departmental budgets would be the way forward for the State if it were to measure the climate relevance and sensitivity of its expenditure. This would internally facilitate greater effectiveness of public expenditure in not just delivering welfare but also significant climate adaptation or mitigation benefits without much additional effort towards planning.

Introduction

Public expenditure in countries like India, even if not explicitly motivated by climate concerns, has provided significant climate change adaptation and mitigation co-benefits (Koyel Mandal, 2013). However, this has not received significant focus in the Indian context and budgetary allocation and spending on climate change issues remain underreported in India. To address this, the Ministry of Environment, Forest & Climate Change (MoEF&CC) along with a few states have recently initiated discussions on creating a consistent reporting template for their climate-related expenditure.

Frameworks that can be adopted for identifying the climate relevance of public expenditure have far predated such thought in India. However, there is some need to re-align such frameworks to the Indian context. Contemporary frameworks like the Climate Public Expenditure and Institutional Review (CPEIR), Climate Markers by Organisation for Economic Cooperation and Development (OECD), Joint Multilateral Development Banks (MDB) Finance approach, etc. are universally recognised and have been adopted by several countries (UNDP, 2012) in the past to report their climate-related expenditures. These are objective-based approaches which use either the stated explicit or implicit objectives of the schemes/programmes/aid to estimate their climate relevance. Figure 1 provides a summary of these approaches, followed by a few illustrative examples to highlight the inherent differences in classifying public expenditure.



Action Aid estimates that nearly 200,000 people migrate from Western Odisha to brick kilns surrounding major cities of Andhra Pradesh

Figure 1.1: Objectives-based Approaches to Climate Budgeting

Multilateral Development Bank Joint Approach (MDB criterion)	
•	Based on explicit inclusion of climate adaptation/ mitigation in the objectives of the programme
•	Categories: 1 (if included) 0 (if not included)
OECD-DAC Climate markers	
•	In addition to explicit mention in programme objectives, also highlights if climate change (CC) is a primary focus or not
•	Categories: 2 (if CC is the principal focus) 1 (if CC is a significant goal) 0 (if CC is not targeted at all)
Climate Public Expenditure and Institutional Review (CPEIR)	
•	Also includes implicit climate co-benefits, and ranks a programme based on the relative importance of these benefits
•	Categories: High (CC is part of the primary focus) Medium (CC is a secondary focus, or programme has prominent CC co-benefits) Low (CC co-benefits are indirect) Marginal (very minimal or theoretical links of climate relevance)

Source: Methodology documents of different Climate Financing Frameworks

Table 1.1 shows that there is greater scope **to classify components within a programme, rather than take the programme outlay as a whole**, as one moves from explicit to implicit inclusion of a climate perspective in programme objectives (i.e. schemes could have a considerable relevance to climate change, even without an explicit goal to address its impacts).

Table 1.1: Objectives-based Approaches: Illustrative Examples

Methodology	Schemes		
	On-Farm Water Management	Integrated Coastal Zone Management Programme (ICZMP)	National Innovations on Climate Resilient Agriculture (NICRA)
Objectives	<ul style="list-style-type: none"> Enhance water use efficiency by promoting on-farm water mgmt. Rainwater conservation for effective use Rainfed area development 	<ul style="list-style-type: none"> Reduce coastal erosion Reduce vulnerability to disasters Coastal biodiversity conservation Improving livelihood security Improving coastal environment quality 	<ul style="list-style-type: none"> Enhance climate resilience of agriculture & allied activities Demonstrate farm-specific technology packages to adapt to climate risks Capacity building of scientists & other stakeholders in climate resilient agriculture
MDB Joint Approach	No	No	Yes
OECD-DAC	Not targeted	Not targeted	Principal
CPEIR	Medium	Medium	High

As can be seen from the above examples, though all three schemes have a significant contribution towards building climate change resilience, the MDB and OECD approaches exclude two of the schemes altogether. Thus, there is a need to identify a methodology to suitably identify climate change benefits of the existing budget expenditures of the state. Such indicators will be helpful for the state to prioritize climate actions as well as be a powerful reporting tool for Sustainable Development Goals (SDG).

With this premise, the Climate Change Innovation Programme (CCIP)¹ has developed its Climate Change Financing Framework (CCFF), called the State Action Plan Financial Integration (SAPFIN), which is a benefits-based approach. This approach takes into account the expected benefits of the schemes/programmes and grades them based on their relative climate sensitivity to arrive at the Climate Change Benefit Share (CCBS).

It is important to understand that a state should analyse the climate relevance and sensitivity of its public expenditure. Most of the evidence that suggests the importance of this exercise stems from their Action Plan on Climate Change which summarises the different climate hazards that the state is prone to and categorises its districts based on their degree of vulnerability. Hence this analysis would inform policy makers of the susceptibility and damages that climate change could cause to the state, and entry points to building resilience through its already existing development outlays.

Given the state's development trajectory, key concerns relate to agricultural productivity, poverty reduction, food security, disaster mitigation and response, etc. However, it is often seen in developing countries that planning of development programmes without integrating climate concerns could reduce or impede future benefits expected out of them. This could be due to the need for additional resources for disaster response or building resilience for the communities affected by such disasters. **Hence, climate budgeting or proofing of development budgets would only help ensure that these future development benefits are not significantly eroded due to hazards like floods, droughts, storms, cyclones, earthquakes which are aggravated by climate change.**

The current exercise provides multiple benefits to the States by:

1. identifying the inherent climate mitigation or adaptation benefits of current public expenditure and plan future investments,
2. facilitating the re-alignment of the objectives of departmental schemes to achieve greater climate relevance in future,
3. predicting future loss and damage because of climate change given climate scenarios (regional projections) with current adaptation and mitigation efforts, and
4. standardising domestic and international climate action and expenditure reporting (SDGs).

¹ The CCIP is a UK DfID supported initiative aimed at strengthening India's climate resilience, through concerted engagement with the governments at the national, state and local levels. The CCIP is active in six Indian States: Assam, Bihar, Chhattisgarh, Kerala, Maharashtra and Odisha.

Methodology

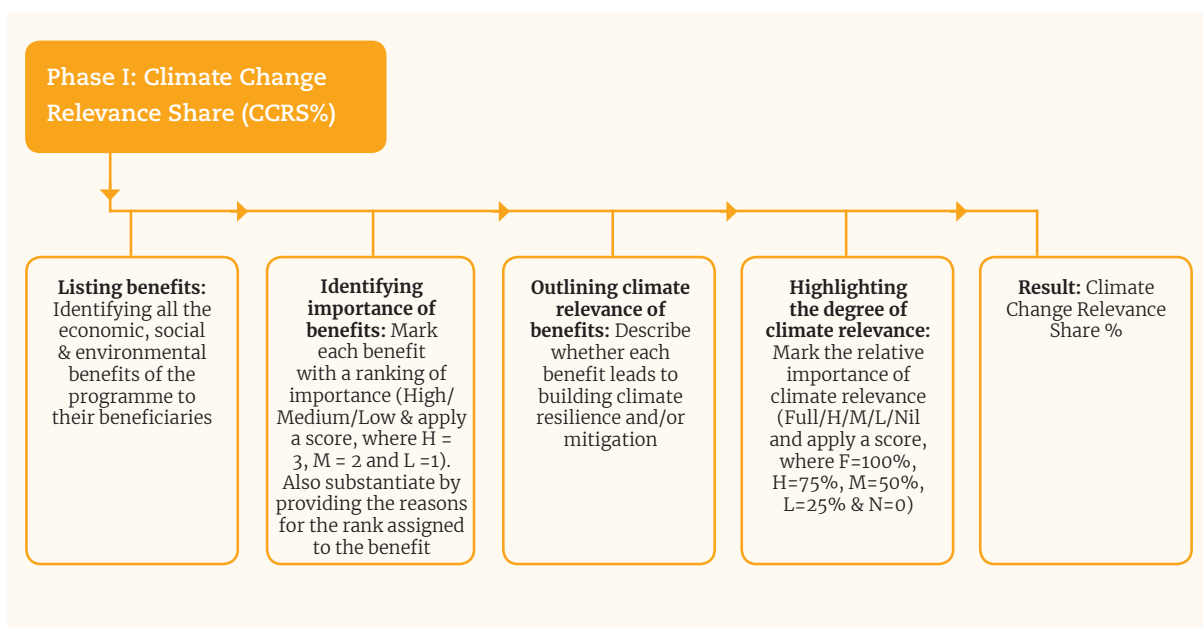
Phased CCIA

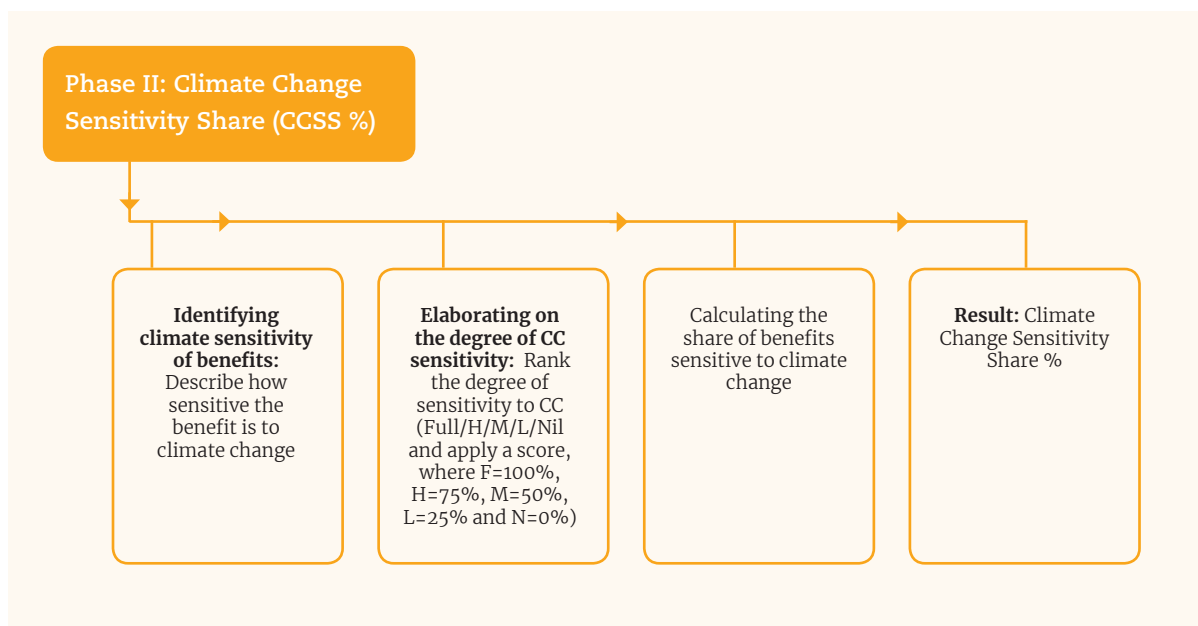
The Phased CCIA methodology is an extension of the SAPFIN methodology to include a two-step analysis. It is based on the understanding that public expenditure on development could:

1. provide inherent climate mitigation and adaptation co-benefits and
2. themselves be sensitive to potential impacts of climate change, thereby deviating from the expected welfare trajectory or programme objective in future.

The steps adopted during the Phased CCIA approach are represented below:

Figure 2.1: Phased CCIA Approach





Hence this methodology in step I, attempts to **provide the climate relevance of public expenditure** while in step II, highlight the **vulnerability of public expenditure to future climate impacts**. If results of both analyses are studied together, it will be observed that there are schemes in every sector which provide relatively greater climate benefits than others while also being sensitive to climate impacts hence needing relevant design considerations to ensure that the benefits are not at risk. Similarly, schemes which are low in providing climate benefits might also be low in sensitivity, which could again call for design changes for accruing greater benefits at lower risk exposure. This could help States draw greater benefits out of schemes which are more tolerant of climate impacts. Hence this dual analysis while facilitating effective design changes, could also provide a holistic view of where the current climate preparedness stands vis-à-vis future requirements.

Once the Phased CCIA approach is applied to all the schemes to the expenditures across priority sectors of the SAPCC, the resultant CCRS % and CCSS % will be imposed on the programmatic expenditure of these schemes. This exercise will ultimately provide the overall climate relevance and sensitivity shares of public expenditure thereby providing an additional classification in the light of future climate expenditure as well as Nationally Determined Contribution (NDC) reporting.

The relevance (CCRS) share is meant to help state departments to identify priority schemes to focus on for climate-related planning, as a first step. The sensitivity (CCSS) share is useful to then realign interventions/components within a scheme for reducing any welfare loss from climate-induced risks.

ON THE APPLICATION OF A DIRECTION TO THE SENSITIVITY OF BENEFITS

In the Phased CCIA approach, the climate change relevance of a scheme/programme is captured through two primary contributions:

1. the contribution of the scheme/programme towards building resilience to climate change (for ex: irrigation facilities or disaster risk reduction), or
2. help mitigating climate change itself (for ex: emissions reduction, carbon sequestration etc.).

Based on the observable strength of this linkage, a score of High, Medium or Low is given. A 'Nil' score is given if no connection can be established between the benefit and climate adaptation or mitigation. A score of 'Full' is given in the exclusive case of emission reduction and carbon sequestration (wherein complete effect of mitigation is realised, which would otherwise be zero, in the absence of climate change). The respective scores of 0% (Nil), 25% (Low), 50% (Medium), 75% (High) and 100% (Full) are accordingly assigned for further analysis. It is to be noted that only the strength of this linkage is captured here, and not whether the benefit influences /contributes to climate change in a favourable manner or otherwise. Therefore, only the absolute values are considered for calculation.

However, the climate change sensitivity (next step in the analysis after studying the relevance), is meant to capture *how the benefit would be impacted by potential climate risks*. Therefore, it is necessary to assign a score, not only based on the strength of expected impact but also to indicate *whether there would be any loss or increase in the benefit due to climate change*. Accordingly, a *negative* sign is assigned, if the benefit is expected to reduce and a *positive* sign, for an expected increase in the benefit. For instance, the benefit from improved access to drinking water is likely to become highly impacted in water deficit areas, in the context of increased climate risks of drought, extreme temperatures etc. Hence this is a *highly* sensitive benefit, with a *negative* direction, because the water supply is expected to be constrained in the above scenario. On the other hand, benefits from disaster-resilient planning, in the context of climate-induced events, would be favourable, owing to the system preparedness already in the programme. Hence it would be reflected in a *positive* sensitivity score.

It would be useful to incorporate this directional aspect while assessing relative sensitivity of schemes within a Department, for a climate-oriented re-prioritisation of spending. It could be practical for planners in State Departments to refer to directions only for internal re-allocations *within a scheme (with the idea of preventing loss of benefits due to climate hazards)*, while retaining sensitivity scores in absolute values (ignoring directional effects) for assessing potential reallocations *between schemes*.

SCOPE OF ANALYSIS

The Odisha Climate Change Action Plan (OCCAP) outlines strategies across 11 priority sectors, hence the same form the basis for conducting the Phased CCIA analysis. However, due to comparatively low budgetary allocations, expenditure from the Departments of Industries and Steels & Mines have been omitted from this analysis. Similarly, since only a subset of the schemes of the Department of Revenue & Disaster Management has any actual climate change relevance, these sub-set of schemes have been analysed as part of this assessment. On the other hand, Panchayati Raj & Drinking Water and Rural Development have been included since the expenditures in these department have far reaching climate change adaptation benefits and at the same time are susceptible to climate change impacts. The Budget Estimates of Programme Expenditure for 2017-18 as obtained from the Detailed Demand for Grants² across the 11 sectors form the source of data on budgetary allocations for schemes. Similarly, for qualitative scheme level details of all priority sectors, the Outcome Budget documents, as well as Activity Reports for the last 3 years, were studied during the budget coding exercise. Expenditure under the following departments were analysed during this exercise:

1. Agriculture and Farmers' Empowerment
2. Revenue and Disaster Management
3. Energy
4. Fisheries and Animal Resources Development
5. Forests & Environment

² The list of various Grants pertaining to the 11 sectors is provided in Annexe 2.

6. Health and Family Welfare
7. Panchayati Raj & Drinking Water
8. Rural Development
9. Commerce and Transport
10. Housing and Urban Development
11. Water Resource

Summary findings from Phased CCIA

The current analysis attempts to delineate the climate change relevance and sensitivity of public expenditure in sectors outlined in Odisha's SAPCC. These include Agriculture, Coast & Disaster Risk Management, Fisheries & Animal Resource Development, Forestry, Panchayati Raj, Rural Development, Transport, Urban Development, Energy, Health and Water Resources³.

This exercise has drawn from data⁴ and qualitative inputs from the relevant State Departments, and the sector-wise summary is shown below:

Table 3.1: Phased CCIA Results

S. No	Sector	Climate Change Relevance Share: CCRS (%)	Climate Change Sensitivity Share: CCSS (%) Negative	Climate Change Sensitivity Share: CCSS (%) Positive
1	Agriculture	45	-41	2
2	Coast & Disaster Risk Management ⁵	45	-39	4
3	Energy	52	-47	1
4	Fisheries & Animal Resource Development	30	-44	1
5	Forestry	54	-39	6
6	Health	37	-22	
7	Panchayati Raj	45	-45	2
8	Rural Development	42	-36	4
9	Transport	31	-32	0
10	Urban Development	46	-38	4
11	Water Resources	59	-57	3

³ Industries and Mining are two other sectors outlined in the SAPCC, however due to minor representation in the state budget, these sectors have not been presented in this draft.

⁴ Programme Expenditure (Budget Estimates) for 2017-18 have been used for applying the relevance and sensitivity scores for each sector.

⁵ This score is based on partial analysis of very few schemes, hence it is not representative of the entire sector

Inspection of the CCRS and CCSS scores above shows that opportunities to incorporate adaptation and/or mitigation actions are substantial in sectors like Water Resources, Forestry and Energy. These show relatively higher climate change relevance, followed by Agriculture, Urban Development, Panchayati Raj and Coast & Disaster Management. Expenditure patterns in the Fisheries & Animal Resources Development (F&ARD), Health and Transport sectors currently contribute relatively less to climate resilience building (hence their lower CCRS shares). In terms of sensitivity to climate risks, expenditure in the Water Resources sector, followed by Energy, rank high, closely followed by Panchayati Raj, F&ARD and Agriculture. The following sections summarise sector specific analysis and findings from the exercise. A detailed list of analysed schemes of the 11 Departments is provided in Annexe 1 for technical officers to deliberate on scheme designs to derive maximum climate benefits from them while reducing their sensitivities.

AGRICULTURE

Agriculture is one of the larger sectors in the Odisha budget with overall programme expenditure of Rs. 3,359.1 crores across 64 schemes in (Budget Estimates for 2017-18). Major expenditure heads in this sector are Crop Husbandry, Loans for Crop Husbandry, Soil and Water Conservation, Agricultural Research and Education, and Capital Outlay for the same. The current analysis has covered 99% the total Programme Expenditure, while schemes with limited information were excluded.

It is observed that major spending has been on irrigation, farm mechanisation, food security, watershed management, and holistic agricultural productivity enhancements (which includes maintaining a supply of quality seeds, prevention of crop diseases, etc.). Schemes related to these interventions constitute around 76% of the Programme Expenditure analysed.

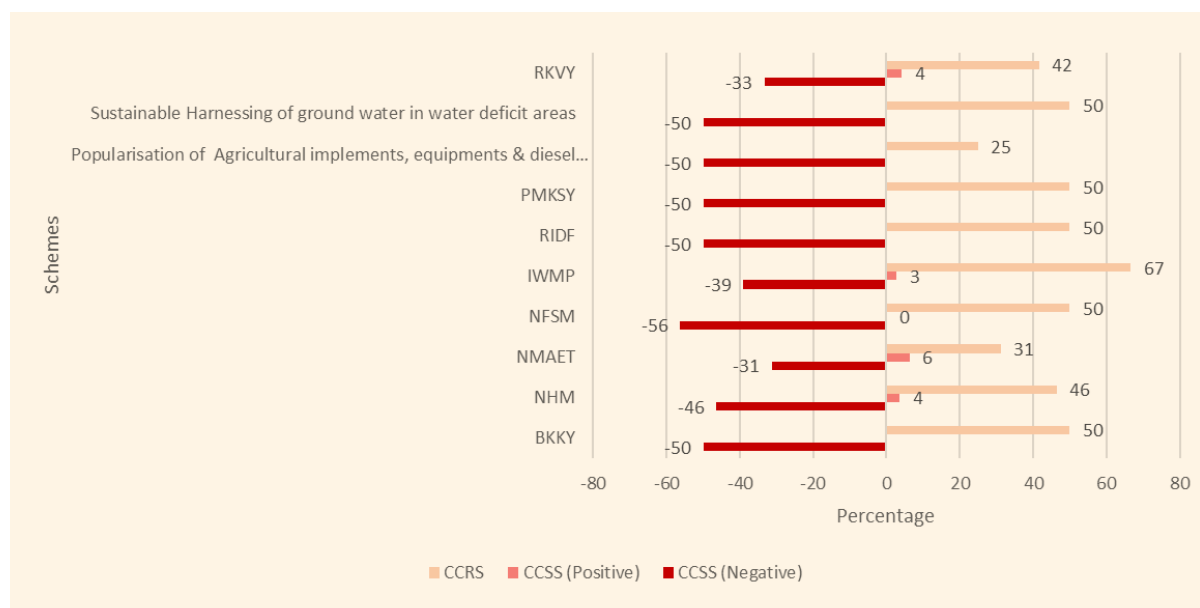
Based on the Phased CCIA analysis, it is observed that **45%** of the Programme Expenditure is climate-relevant and **41%** is negatively sensitive to climate impacts. Similarly, it is also noted that **2%** of the analysed expenditure was positively sensitive to climate impacts, i.e. they were expected to provide more benefits in the light of increased frequency and magnitude of climate hazards. They are mainly around training of extension workers and farmers on efficient agriculture practices or organic farming.

- Climate relevance ranges between 0-79% in this sector. Schemes which adopt a holistic approach to natural resource conservation and livelihoods have scored relatively higher on climate relevance and lower on sensitivity. This is because, while on one hand, they promote water or soil conservation which is vulnerable to climatic events, they also support livelihoods through alternate strategies which help farmers cope with climate shock. The System of Rice Intensification Scheme, Integrated farming as well as Organic Farming schemes are a few such examples to be noted.
- CCSS scores in this sector range between (-25%) to (-63%). Schemes focused exclusively on irrigation or mechanisation are also reasonably prone to climate impacts, hence have high sensitivity shares. Such schemes require additional climate proofing to ensure delivery of development benefits. Others like SRI, procurement of bio and chemical fertilisers, etc. are lower on sensitivity levels.
- Schemes which aim to establish institutions for agriculture and horticulture, training personnel and farmers on sustainable practices and efficient farming, etc. are positively sensitive to climate impacts.



it is observed that 45% of the Programme Expenditure is climate-relevant and 41% is negatively sensitive to climate impacts

Figure 3.1: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Agriculture Department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

While an initial assessment helps categorise benefits and their climate relevance, **agriculture schemes offer a broad spectrum of benefits which through minor design changes have proved to help buffer development from climate hazards.** Annex 1 can be referred to, for scheme-wise listing of CCRS and CCSS scores.

ENERGY

The Department of Energy has overall programme expenditure of INR 1,708.3 crores (Budget Estimates 2017-18), with major expenditure on expanding transmission networks, rural electrification, promotion of renewable energy applications and investment in disaster resilient power systems. The current exercise has analysed around 70% of the programme expenditure, as the remaining amount related to operational and administrative reforms or were too broad in scope to be included for coding.

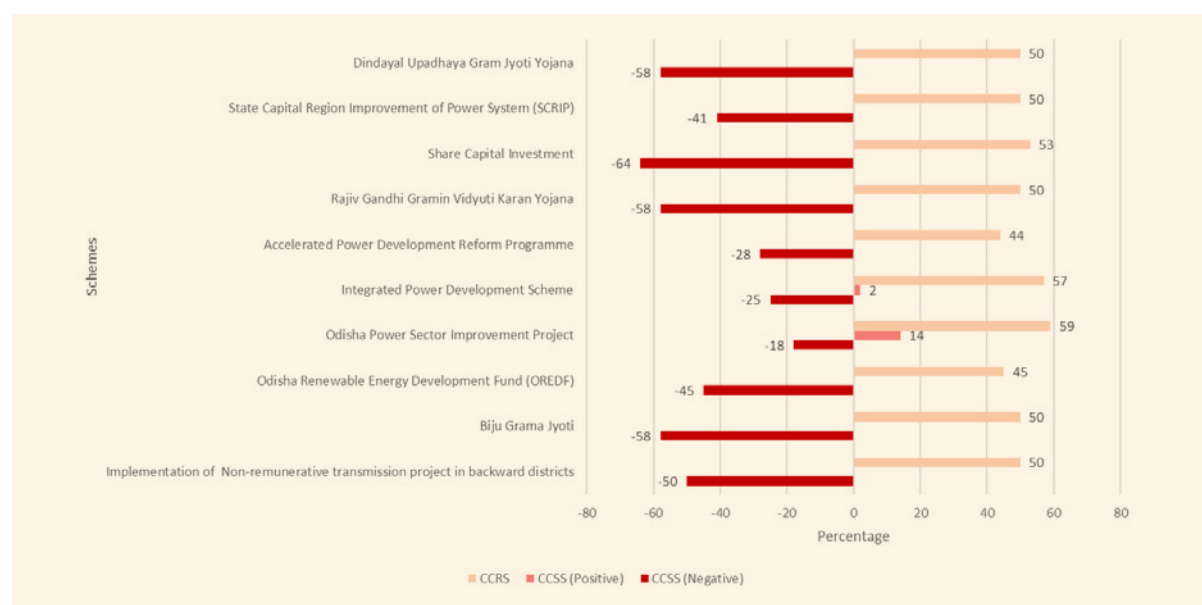
Rural electrification initiatives such as the Rajiv Gandhi Gramin Vidyutikaran Yojana, Deendayal Upadhyay Gram Jyoti Yojana, Biju Grama Yojana, and major transmission upgradation efforts account for more than 64% of the Energy sector planned outlay. The Phased CCIA analysis of the sector shows that while 52% of the expenditure is climate-relevant, about 46% is vulnerable to climate-related risks.

- Schemes promoting renewable energy, increasing energy access to rural and hitherto unelectrified areas, those with specific focus on backward districts etc. yield benefits that are highly climate relevant. Opportunities for emission reduction (from clean fuels and increased efficiency in generation) plays a major role in select energy sector schemes, due to their direct contribution to mitigation.
- Power transmission infrastructure, in the absence of disaster resilient design, is one of the most vulnerable to climate risks. Benefits from improved energy access are likely to be impacted by disruption and additional costs of restoration by utilities. Some expenditure is planned for creating disaster response centres and reducing gaps in power supply due to extreme events. These, along

with interventions to promote renewable energy, contribute to favourable impacts on benefits from respective schemes, in the event of climate-induced risks.

The following chart shows the climate change relevance and sensitivity scores of the top ten schemes in terms of outlay. As noted earlier, these schemes mainly relate to transmission systems, and extending energy access to rural areas. Sources of positive climate change sensitivity are observed in very few schemes, from activities that promote greater energy efficiency, and adaptability of power infrastructure to combinations of sources (so that both conventional and renewable sources can be co-hosted).

Figure 3.2: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Energy Department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

FISHERIES AND ANIMAL RESOURCE DEVELOPMENT

The Department of Fisheries & Animal Resources Development (F&ARD) reports a program expenditure list with 67 schemes which sum up to a total of Rs. 3,771 crores for the FY 2017-18. The budget includes major heads like Fisheries, Animal Husbandry, Dairy Development and Capital Outlay on each of them. The top ten schemes in terms of allocations formed up to 78% of the analysed spending of the department. They were predominantly spent on the following:

1. White Revolution
2. Upgradation of Livestock Health Care Services
3. Infrastructure development for Livestock Services
4. Implementation of Kalyani project through BAIF Research and Foundation
5. Integrated Development and Management of Fisheries (blue revolution)
6. Rural Infrastructure Development Fund (RIDF)
7. Strengthening of Dairy Organisation

8. Mobile Veterinary Unit
9. Infrastructure Development
10. Rural Infrastructure Development Fund

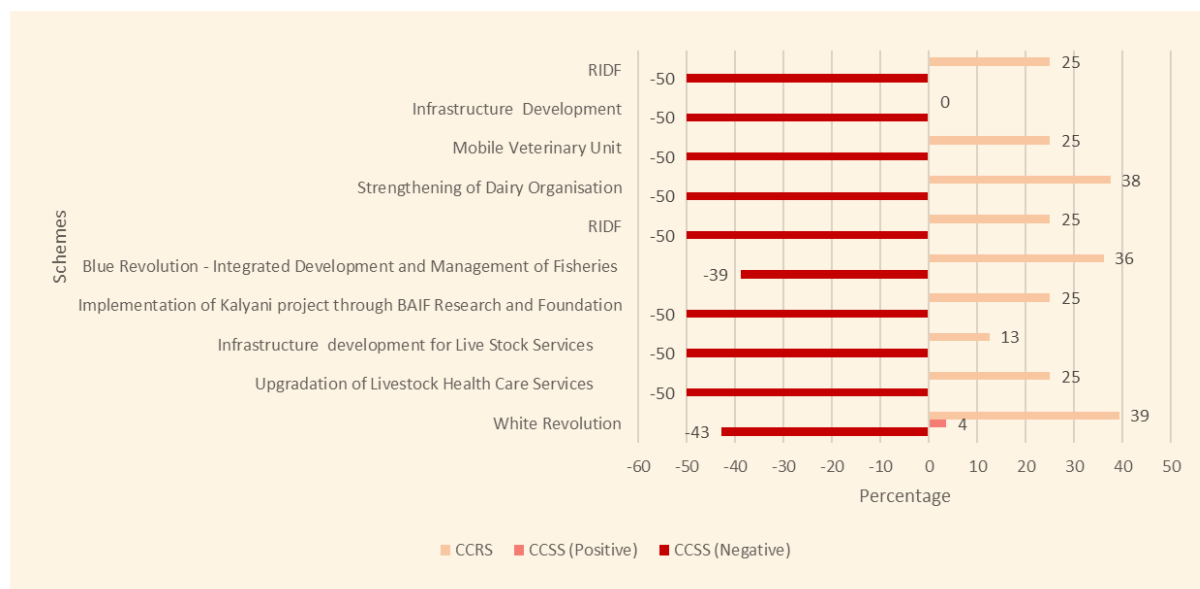
Summarily, these schemes mainly focus on the promotion of livestock rearing, fish cultivation, infrastructure development for livestock and fisheries, enhanced medical facilities for livestock, mechanisation of fish cultivation, establishing markets for fish farmers, providing mobile veterinary and awareness services for farmers and fish cultivators, and promoting their livelihoods and savings. In addition to this, the Machha Chasa Pain Nua Pokhari Khola Yojana⁶ too has received significant funding from the State.

An examination of the F&ARD expenditure revealed that while only **30%** of their spending was climate-relevant, approximately **44%** of it was negatively climate sensitive. Similarly, **1%** of it was expected to be positively sensitive to climate impacts. This goes in line with the common understanding that the sector mainly focuses on fish cultivation and livestock production which are heavily dependent on natural endowments and resources from water bodies, and fodder (either from crop residue or forests) and therefore could be more susceptible to climatic hazards than others. Given greater frequency of climate hazards within the state, this is expected to be exacerbated.

- The CCRS scores in this sector ranges between 0–50%. While income from fish cultivation, dairy development, access to formal markets, accidental insurance and savings schemes, real-time information on cultivation and best practices, etc. contribute majorly to building resilience within the sector. Schemes that promote intensive aquaculture and in brackish waters, promotion of indigenous and threatened livestock species, white revolution, etc. contribute significantly to building climate resilience within the sector. These resilience-building benefits are key takeaways for the department to build upon to climate-proof the sector even further.
- On the other hand, susceptibility of livestock & fish cultivation, etc. to climate-induced diseases, productivity losses, and disasters themselves significantly reduce these benefits. The same schemes which contribute to climate benefits are also considerably vulnerable to climate hazards mainly storms, cyclones, floods, etc. This level of susceptibility is relatively higher in this sector because of its dependence on lakes, rivers, brackish and sea waters. It is noteworthy that 75% of the schemes in this sector have been estimated to have a CCSS of 50%.

⁶ Due to insufficient information, this scheme has not been included in the analysis

Figure 3.3: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the F&ARD department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

FORESTS AND ENVIRONMENT

The Forest & Environment department has an overall program expenditure for the FY 2017-18 of Rs. 2,838 Crores. It is to be noted here that this exercise includes 31 schemes which constitute 97% of the overall department expenditure. The major heads of expenditure within this department are Forests, Ecology and Environment, Wildlife and Environment.

Of this, major spending has been on the Tiger Reserves & wildlife conservation and Afforestation schemes (including EAPs). Components on capacity and skill building, technology enhancements and upgrade of physical infrastructure form part of most schemes taking up minor shares of their expenditure.

After an analysis using the phased CCIA methodology on the F&E department's schemes, it was found that approximately **54%** of their overall expenditure is climate-relevant i.e. they either contribute to mitigation, adaptation or resilience-building benefits. Similarly, of the total expenditure, it was calculated that close to **39%** of it was negatively sensitive and **6%** positively sensitive to impacts⁷ of climate change. This reckons that while more than half of the department's expenditure contributes to either mitigation or adaptation to climate change, more than one-third of it is also sensitive to climatic events like floods, droughts, cyclones and earthquakes. Such an exercise while appreciating the inbuilt climate proofing carried out by the department's schemes, also highlights the vast scope for further realigning their schemes to achieve greater climate mitigation or adaptation benefits.

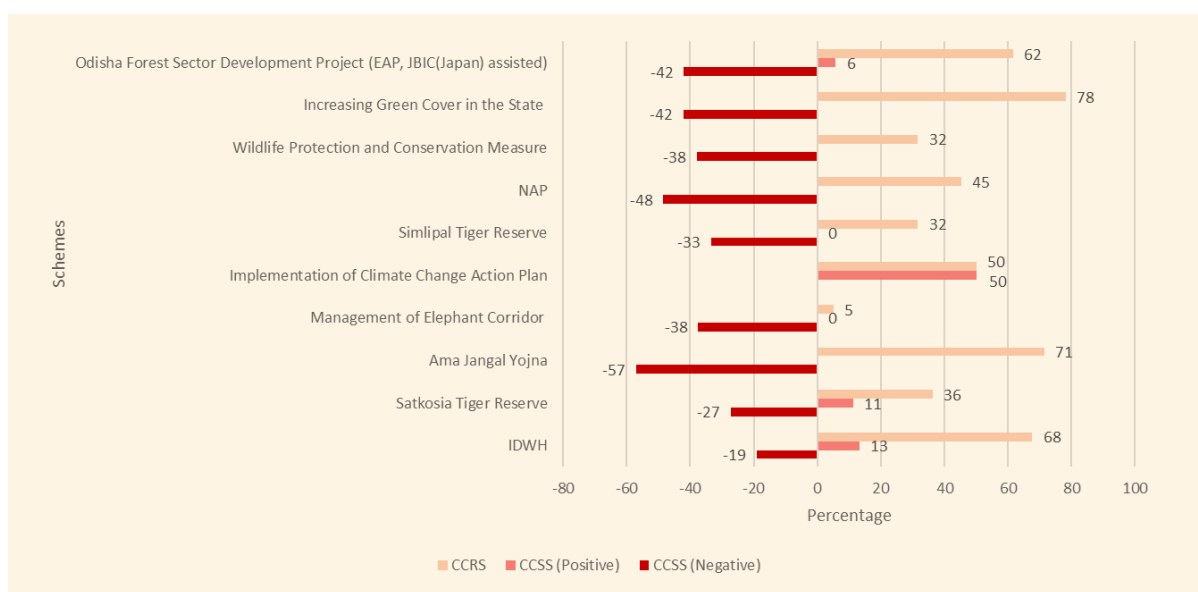
- CCRS ranged between 0-83% where schemes like Integrated development of wildlife habitats, increasing green cover in the State, Amal Jangal Yojana, etc. contribute significantly to building resilience and enhancing carbon sinks within the State. These schemes adopt an integrated approach to afforestation which includes livelihood enhancements and also building internal capacities. Other afforestation schemes like the Satkosia Tiger Reserve, Establishing Regional Resource Centres, which have a leaner outlook scored lesser in climate relevance.

⁷ It is to be understood that major hazards that affect all districts of Odisha had been mapped by the State Action Plan on Climate Change (SAPCC) and these hazards have been considered while carrying out the sensitivity coding.

- In the context of climate sensitivity, like mentioned before, pure afforestation programmes like Amal Jangal Yojana or other schemes which aim to conserve eco-sensitive regions like mangroves and wetlands score higher on sensitivity. Others like the IDWH which adopted a holistic approach to wildlife and forest management scored relatively lower on CCSS. On the whole, this sectors' CCSS range stood between (-8%) and (-58%). Small awareness generation on biodiversity conservation and training related schemes showed a marginal positive sensitivity score.

A detailed look at the top 10 schemes in terms of financial allocations within the department which sum up to 79% of the total department's expenditure highlights the following:

Figure 3.4: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the F&E department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

While these schemes are relatively high in providing mitigation and resilience-building benefits (5-78%), they are also susceptible (19-57%) to climate impacts. Hence, these sensitivities could also offset their development benefits given they aren't redesigned to reduce them. Another important observation was that given this sector focuses on building capacities, forest-based livelihoods and train staff and communities for forest management, some of their benefits are expected to become more valuable in the context of climate change. A detailed list of schemes sequenced based on their climate relevance is provided in Annexe 1. This could help the department reprioritise allocations as well as analyse requirements for redesigning schemes to reduce their climate sensitivities.

HEALTH

The Department of Health and Family Welfare has a programme expenditure of approx. INR 3,652.2 crores (Budget Estimates for 2017-18), catering to basic health service delivery, specific disease control programmes, training of medical and paramedical personnel, emergency response etc. For this analysis, around 89% of this total outlay has been considered, while generic establishment expenses and specific tertiary healthcare programmes have been excluded.

Major flagship initiatives like the National Health Mission, Mukhyamantri Swasthya Seva Mission, Rashtriya Swasthya Suraksha Yojana, National Malaria Eradication programme, and several family

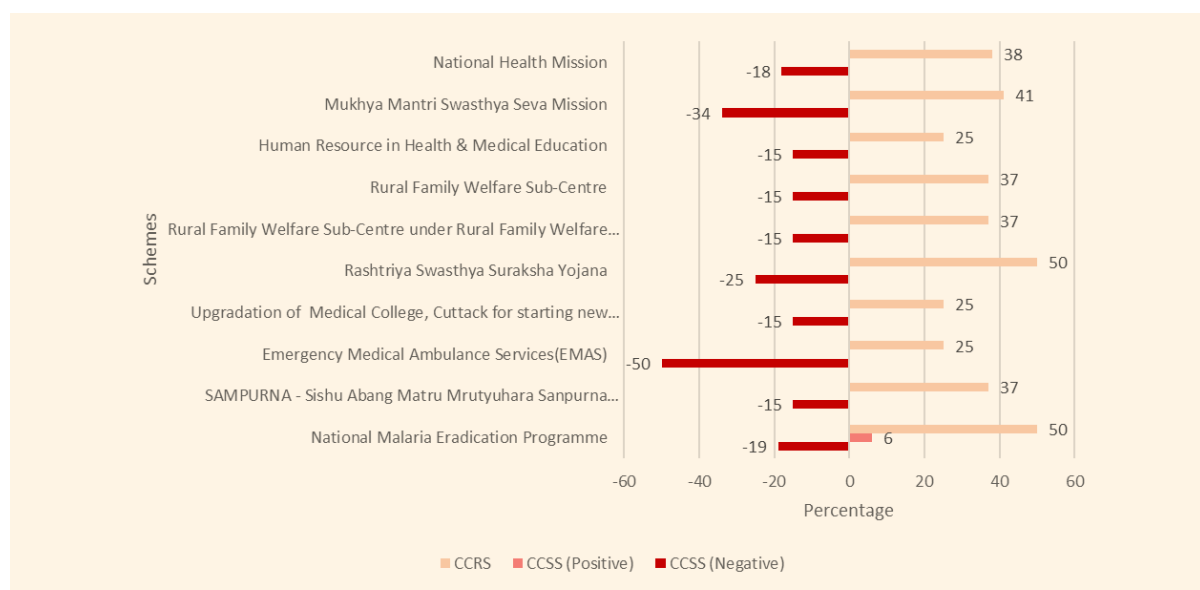
welfare schemes account for around 84% of the Programme Expenditure in Health & Family Welfare.

Based on the Phased CCIA analyses, **37%** of the Programme Expenditure is climate relevant, while **22%** is negatively sensitive to climate change.⁸

- Schemes with highest relevance to climate change pertain to disease control (specific programmes on malaria, filaria, other vector-borne diseases, goitre, tuberculosis, etc.), financial support to the poor to access healthcare and improved sanitation and waste disposal at hospitals. These directly contribute to higher individual and community productivity – by preventing/controlling morbidity and reducing cost of availing medical services for the vulnerable sections of society. Climate risks would also increase disease incidence, and these services would become important to address this additional burden in the future
- High sensitivity to climate change is observed only in a few schemes, and these relate to emergency response system (ambulances, use of telemedicine to follow-up and coordinate healthcare delivery etc.). This is due to vulnerability of such infrastructure to reach out to beneficiaries under constrained circumstances of extreme weather/floods/cyclones. Hence there is a need to incorporate disaster resilient response plans to reduce this sensitivity.

A comparative view of the climate change relevance and sensitivity are shown below, for the top ten schemes in terms of budget.

Figure 3.5: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Health and Family Welfare Department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

PANCHAYATI RAJ

The Panchayati Raj Department has an overall spending of Rs. 5,270 Crores in 2017-18. This was broadly divided into Labour & Employment, Social Security and Welfare, Special Programmes for Rural Development, Rural Employment, Other Rural Development Programmes & finally Capital Outlay on Public Works and Housing. 99% of their total expenditure was included in this analysis.

⁸ Very few schemes have benefits that are positively sensitive to climate change (as can be seen from the list of CCRS and CCSS for this sector provided in the Annex); however, this accounts for 0.3% of the Programme Expenditure, hence not detailed in this section.

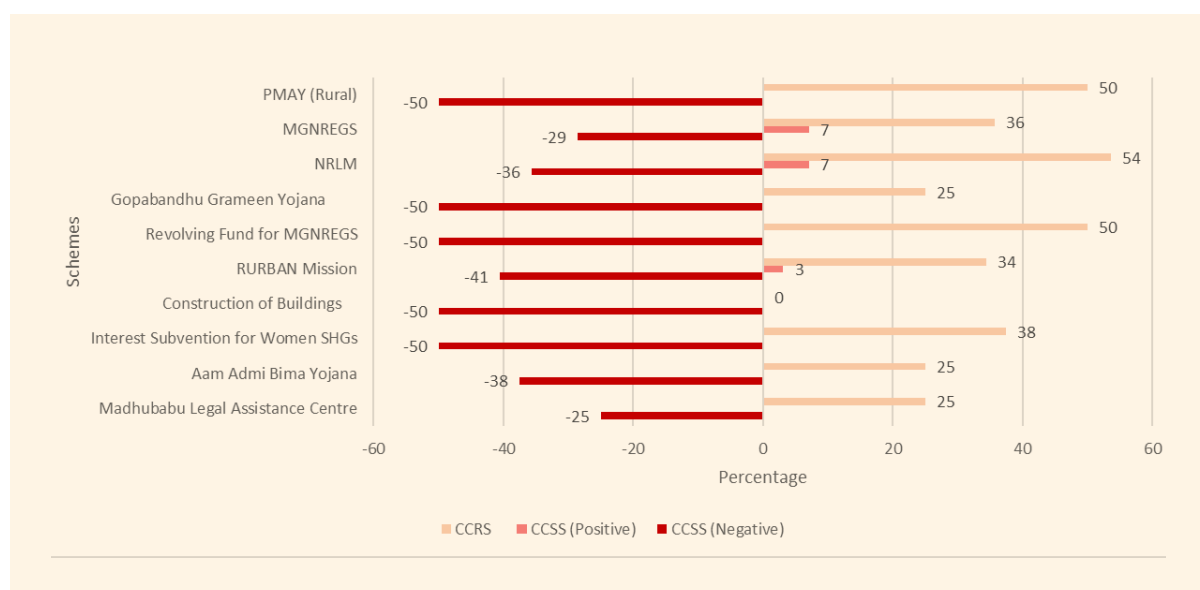
The top spending within the department broadly focused on rural livelihoods, lighting, roads, housing, healthcare, agricultural productivity, market linkages and providing legal assistance to farmer households. These schemes aggregate to form 99.7% of the analysed expenditure. The flagship livelihood scheme of MGNREGS which focuses on providing minimum annual wages to rural households, soil & water conservation infrastructure, skill building and institutional strengthening sums up to almost 1/5th of the department's spending.

Analysis of the department's expenditure explicated that around **45%** of it was climate-relevant, **45%** was negatively sensitive to climate change. This could also be explained by the fact that most of its schemes are rural centric and focus on providing livelihoods, conserving natural resources and provision of basic facilities for the poor. Lastly, it was also found that **2%** of its expenditure was positively sensitive to climate impacts

- CCRS scores ranged between 0–54% where benefits involving livelihood creation, provision of accidental insurance, pucca housing, and access to banking and revolving fund, community investment fund and the vulnerability reduction fund contributed significantly to climate resilience.
- Other benefits like creation of kuchcha houses and roads, power supply, etc. were higher on climate sensitivity. It was also understood that newer schemes like RURBAN which adopt a holistic approach of roads, mobile healthcare, lighting, education, livelihoods, post-harvest storage facilities, etc. display higher relevance and relatively low susceptibility to climate hazards. CCSS ranged between (-25%) to (-50%).

Literature (Dave Steinbach) suggests that while fixed financial assistances through safety net schemes created a reserve for rural households, modulating them based on climate hazards, stress due to erratic weather, etc. could provide greater resilience to poor households. This is a potential modification that some schemes could incorporate, as a climate proofing measure.

Figure 3.6: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Panchayati Raj Department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

Schemes like NRLM focuses on sustainable agriculture for women, access to banking, promotion of SHGs for women, skill development, etc. have relatively low sensitivity scores, with substantially

high relevance scores. This calls for a deeper assessment of such schemes for learning and integration into other schemes. Annex 1 provides the total list of schemes within this department arranged in descending order of climate relevance.

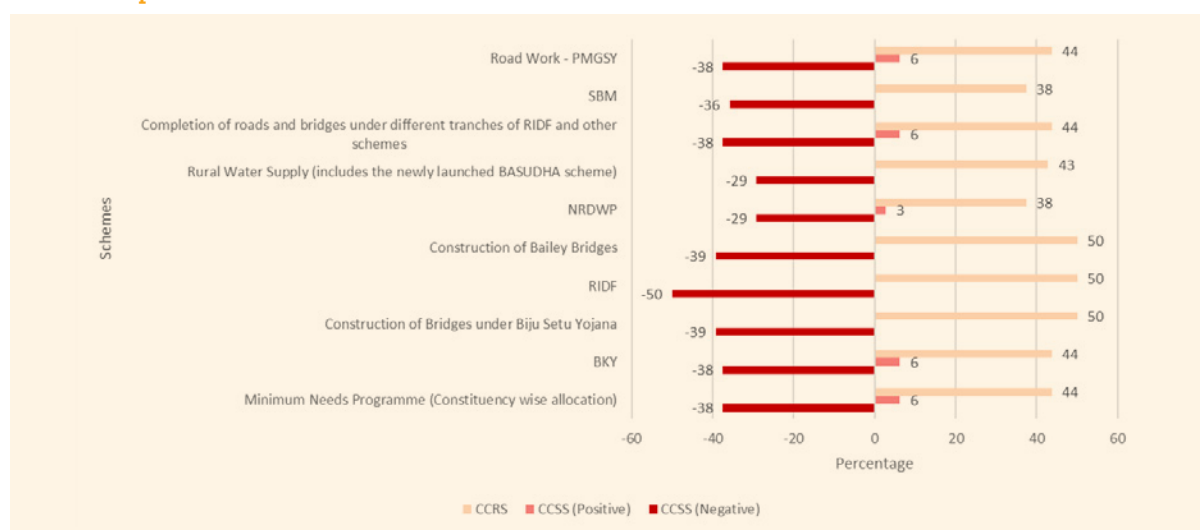
RURAL DEVELOPMENT

The Rural Development Department of Odisha indicated an overall program expenditure of Rs. 5,780 Crores for the FY 2017-18. Of this 93.55% of the expenditure has been included in this analysis. The Major Heads of expenditure are Rural Works, Rural Water Supply and Rural Sanitation. Schemes with largest budget allocations are the Pradhan Mantri Gram Sadak Yojana (PMGSY), Swachh Bharat Mission, Completion of Roads under the RIDF, Basudha scheme of rural water supply and the National Rural Drinking Water Programme, Construction of Bailey Bridges, Construction of Bridges under Biju Setu Yojana, Rural Infrastructure Development Fund, Biju KBK Yojana and the Minimum Needs Programme (Constituency wise allocation). These schemes constitute around 98% of the department's overall spending.

The Phased CCIA exercise revealed that approximately **42%** of the department's expenditure is climate-relevant, i.e. they either contribute to resilience building, adaptation or mitigation of climate change. However, it also estimated that **36%** of the department's expenditure is negatively sensitive to climate impacts like floods, droughts, cyclones, earthquakes, etc. and the effects of climate change should be considered during the planning and implementation of such sensitive schemes. Lastly, **4%** of the department's expenditure is observed to be positively sensitive to climate impacts.

- CCRS scores ranged between 8-50% where lean schemes focusing on capacity building and training score low whereas construction of bailey bridges, PMGSY, RIDF, etc. scored higher.
- Given the rural focus, a similar trend was noticed in the CCSS (0 to (-50%)) where programmes like the bailey bridges, Biju Setu Yojana were highly sensitive and schemes like the Swachh Bharat Mission, NRDWP which had a multi-pronged approach to development scored relatively less on this scale. Like in other sectors, minor capacity and skill building programmes been estimated with negligible positive CCSS scores.

Figure 3.7: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the RD department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

Schemes like the RIDF, PMGSY, etc. are found to be relatively higher in terms of their climate relevance. This could be attributed to them being larger schemes with several smaller interventions within, that provided holistic benefits. A scheme like the Construction of bailey bridges' is high in its climate relevance mainly because of having fewer and streamlined interventions which have climate co-benefits. On the other hand, the same schemes (RIDF & construction of bailey bridges) are higher in terms of climate sensitivity. *Hence, if the department were to sustain the development impact of such schemes and ensure greater sustainability, these schemes would require greater climate proofing effort.*

TRANSPORT

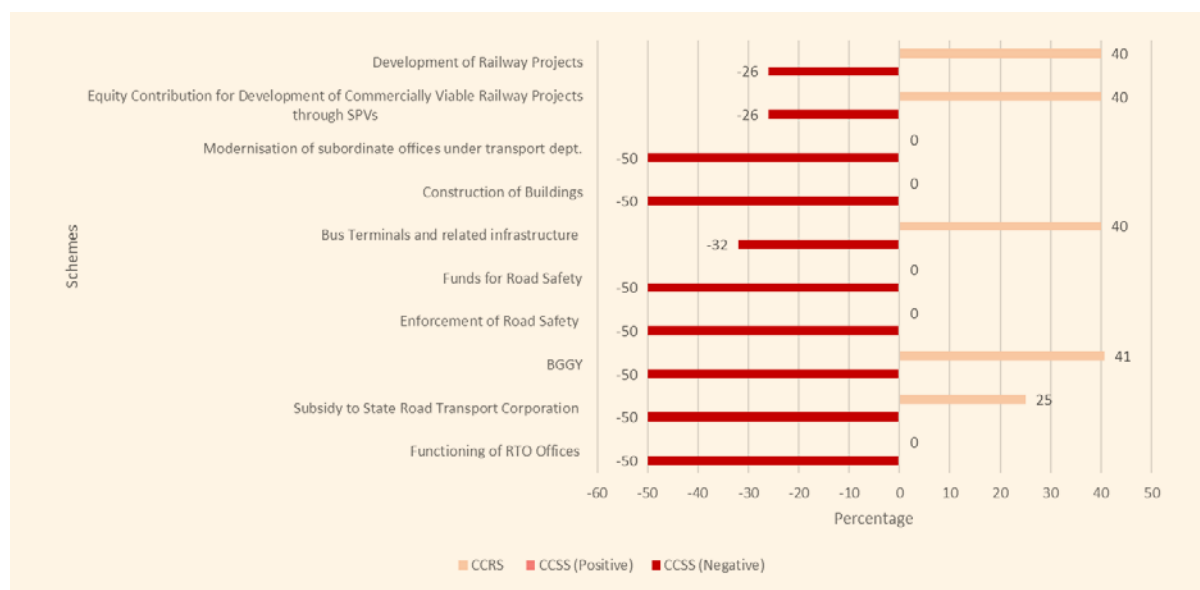
The Odisha Transport department has a relatively smaller outlay for the FY 2017-18 of Rs. 334 Crores of which the entire expenditure was included in this analysis. Major heads of expenditure within this department are Taxes on Vehicles, Road Transport, Capital Outlay on Public Works and Other Transport and Secretariat Economic Services. Of this, major themes of spending for bus & railway transport between cities, supporting infrastructure and road safety.

The current analysis highlighted that **31%** and **32%** of their spending were climate-relevant and sensitive (negative) respectively. A negligible portion of the department's spending is positively sensitive to climate impacts (hence not mentioned here).

- Key drivers of climate relevance were 1) railway transport between cities, 2) improved road connectivity between remote villages, 3) provision of education, health and banking facilities, 4) public transport being a contributor to mitigation efforts. The CCRS in this sector ranged between 0-57%.
- Disease outbreaks & accidents and damage to bus and rail services are typical impacts of climate change in this sector. Moreover, since Odisha is relatively more disaster-prone, urban centres with denser population are typically the vulnerable hotspots to any such climate hazards. The overall CCSS lied between (-25%) and (-50%).

While the sector does not currently have dedicated schemes targeting climate mitigation or adaptation benefits, there is substantial scope for mainstreaming such goals with them. Schemes which have bulk spending within the department are highlighted below to show the disparity between their climate relevance and sensitivities. It can be observed that most of these schemes have greater shares of climate-sensitive expenditure as compared to their relevance. This could be because of the demographic and development pressure in the urban centres.

Figure 3.8: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Transport Department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

URBAN DEVELOPMENT

The Department of Housing and Urban Development reports overall programme expenditure of INR 2,439.24 crores (Budget Estimates 2017-18). The schemes span across services related to Water Supply and Sanitation, Housing, Urban Development, Roads and Bridges and the capital expenditure related to them. For the current analyses, around 91% of the Programme Expenditure has been covered, given that some schemes⁹ were meant for improving administrative efficiency, maintenance or were too generic to be clearly classified in the absence to additional details.

Important flagship initiatives such as the Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), UNNATI, Swachh Bharat Mission (SBM-Urban) and Pradhan Mantri Awaas Yojana (PMAY-Urban) constitute more than 80% of the expenditure planned for the year 2017-18. The newly announced Buxi Jagabandhu Assured Water Supply to Habitations (BASUDHA) is also among the largest schemes in terms of financial outlay.

A detailed analysis of the schemes for climate change relevance and sensitivity was performed using the Phased CCIA method. This shows that around **46%** of the analysed¹⁰ Programme Expenditure are climate-relevant, while **38%** are negatively sensitive to climate-related risks (as inferred from the hazards mapped from the Odisha SAPCC). Around **4%** of the outlay is positively sensitive to climate change (these relate to emission reducing interventions and soft measures on capacity building and behavioural change towards improved sanitation practices).

- It is observed that schemes with aspects of water supply, sanitation, targeted housing and infrastructure provision for the vulnerable sections of urban population have a high relevance in the climate change context, owing to their linkages to building resilience. Certain schemes with emission reduction/sequestration potential (promotion of non-motorised transport, urban greening etc.) also rank high in mitigative capacity.

⁹ These include sub-major heads 0708, 2141, 2719, 3217 and 3220 (please refer enclosed calculation workbook for details).

¹⁰ This refers to the 91% of Budget Estimates, excluding schemes that are mentioned in footnote 1.

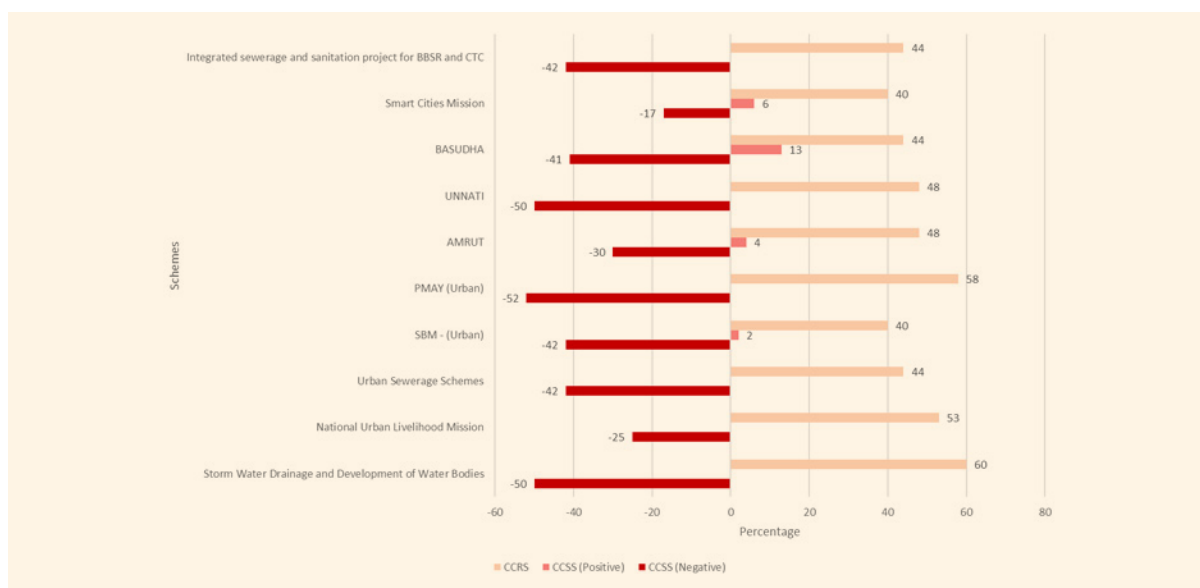
These are interventions that could be viewed as high priority by the Department to further understand and enhance linkages with the State’s specific climate concerns.

- Highly climate sensitive interventions also include most schemes with dedicated focus on sewage and storm water drain networks, improving access to drinking water, general housing support for low income households (which do not have any explicit focus on disaster resilient design).

These are interventions that the Department could scrutinise towards the purpose of reallocating funds such that climate-induced losses to development benefits are reduced, or inherent adaptive capacity in programmes is enhanced.

A snapshot of the climate change relevance and sensitivity scores for the top ten schemes in terms of outlay are shown below.

Figure 3.9: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Housing & Urban Development Department



CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

WATER RESOURCES

The Department of Water Resources (DoWR) has an overall Programme Expenditure of around INR 7,828 crores (Budget Estimates 2017-18). These include interventions of major, medium and minor irrigation, flood control and command area development. The current exercise includes almost the entire Programme Expenditure (more than 99%), except very minor expenses relating to accounting adjustments and a few others which require additional details to be categorised for climate relevance.

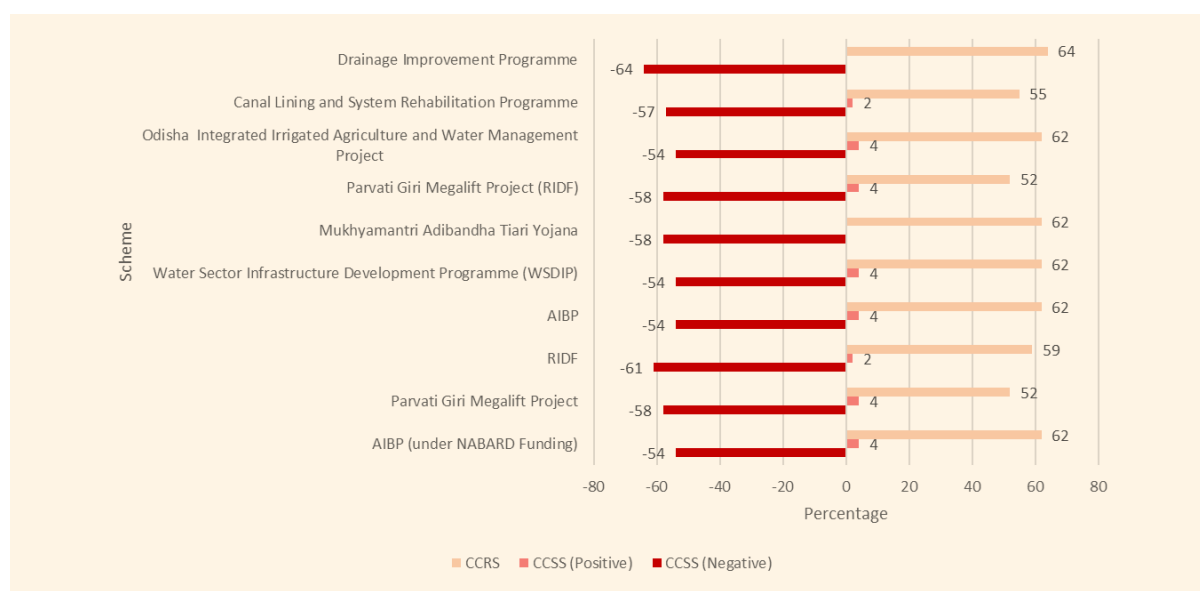
Major initiatives such as the Accelerated Irrigation Benefit Programme (AIBP), Rural Infrastructure Development Fund (RIDF), Parvati Giri Megalift projects, Drainage Improvement Programme and other expenditure to rehabilitate and strengthen irrigation infrastructure constitute around 80% of this expenditure.

A detailed Phased CCIA analysis of the schemes shows that around 59% of the analysed Programme Expenditure are climate-relevant, while 54% are sensitive to climate-related risks.

- Schemes that have a high relevance in the climate change context are those that deliver benefits of increased irrigation potential, water use and drainage efficiency, more equitable water access within a command area, better upkeep and renovation of irrigation infrastructure, etc. Their linkages with increasing area under cultivation, farm productivity and better water distribution contribute to their higher climate relevance.
- Schemes with a focus on improvement of dams, flood control measures, improving minor irrigation coverage through tank rejuvenation etc. are highly climate sensitive. While some programmes have a mandate to include emergency preparedness, significant routine infrastructure repair effort would require additional climate proofing to reduce such sensitivity.

A snapshot of the climate change relevance and sensitivity scores for the top ten schemes in terms of outlay are shown below.

Figure 3.10: Climate Relevance & Sensitivity of top 10 schemes (in terms of expenditure) in the Water Resources Department



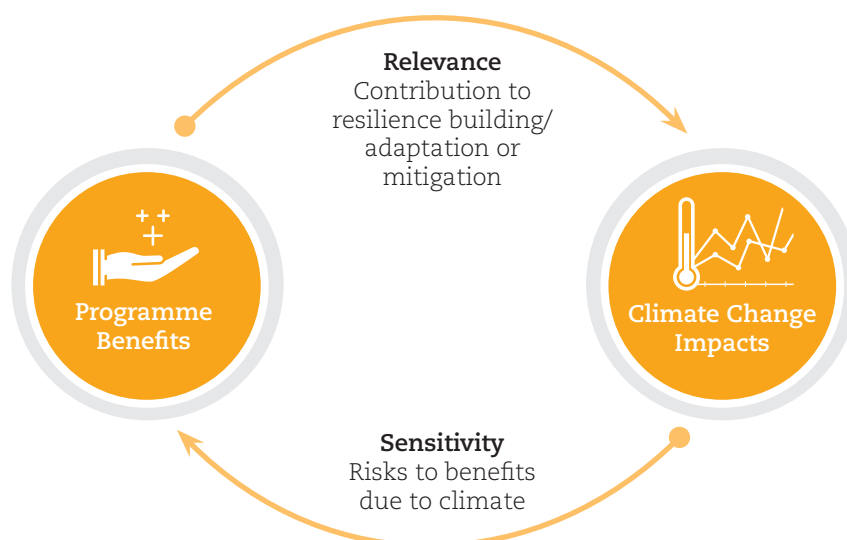
CCRS = Climate Change Relevance Share

CCSS = Climate Change Sensitivity Share

Interpretation and Detailed Illustrations

The purpose of conducting a Phased CCIA analysis is to assist the Government to first identify which schemes to focus on, for improving climate resilience/mitigation outcomes, and then decide on whether securing these outcomes are to be done by re-designing a programme or by increasing funds allocated to some of its components. The figure below recapitulates these linkages to programme benefits, followed by an interpretation matrix.

FIGURE 4.1: Significance of Climate Relevance and Sensitivity



Interventions with **high climate relevance** demand greater focus to understand and optimize resilience-building opportunities already inherent in the design of ongoing schemes. Upon scrutiny, those benefits that have **high climate sensitivity** would require climate-proofing effort (could be in terms of re-design of interventions to reduce climate vulnerability or increased funding towards components

that already enhance resilience). Since negative sensitivities to climate change will have potential adverse effect on the development benefits, only negative sensitivity scores have been considered for prioritisation of climate-proofing efforts in this section.

The table below shows the sectoral groups, across ‘Low’ and ‘High’ categories for climate relevance and sensitivity respectively (refer Table 3.1 for individual CCRS and CCSS scores from the analyses).

Table 4.1: Sector level snapshot of climate relevance and sensitivity

Phased CCIA Score		Climate Relevance (resilience building/adaptation/mitigation)	
		High (>= 45%)	Low (< 45%)
Climate Sensitivity (loss and damage due to floods/ cyclones/ droughts)	High (>= 40%)	Water Resources	Fisheries & Animal Resource Development
		Energy Agriculture Panchayati Raj	
	Low (< 40%)	Forestry	Rural Development
		Urban Development Coasts & Disaster Management	Health Transport

NOTE: Based on the results and the range obtained for CCRS and CCSS (Table 3.1), 45% has been chosen as the threshold for relevance and 40% for sensitivity.

A matrix indicating the different combinations of climate relevance and sensitivity amongst any programmes is provided below to highlight relevant follow-up actions needed based on their grouping:

Table 4.2: Key Action Points based on the matrix

Phased CCIA Score		Climate Relevance (resilience building/adaptation/mitigation)	
		High	Low
Climate Sensitivity (loss and damage due to floods/ cyclones/ droughts)	High	High priority for scrutiny: Retain benefits with <i>positive</i> climate sensitivity Climate-proof benefits with <i>negative</i> sensitivity	Design changes to enhance climate resilience and also more climate proofing effort to insure against welfare losses from climate hazards (in case of negative sensitivity) In case of <i>positive</i> sensitivity, enhancing climate resilience would reap dual benefits
	Low	Climate change benefits accrue with relatively less impact (or loss) from climate risks – low hanging fruits	Regular monitoring and review effort – To explore the future scope of mainstreaming climate concerns. Comprehensive assessments needed to evaluate allocations in such programmes

Using the above-mentioned concept of how different interventions could display high and low combinations of relevance and sensitivity, the following ranges of CCRS and CCSS could be studied for grouping schemes into different categories.

Table 4.3: Percentage ranges for CCRS and CCSS

Category	CCRS and CCSS
Low	Up to 50%
High	50% and above

A short illustration is used to show how schemes could fare within the matrix indicated is provided below. This will inform policymakers of the following:

1. Why particular schemes fall within a high/low category of relevance and sensitivity
2. Based on this inference, policymakers, using the larger list of benefits would be able to decide on how to integrate or package different interventions together to either enhance climate relevance or reduce sensitivities.

AGRICULTURE

Table 4.4: Matrix of climate relevance and sensitivity using Agriculture sector schemes

Phased CCIA Score		Climate Relevance (resilience building/adaptation/mitigation)	
		High	Low
Climate Sensitivity (loss and damage due to floods/cyclones/droughts)	High	Organic Farming	State Potato Mission
	Low	The system of Rice Intensification	Strengthening / Infrastructure Devp. for Training Research Centre, Laboratories, implements

The above matrix has been populated using examples from the agriculture sector schemes to indicate different combinations of climate relevance and sensitivity. A general observation was that CCRS in this sector ranged between (0-79%) and CCSS (-25 to -63%). Hence as per the grouping defined above, the schemes were categorised and select samples identified for case study documentation.

1. **High Relevance & High Sensitivity:** The ‘Organic Farming’ scheme is categorised in this group as it was estimated to have a CCRS of 70% and CCSS of (-52%). A more detailed study of the scheme revealed the following benefits, climate relevance and sensitivities. Benefits which contribute to building moderate levels of resilience a) reduction in input costs because of non-usage of fertilisers and pesticides and cultivation of indigenous crop species b) reduction of health hazards and expenditure because of organic produce consumption (subsistence farming). Similarly, benefits which contribute to climate mitigation (reducing emissions) are a) cultivating indigenous crops which sequester more carbon b) reduced emissions due to fertilisers and pesticides c) reduced power consumption due to organic farming practices.

However, cultivation of crops (not climate resistant) is considered highly sensitive to climate hazards like floods, droughts, disasters. Similarly, groundwater contamination, inefficiencies in farming leading to increased cost of inputs/practices could add to the financial burden of farmers and therefore to the overall sensitivity of the benefits to climate change. Hence this scheme, while delivering substantively to climate resilience and mitigation, is also susceptible damages from climate hazards.

In the case of Organic Farming, integrating the cultivation of only climate resistant crops could reduce the scope for crop loss due to floods, droughts. Similarly, introducing relevant farm mechanisation into organic farming to reduce inefficiencies in farming could further add income resilience to farmers. Lastly, conducting training for farmers to understand the long-lasting benefits of organic cultivation could facilitate better uptake and also planned crop selection/rotation before or during climate hazards. This could reduce the overall CCSS of the scheme

2. **High Relevance & Low Sensitivity:** The 'SRI' scheme which aims to conserve water, increasing farming efficiencies, reduction in the application of chemical fertilisers, conservation of indigenous crop species which could also be hardy climate resistant ones. This scheme was found to have 79% and (-29%) of CCRS and CCSS (Negative). This was mainly because the scheme did provide significant mitigation benefits through reduction in chemical fertilisers being applied, increased cultivation of indigenous crops, etc. However, since this scheme promoted cultivation of native species which are naturally more climate resistant, their resilience quotient to climate change was relatively higher. Having said this, such schemes are ideal for increased budgetary allocations because while providing relatively higher levels of climate resilience and/or mitigation they are also comparatively lesser sensitive to climate hazards.
3. **Low Relevance & High Sensitivity:** An example of this group would be the 'State Potato Mission' which mainly sought to increase potato cultivation within the State and also create necessary cold storage facilities for farmers. It was observed that the scheme only sought to increase cultivation, not necessarily by providing heavy subsidies to such farmers. Hence, it only offered marginal climate benefits through storage facilities. However, like any other cultivation, it was estimated that potatoes too would be highly susceptible to climate hazards. Similarly, storage infrastructure too was expected to be damaged by floods, cyclones and storms. Hence, this scheme, having a narrow focus on enhanced potato cultivation and storage infrastructure only creates marginal income resilience to farmers while being substantially vulnerable to climate impacts. Hence, the CCRS and CCSS (Negative) are 25% and 63% respectively.
4. **Low Relevance & Sensitivity:** Strengthening / Infrastructure Development for Training Research Centre, Laboratories, etc. focuses mainly on the provision of soil testing facilities for farmers, training on sustainable agricultural practices and maintaining the quality of seeds, fertilisers, etc. All such benefits are only expected to marginally increase the resilience of farmers through better soil and fertiliser quality and training. Benefits of testing infrastructure and quality of seeds, fertilisers are expected to be impacted by floods, cyclones, etc. whereas it was expected that such training would increase with a greater incidence of climate hazards. Therefore, the overall CCSS too was low. The CCRS and CCSS were 25% and -33% respectively. Such schemes need substantial redesigning to increase climate co-benefits. However, design and implementation monitoring to keep a check on its climate sensitivities would be a requirement to ensure stability in welfare benefits.

The main takeaway from the above matrix is that this exercise would help policymakers identify 1) key benefits, 2) climate relevance and 3) sensitivities of their departments' schemes and therefore 4) realign/design schemes to ensure greater welfare and climate benefits. Specifically, in the case of the above-discussed schemes, the following was observed:

- It was found that in this sector, schemes with a lean focus or having only a few interventions could fall within this groups (4). Such schemes usually receive lesser funding and are launched as standalone ones thereby not creating significant ground-level impacts. However, when such interventions are clubbed with bigger schemes, they might deliver greater resilience and also suffer lesser sensitivity to climate impacts.

FISHERIES AND ANIMAL RESOURCES

In general, it was observed that the programmes or benefits expected from the Fisheries sector in Odisha are relatively more susceptible to climate impacts. Schemes in this sector displayed CCRS scores between 0-50% while their CCSS ranges were (0%) to (-75%). However, a detailed analysis of schemes to study the varying degrees of climate relevance and sensitivity helped categorise some schemes as shown below:

Table 4.5: Matrix¹¹ of climate relevance and sensitivity using F&ARD sector schemes

Phased CCIA Score		Climate Relevance (resilience building/adaptation/mitigation)	
		Very High	Low
Climate Sensitivity (loss and damage due to floods/cyclones/droughts)	Very High	Promotion of L.Vannamei Aquaculture & Exports in Brackish Water Areas	National Livestock Management Programme (NLMP)
	Low		Matshyajibi Unnayan Yojana

- 1. High Relevance and High Sensitivity:** ‘Promotion of L. Vannamei Aquaculture & Exports in Brackish Water Areas’ is a scheme which seeks to promote fishing in brackish waters. The scheme offers a subsidy to farmers who are willing to enhance fish cultivation in such waters. However, this is generally less preferred by farmers because of the higher cost of inputs and sensitivity of such region to climate hazards. Hence, this subsidy is expected to incentivise farmers to take it up. While the subsidy only creates a minor financial reserve for farmers, this cultivation by itself is highly vulnerable to storm surges, floods, etc. due to which its CCSS is high.

Adopting an integrated approach including other forms of income generation along with fish cultivation in brackish waters might help reducing its sensitivity and also enhance livelihoods for such farmers.

- 2. Low Relevance and High Sensitivity:** The NLMP aims to increase poultry farming amongst rural households and additionally provides improvised veterinary services to such households. This scheme, while adopting a lean focus of simply enhancing poultry and livestock, doesn’t contribute significantly to resilience building or adaptation. However, floods, droughts, storms, the rise in temperatures can have severe adverse impacts on livestock and poultry farming like in the case of agriculture. Hence, it has scored a relatively higher CCSS.

In the context of this scheme, if veterinary services were modified or subsidised in response to or in anticipation of climate hazards like floods, droughts, perhaps the overall sensitivity of its benefits would come down adding more welfare benefits to beneficiaries.

- 3. Low Relevance and Low Sensitivity:** Matshyajibi Unnayan Yojana scheme is a typical case of where a combination of interventions are delivered together thereby reducing its overall sensitivity to climate impacts. This scheme seeks to achieve 1) mechanisation of fish cultivation 2) seaweed cultivation 3) accident or death insurance for farmers 3) financial assistance to women in SHGs and others having eye ailments 4) financial assistance to poor households through Mo Kudia 5) merit scholarships for students 6) housing through Basundhara schemes and 7) rice at subsidised rates through the PDS. Multiple layers of financial assistance, housing, education scholarships to add to the climate resilience of farmers, but in small ways. In the context of sensitivities, owing to the several benefits expected of this scheme, higher sensitivities are evened out by lower ones. Benefits like fish farming infrastructure, seaweed cultivation are susceptible to climate impacts. However, financial assistance, scholarships, subsidised rice do help reduce such vulnerabilities.

The possibility of exploring climate responsive financial assistance to farmers or training women for fish cultivation could further add resilience benefits of this scheme.

It is to be noted that there was no instance of High Relevance and Low Sensitivity programme within this sector.

¹¹ The groups in the matrix have been customised based on the CCRS and CCSS scores generated in this sector.

FORESTS AND ENVIRONMENT

Schemes in this sector have CCRS ranged between 0–83% and CCSS of (–8%) to (–58%). This diversity is expected because of a clear intent of several schemes to deliver some form of mitigation or adaptation benefits.

Table 4.6: Matrix¹² of climate relevance and sensitivity using F&E sector schemes

Phased CCIA Score	Climate Relevance (resilience building/adaptation/mitigation)		
	Very High	Low	
Climate Sensitivity (loss and damage due to floods/cyclones/droughts)	Very High	Amal Jangal Yojana	Intensive protection of critically endangered areas
	Low	Integrated Development of Wildlife Habitats	State Medicinal Plant Board

- 1. High Relevance & High Sensitivity:** Most of this sector schemes target enhancing cover of forests and biodiversity along with livelihood of forest-dependent communities. The Amal Jangal Yojana which had a CCRS of 71% and CCSS of (–57%) scheme to seeks to enhance forest cover and related NTFP supply. A significant co-benefit of this scheme is also a reduction in soil erosion due to increased forest cover. However, increased incidence and magnitude of floods, forest fires, cyclones would also lead to degradation and increased soil erosion. Hence, this scheme was estimated to provide high climate mitigation benefits as well as to be highly susceptible to climate hazards.

Forest regeneration measures along with soil conservation actions (in watersheds) could reduce surface water runoffs and help recharge of water during and post monsoons.

- 2. High Relevance and Low Sensitivity:** Demarcation and protection of pristine areas, wildlife habitats (biodiversity), better equipment, maps, etc. to monitor forest management, provision of livelihood support for households in protected areas, enhanced NTFP, research and training for sustainable forest management, etc. are the main objectives of the ‘Integrated Development of Wildlife Habitats’ scheme. This scheme with a CCRS of 68% and CCSS of (–19%) is expected to provide significant mitigation benefits through carbon sequestration. However, forest cover too is vulnerable to climate hazards but in the medium to long term through degradation. Hence, through a combination of interventions, the overall sensitivity score of this scheme is relatively low.
- 3. Low Relevance and High Sensitivity:** ‘Development and Beautification of Nandankanan Zoo’ could be an example of this group. Its CCRS score is 17% while CCSS is (–33%)¹³. This scheme had a simple objective which was to protect wildlife within its premises, disseminate information on wildlife and lastly, provide employment for relevant staff. However, through a detailed analysis of its benefits, it was understood that they provided very little climate resilience or mitigation benefits. However, zoo operations and employment are susceptible to climate impacts even more as it is located in an urban location. Hence its overall sensitivity is relatively high.
- 4. Low relevance and Low Sensitivity:** The ‘State Medicinal Plant Board’ scheme (CCRS 25% and CCSS (–8%)) seeks to enhance capacities of forest officers to implement schemes, creating an interpretation centre for users to learn about medicinal species, their usage and benefits and lastly provide market linkages for farmers to sell their produce at. While the overall climate relevance

¹² The groups in the matrix have been customised based on the CCRS and CCSS scores generated in this sector.

¹³ This scheme doesn’t strictly adhere to the 50% benchmark to be grouped into high/low sensitivity but is chosen more on a relative scale based on the sector’s range of CCRS and CCSS scores.

of this scheme's benefits is low, the expected sensitivity is low too. This could be because of the lean set of interventions included as part of this scheme. They are mainly soft interventions which might enable development or climate benefits.

To sum it up, technical officers within line departments would be able to make more well-informed decisions on changes in scheme designs or financial allocations to ensure planned welfare outcomes and also deliver climate resilience, adaptation or mitigation benefits. This could also be through the better packaging of schemes after a rapid assessment of their benefits through this approach. While as a pilot project this might be more time to consume and difficult to comprehend for researchers, policymakers, being technical experts in the respective sectors could be able to make quick back-of-the-envelope calculations and decisions on schemes after an initial analysis. This could ultimately increase the effectiveness of the department's spending in terms of ground level impacts and their sustainability.

WATER RESOURCES

Programmes in the Water Resources sector have a climate change relevance share ranging from 25 to 75%, and a net (negative) sensitivity share¹⁴ across a comparable range of 23 to 75%. Schemes with varying shares of relevance and sensitivity have been selected, to explore the nature of decisions that the Department of Water Resources could undertake, based on the Phased CCIA analysis. The following table shows the schemes chosen across combinations of scheme-level CCRS and CCSS.



Water Resources sector have a climate change relevance share ranging from 25% to 75%

Table 4.7: Matrix of climate change relevance and sensitivity for select Water Resources schemes

Phased CCIA Score		Climate Change Relevance (resilience building/adaptation/mitigation)	
		High	Low
Climate Change Sensitivity (loss and damage due to floods/cyclones/droughts)	High	Minor Irrigation Projects under State Plan	Irrigation Road Improvement Programme
	Low		Water and Land Management Institutes (WALMI)

1. **High Relevance and High Sensitivity:** The scheme 'Minor Irrigation Projects under State Plan' has a high CCRS of 72% and CCSS of (-)65%, hence requires to be further examined by the Department for opportunities to reduce vulnerabilities while retaining its CC resilience benefits. Major activities undertaken in this scheme include restoration of flood protection infrastructure, improvement of dam infrastructure and repair & renovation of water storage structures. Its high CCRS is attributed to potential flood risk reduction and contribution to greater water security from improved recharge and storage.
 - a. There is scope to reduce losses to farm output, property and livelihoods, from enhanced flood control and prevention efforts.
 - b. However, unless dam safety improvements incorporate parameters of increased frequency and/or intensity of flooding, the existing flood protection infrastructure would not be adequate for these risks.

¹⁴ There are only three schemes with a net positive climate change sensitivity and relate to grants for crop demonstration, farmers' training and WALMIs. They account for less than 1% of the Programme Expenditure of the Department of Water Resources.

- c. Similarly, the climate related risk of lower water availability would reduce the benefits from tank restoration and other ground water recharge efforts. These are the sources of relatively high sensitivity of benefits from this scheme to climate change.
- 2. Low Relevance and High Sensitivity:** The scheme 'Irrigation Road Improvement Programme' has a CCRS of 25% and CCSS of (-)75%, hence representing a case for climate proofing, to avoid welfare losses. This scheme funds reconstruction of roads and bridges to restore connectivity and improve their efficiency.
- a. In the absence of exclusive disaster resilience built into their design, this would be similar to upgradation of general road infrastructure, hence is low on its climate change relevance share.
 - b. As links to flood protection structures such as embankments, these roads and bridges are more prone to flood exposure and would have to be frequently restored/repared with increasing flood events. Hence there is a need to improve their structural resilience to improve effectiveness of flood control efforts, as well as to reduce future recurring costs of reconstruction.
- 3. Low Relevance and Low Sensitivity:** The 'Water and Land Management Institutes (WALMI)' have been established to provide training and build capacity for staff in the Irrigation and Agricultural Engineering divisions, and farmer groups, as a support to enhancing farm productivity. WALMIs engage in conducting field experiments and adaptive trials to help identify optimal water management practices for farmers.
- a. WALMIs potentially contribute to the adaptive capacity of farmers in the face of dynamic conditions of water availability, which become more valuable in the event of climate change.
 - b. Multi-disciplinary training offered to department personnel would help improve overall staff quality. In the absence of a dedicate focus on climate concerns and resilience building, this expenditure has limited climate relevance.
 - c. However, farmer training and field trials for better water management techniques are likely to become more valuable in the event of climate-induced water stress/drought conditions. Hence these are sources of positive sensitivity for this scheme, albeit to a limited extent due to the indirect linkages they have in influencing farmers' decisions. Therefore, such components would have to be retained or suitably enhanced for greater resilience among the farming community.

It is notable that there was no instance of Low Relevance and High Sensitivity programme in the Water Resources sector (schemes with high CCSS were also significantly climate relevant, hence this case did not arise).

Conclusion

The current budget coding exercise, spanning across 11 sectors of which 9 sectors are listed in the Odisha SAPCC, has been undertaken to develop a logical tool for planners to identify key expenditure items that are priorities for climate change mainstreaming and/ or highly climate sensitive. As observed in earlier sections, the results can be analysed at various levels: at a higher level, the State Government can study the relative shares of climate relevance and sensitivity across sectors; at the Department level, planners could move from a cursory selection of high priority schemes to a detailed intra-sector comparison of similar climate relevant initiatives. Accordingly, the following inferences emerge for different categories of relevance and sensitivity (sectors indicated under each, based on the current analyses):

- 1. High Relevance and High Sensitivity:** There is a need to climate proof activities with higher vulnerability to climate change, while ensuring that benefits with climate relevance are retained.
Sectors: Water Resources, Energy, Agriculture, Panchayati Raj
- 2. Low Relevance and High Sensitivity:** Greater climate proofing effort is required to insure against welfare losses from climate hazards, while exploring options to enhance climate relevance.
Sectors: Fisheries & Animal Resource Development
- 3. High Relevance and Low Sensitivity:** These are *low hanging fruits* for development planners, as climate change benefits accrue with relatively less impact (or loss) from climate risks.
Sectors: Forests & Environment, Urban Development, Coasts & Disaster Management
- 4. Low Relevance and Low Sensitivity:** This requires regular monitoring and review effort, to explore the future scope of mainstreaming climate concerns. Although not an immediate priority, it is important to track these interventions periodically so that any increase in sensitivity is detected in time for active response/climate proofing.
Sectors: Rural Development, Health, Transport

Given this classification, the following action points emerge regarding budgeting and programme design:

1. Immediate reflection in budget stock-taking

The results of this budget coding exercise provide a cross sectoral insight on relative vulnerability and contribution to climate change-related risks. This could be used as a starting point for the State Government to provide focused attention to select sectors with greater relevance and sensitivity, to climate proof its development expenditure. This would be an iterative process in the medium to long term; however, this analysis could be treated as a trigger for directing the future course of policy and financial decisions.

2. Further consultative action

As a next step in applying this budget coding in a comprehensive manner, it would be valuable to have focused discussions with line Departments to further refine and standardize benefit scores. This would enhance the planner's perspective in this exercise, and more detailing of schemes would also sharpen scores/ranking.

3. Baseline for more detailed investment analysis

The Government, in its endeavour to assess multiple options to attain development outcomes, could compare between initiatives (or its sub-components) for greater value of investment. By including the dimension of the schemes' potential contribution (relevance) and susceptibility (sensitivity) to future climate change, it could strengthen its ongoing mainstreaming agenda. This analysis highlights the disaggregated profile of relevance and sensitivity at the scheme level. Hence this becomes a logical input to cost-benefit analyses or evaluations that could be undertaken for better climate proofing of outcomes.

Annex 1: Sector-wise CCRS and CCSS – Detailed list of Schemes

Agriculture: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	2269 - Promotion of System of Rice Intensification	79	-29	
2	2957 - Promotion of need based Plant Protection	75	-50	25
3	2608 - Promotion of Integrated Farming	73	-33	
4	3152 - Promotion of Integrated Farming in Tribal Areas	73	-33	
5	2877 - Organic Farming	70	-52	
6	2958 - Organic Farming(Horticulture)	70	-52	
7	3148 - Paramparagat Krishi Vikash Yojana (PKVY)	67	-33	
8	2431 - Integrated Watershed Management Programme (IWMP)	67	-39	3
9	2878 - Operational Cost for IWMP	67	-39	3
10	2959 - World Bank Assisted Neeranchal Project	67	-39	3
11	2610 - Technology Mission on Sugarcane Development	58	-33	17
12	2905 - Technology Mission on Pulses and Oil seeds	58	-33	17
13	2906 - Technology Mission on Jute and Mesta	58	-33	17
14	2960 - National Mission on Oil Seeds and Oil Palm(NMOOP)	56	-56	6
15	2927 - National Mission for Sustainable Agriculture	53	-33	5
16	3151 - Grant to State Fertiliser Procurement Agencies	50	-50	
17	2980 - Corpus Fund for Odisha State Co-operative Marketing Federation Ltd.	50	-50	
18	1862 - Micro Irrigation (Horticulture)	50	-50	
19	1957 - Development of Potato Vegetables & Spices	50	-50	
20	2161 - Rural Infrastructure Development Fund (RIDF) - Jalnidhi	50	-50	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
21	2185 - Inter Cropping in Fruit orchards	50	-50	
22	2270 - Subsidy under Agriculture Policy (Capital Investment)	50	-50	
23	2605 - Management of Acidic soil	50	-50	
24	2606 - Sustainable Harnessing of ground water in water deficit areas	50	-50	
25	2607 - Development of Agriculture firms	50	-50	
26	2609 - Promotion of improved package of practices	50	-50	
27	2747 - Special Crop specific Scheme-Floriculture	50	-50	
28	2748 - Special Crop specific Scheme-Coconut	50	-50	
29	2749 - Special Crop specific Scheme-Banana	50	-50	
30	2831 - Special Crop Specific Scheme-Betel Vine	50	-50	
31	2866 - Biju Krushak Kalyan Yojana	50	-50	
32	2882 - Development of Infrastructure of Post Harvest Management	50	-50	
33	3064 - Pradhan Mantri Krishi Sinchi Yojana (PMKSY)	50	-50	
34	3147 - Establishment of Floriculture Market	50	-50	
35	2187 - National Food Security Mission (NFSM)	50	-56	0
36	2183 - Strengthening of School of Horticulture	50		25
37	3142 - Development of Agriculture in collaboration with International Institutions	50		25
38	3150 - Management of Soil Health	50		50
39	1642 - National Horticulture Mission	46	-46	4
40	1751 - Implementation of Horticultural Prog. in Non-Horticulture Mission District	46	-46	
41	2907 - Horticulture Mission Plus	46	-46	4
42	0713 - Input subsidy on seed, fertilizers, bio-fertilizers, insecticides, bio-pesticides etc. (Agril.)	44	-31	
43	1955 - Input subsidy on seed, fertilizer, bio-fertilizers, insecticides, bio-pesticides etc. (Horticulture)	44	-31	9
44	2979 - Corpus Fund for Odisha State Seeds Corporation Ltd.	44	-31	
45	2981 - Corpus Fund for Odisha Agro Industries Corporation Ltd.	44	-31	
46	3055 - Corpus Fund for Odisha Cashew Development Corporation Ltd.	44	-31	
47	2163 - Rashtriya Krushi Vikas Yojana (RKVY)	42	-33	4
48	2926 - National Mission on Agriculture Extension and Technology (NMAET)	31	-31	6
49	2926 - National Mission on Agriculture Extension and Technology	31	-31	6
50	1376 - Strengthening / Infrastructure Devp. for Training Research Centre, Laboratories, implements	25	-33	8
51	2078 - Popularisation of Agricultural implements, equipment & diesel pump sets	25	-50	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
52	2188 - Establishment / Revival of Block level Nursery-cum-Sale Centre	25	-50	
53	2880 - Operationalisation of Soil Testing and Quality Control Laboratory	25	-50	
54	2611 - Infrastructure Devp. of Sale Centre	25	-50	
55	3056 - State Potato Mission	25	-63	
56	2086 - Refresher Training for extension functionaries	25		25
57	3145 - Certification of Agriculture Programmes	25		25
58	3149 - Accessible India Campaign (Sugamya Bharat Abhiyan)	13		25
59	0708 - Information, Education and Communication	0	-25	
60	0182 - Construction of Buildings	0	-50	
61	2883 - Intensive Extension campaign on Agriculture	0		25

Fisheries & Animal Resource Department: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	3078 - Promotion of L.Vanamei Aquaculture & Exports in Brackish Water Areas	50	-75	
2	3077 - Feed & Fodder Production in Different Agro-Climatic Zones for Utilisation for Livestock in Odisha	50	-50	
3	2490 - Encouragement of commercial poultry entrepreneurs and backyard poultry production	50	-50	
4	3158 - Establishment of Chicken Fresh Outlet on PPP Mode	50	-50	
5	2762 - Reactivation of Fisheries Co-operative Societies	50	-50	
6	3155 - Livelihood Support to Marine Fishermen during Fishing Ban Periods	50	-50	
7	2492 - Genetic upgradation of Small animals	50	-50	
8	2761 - Organisation of Skill Upgradation Training and Awareness Meet in Fisheries Sector	50	-50	
9	1640 - Upgradation of skill in self-employment under ARD	50	-50	
10	2493 - Conservation and improvement of threatened indigenous breeds	50	-50	
11	2842 - Promotion of Intensive Aquaculture	50	-50	
12	3156 - Establishment of Commercial Fisheries Enterprises	50	-50	
13	1692 - Fishery Hub at Kausalyaganga	50	-50	
14	3159 - White Revolution - Rashtriya Pashaudhan Vikash Yojana	39	-43	4
15	1383 - Strengthening of Dairy Organisation	38	-50	
16	2966 - National Livestock Health and Diseases Control Programme	38	-50	
17	3265 - Integrated Development and Management of Fisheries (blue revolution)	36	-39	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
18	3265 - Integrated Development and Management of Fisheries	36	-39	
19	3265 - Integrated Development and Management of Fisheries (blue revolution)	36	-39	
20	2755 - Matshyajibi Unnayan Yojana	36	-28	
21	2874 - Assistance to Mastyajibi Basagraha Yojana	36	-28	
22	2884 - Interest subvention in long term credit support to Fish Farmers	36	-28	
23	3170 - Implementation of Fisheries Policy	33	-33	
24	2488 - Upgradation of Livestock Health Care Services	25	-50	
25	2627 - Implementation of Kalyani project through BAIF Research and Foundation	25	-50	
26	2161 - Rural Infrastructure Development Fund (RIDF)	25	-50	
27	2839 - Mobile Veterinary Unit	25	-50	
28	2161 - Rural Infrastructure Development Fund (RIDF)	25	-50	
29	3076 - Animal Husbandry Extension Service through Mobile Advisory	25	-50	
30	3154 - Assistance to Fishermen for Development of Livelihood (B&N)	25	-50	
31	3079 - Popularisation of Fisheries Machineries / Equipment	25	-50	
32	3153 - Establishment of Animal Helpline Facility with Ambulance Service	25	-50	
33	2495 - Information, Education & Communication Programme	25	-50	
34	1389 - Strengthening of Odisha Biological Product Institute	25	-50	
35	2843 - Empowering Fisher Men through Mobile Advisory Services and Establishment of Toll Free Call Centre for Fisheries Extension Service	25	-50	
36	1947 - Contribution towards NFDB Assistance	25	-50	
37	2010 - Utilisation of Crop Residue	25	-50	
38	2967 - National Livestock Management Programme	25	-50	
39	2836 - Promotion of Dairy Entrepreneurship	25	-50	
40	2837 - Interest subvention on long term credit support to Dairy Farmers	25	-50	
41	2885 - Interest subvention on short term credit support to Dairy Farmers	25	-50	
42	2840 - Interest Subvention on short term Credit Support to Fish Farmers	25	-50	
43	2161 - Rural Infrastructure Development Fund (RIDF)	25	-50	
44	2494 - Capacity building and strengthening of Training infrastructure under ARD sector	25	-25	13
45	1339 - Odisha College of Veterinary & Animal Science	25	-25	
46	3264 - Establishment of Dairy Science College	25	-25	
47	2489 - Strengthening of Diseases Surveillance by Animal Research Institute	25	0	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
48	2011 - Training and Demonstration in Fodder cultivation and pasture devp.	25		25
49	1307 - Odisha University of Veterinary & Animal Science	25		25
50	2323 - Infrastructure development for Live Stock Services	13	-50	
51	2323 - Infrastructure development for Live Stock Services	13	-50	
52	2323 - Infrastructure development for Live Stock Services	13	-50	
53	3059 - Dredging of River Mouth, Fishing Harbour, Fish Landing Centre & Jetties	0	-50	
54	2053 - Infrastructure Development	0	-50	
55	3175 - Promotion of Reservoir Fishery Production	0	-50	
56	3157 - Support to Private Goshala	0	-50	
57	3060 - Promotion of Aquaculture & Shrimp Export Cell	0	-50	
58	2841 - Infrastructure for Cage Culture	0	-50	
59	2776 - Nabakalebar, 2015	0	-50	
60	1249 - Sample survey on estimation of production of milk, egg, wool and meat	0	0	
61	1742 - Survey and Investigation of Fishing Harbour and Fish landing Centre Project	0	0	

Forests & Environment: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	Intensive protection of critically endangered areas	83	-50	
2	Training Programme	81	-38	
3	Increasing Green Cover in the State	78	-42	5
4	Ama Jangal Yojna	71	-57	13
5	Integrated Development of Wildlife Habitats	68	-19	
6	Odisha Forest Sector Development Project (EAP, JBIC(Japan) assisted)	62	-42	25
7	Development of Eco-tourism	55	-28	5
8	Conservation and development of wetland	55	-57	5
9	Conservation and Management of Mangroves	55	-57	11
10	Conservation of Natural Resources and Ecosystem	55	-57	11
11	National Bamboo Mission	53	-32	
12	Implementation of Climate Change Action Plan	50		11
13	World Bank assisted Coastal Ecological System for protection and development	48	-45	
14	Intensification of Forest Management	45	-48	
15	National Afforestation Programme	45	-48	7

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
16	Green India Mission	45	-48	
17	Relocation of villages from Sanctuaries and National Parks	38	-25	6
18	Forest Research	38		
19	Management of Elephant Corridor	36	-27	6
20	Elephant Management Project	36	-27	
21	Satkosia Tiger Reserve	36	-27	8
22	Simlipal Biosphere Reserve	36	-27	
23	Simlipal Tiger Reserve	36	-27	
24	Wildlife Protection and Conservation Measure	32	-38	11
25	State Medicinal Plant Board	25	-8	
26	Regional Plant Resource Centre	25	-25	
27	Establishment of Odisha Biodiversity Board	25		50
28	Nature Conservation	17	-33	
29	Development and beautification of Nandankanan Zoo	17	-33	5
30	Construction of building	0	-50	
31	Field Establishment (Division Office)	0	-50	11

Panchayati Raj: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	2950 - National Rural Livelihood Mission (NRLM)	54	-36	7
2	3013 - National Rural Livelihood Mission (NRLM) Head Quarters Cell	54	-36	7
3	1178 - Rehabilitation of Bonded labourers	50	-50	
4	3122 - Pradhan Mantri Awaas Yojana (Rural) - Biju Pucca Ghar	50	-50	
5	3227 - Revolving Fund for MGNREGS wages	50	-50	
6	2946 - Interest Subvention for Women SHGs	38	-50	
7	1872 - National Rural Employment Guarantee Scheme	36	-29	7
8	2245 - NREGS Head Quarter Cell	36	-29	7
9	3127 - Syama Prasada Mukharjee RURBAN Mission	34	-41	3
10	2949 - Aam Admi Bima Yojana	25	-38	
11	1855 - Gopabandhu Grameen Yojana	25	-50	
12	3191 - Madhubabu Legal Assistance Centre	25	-25	
13	0564 - Grama Panchayats	0		25

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
14	1350 - State Institute for Rural Development	0		25
15	3169 - IEC for Gram panchayats	0		25
16	0182 - Construction of Buildings	0	-50	
17	0182 - Construction of Buildings	0	-50	

Rural Development: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	Construction of Bridges under Biju Setu Yojana	50	-39	
2	Rural Infrastructure Development Fund	50	-50	
3	Construction of Bailey Bridges	50	-39	
4	Minimum Needs Programme (Constituency wise allocation)	44	-38	6
5	Improvement of existing RD roads	44	-38	6
6	Completion of roads and bridges under different tranches of RIDF and other schemes	44	-38	6
7	Road Work - PMGSY	44	-38	6
8	Biju KBK Yojana	44	-38	6
9	Mukhya Mantri Sadak Yojana	44	-38	
10	Development of Rural Road Connectivity	44	-38	6
11	Rural Water Supply (includes the newly launched BASUDHA scheme)	43	-29	
12	National Rural Drinking Water Programme	38	-29	3
13	Swachh Bharat Mission	38	-36	
14	State Plan - Capacity Building	25		25
15	Construction of residential and non-residential buildings of RD department	13	-38	
16	State Plan - Building Programme	13	-38	
17	Capacity Building (Resources and Infrastructure Development)	8	0	

Transport: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	Strengthening of Public Transport System	57	-50	
2	Biju Gaon Gaadi Yojana	41	-50	
3	Equity Contribution for Development of Commercially Viable Railway Projects through SPVs	40	-26	
4	Development of Railway Projects	40	-26	
5	Bus Terminals and related infrastructure	40	-32	
6	State Road Transport Corporation	40	-32	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
7	Subsidy to State Road Transport Corporation	25	-50	
8	Enforcement of Road Safety	0	-50	
9	Modernisation of subordinate offices under transport dept. including driving training schools	0	-50	
10	Funds for Road Safety	0	-50	
11	Functioning of RTO Offices	0	-50	
12	Information, Education and Communication	0		25
13	Construction of Buildings	0	-50	

Urban Development: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	Other Urban Development Schemes under State Plan	62	-35	5
2	Storm Water Drainage and Development of Water Bodies	60	-50	
3	Pradhan Mantri Awaas Yojana (Urban)	58	-52	
4	Urban Road Transport	57	-43	
5	National Urban Livelihood Mission	53	-25	
6	Urban Transformation Initiative (UNNATI)	48	-50	
7	AMRUT	48	-30	4
8	World Bank assisted EAP - Odisha Disaster Recovery Project	45	-39	5
9	EAP assisted by JBIC Japan for integrated sewerage and sanitation project for BBSR and CTC	44	-42	
10	Urban Sewerage Schemes	44	-42	
11	EAP assisted by JBIC, Japan for Integrated Sewerage and Sanitation Project in Urban Areas	44	-42	
12	Buxi Jagabandhu Assured Water Supply to Habitations (BASUDHA)	44	-41	13
13	Swachha Bharat Mission (SBM) - Urban	40	-42	2
14	Urban Sanitation Scheme	40	-42	2
15	Smart Cities	40	-17	6

Energy: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	SCA for Special Programmes for KBK districts	75	-65	
2	Biju KBK Yojana	75	-65	
3	Assistance to GEDCOL	60	-45	
4	Odisha Power Sector Improvement Project	59	-18	14
5	Agriculture Feeder in High Agriculture Load Area	58	-45	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
6	Odisha Transmission System Improvement Project - JICA - EAP	57	-43	
7	Integrated Power Development Scheme	57	-25	2
8	Share Capital Investment	53	-64	
9	Dindayal Upadhaya Gram Jyoti Yojana	50	-58	
10	Rajiv Gandhi Gramin Vidyuti Karan Yojana	50	-58	
11	Biju Grama Jyoti	50	-58	
12	Implementation of Non-remunerative transmission project in backward districts	50	-50	
13	Construction of Smart Grid in OPTCL	50	-50	
14	Biju Saharanchal Vidyutikaran Yojana	50	-50	
15	State Capital Region Improvement of Power System(SCRIP)	50	-41	
16	Standard Testing Laboratory	50		25
17	Odisha Renewable Energy Development Fund (OREDF)	45	-45	
18	Accelerated Power Development Reform Programme	44	-28	

Health & Family Welfare: **Scheme list in descending order of CCRS**

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	3215 - Rashtriya Swasthya Suraksha Yojana	50	-25	
2	2099 - Improvement and Renovation of W/S, Sewerage and Sanitation works of Hospitals and Dispensaries	50	-25	
3	0957 - National Malaria Eradication Programme	50	-19	6
4	3121 - Malaria Control Programme	50	-19	6
5	1447 - T.B. Control Programme	50	-19	6
6	0953 - National Filariasis Eradication Programme	50	-19	6
7	0816 - Leprosy	50	-19	6
8	1010 - Other Epidemic Diseases	50	-19	6
9	2791 - National Vector Borne Disease Control Programme	50	-19	6
10	0867 - Malaria	50	-19	6
11	0954 - National Goitre Control Programme	50	-19	6
12	3212 - Free Diagnostic	50		25
13	2823 - NAT PCR facilities for testing of blood	50		25
14	3049 - Bio-Medical Waste Management	47	-17	8
15	3213 - Swasthya Sahaya	42	-19	4
16	1016 - Other Hospitals	42	-19	4
17	0646 - Hospital and Dispensaries	42	-19	4
18	0106 - Capital Hospital, Bhubaneswar	42	-19	4
19	0725 - Institute of Paediatrics, Cuttack	42	-19	4
20	0062 - Ayurvedic Hospitals and Dispensaries	42	-19	4

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
21	0644 - Homoeopathic Hospitals and Dispensaries	42	-19	4
22	1936 - Establishment of AIIMS, Bhubaneswar (Near Sijua)	42	-19	4
23	2822 - AYUSH Directorate	42	-19	4
24	3261 - Mukhya Mantri Swasthya Seva Mission	41	-34	
25	1207 - Revamping of Urban Slum	39	-25	
26	1520 - Urban Family Welfare Service - Revamping of Urban Slums	39	-25	
27	2943 - National Health Mission	38	-18	
28	1092 - Primary Health Centre	38	-18	
29	1227 - Rural Family Welfare Sub-Centre	37	-15	
30	1228 - Rural Family Welfare Sub-Centre under Rural Family Welfare Service	37	-15	
31	3260 - SAMPURNA - Sishu Abang Matru Mrutyuhara Sanpurna Nirakarana Abhiyana	37	-15	
32	1131 - Purchase of contraceptive, MCH Extension supplies, Education Kits	37	-15	
33	1519 - Urban Family Welfare Centre	37	-15	
34	1532 - Urban Family Welfare Centre under Urban Family Welfare Service	37	-15	
35	2760 - Emergency Medical Ambulance Services(EMAS)	25	-50	
36	3041 - Telemedicine	25	-40	
37	3037 - Human Resource in Health & Medical Education	25	-15	
38	2521 - Upgradation of Medical College, Cuttack for starting new P.G. Course	25	-15	
39	1487 - Training of Nurses, Midwives and Lady Health Visitors	25	-15	
40	0890 - Medical College Hospital, Cuttack	25	-15	
41	2569 - ANM & GNM Schools	25	-15	
42	0889 - Medical College Hospital, Burla	25	-15	
43	0888 - Medical College Hospital, Berhampur	25	-15	
44	1173 - Regional Health and Family Welfare Training Centres	25	-15	
45	1473 - Training and Employment of Health Worker (Male)	25	-15	
46	0348 - Education	25	-15	
47	1937 - Multipurpose Training of Doctors and Para Medical Staff	25	-15	
48	0998 - Orientation Training of Medical and Para Medical Staff	25	-15	
49	0897 - Medical Institution of Malkangiri Zone	25	-15	
50	0898 - Medical Institution of Umerkote Zone	25	-15	
51	3178 - Medical College Hospital, Koraput	25	-15	
52	3180 - Medical College Hospital, Baripada	25	-15	

Water Resources: Scheme list in descending order of CCRS

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
1	Periphery Development of Reservoirs	75	-63	
2	Minor Irrigation Projects under State Plan	72	-65	
3	Survey and Investigation of Minor Irrigation projects	72	-65	
4	Pradhan Mantri Krushi Sinchai Yojana Har Khet Ko Pani (HKP)	68	-64	
5	Drainage Improvement Programme (DIP)	64	-64	
6	Rooftop Rain Water Harvesting and Ground Water Recharge in Urban Areas	63	-56	6
7	AIBP Under NABARD Funding	62	-54	4
8	Accelerated Irrigation Benefit Programme (AIBP)	62	-54	4
9	Water Sector Infrastructure Development Programme (WSDIP)	62	-58	
10	Mukhyamantri Adibandha Tiari Yojana (MATY)	62	-58	
11	Odisha Integrated Irrigated Agriculture and Water Management Project (EAP)	62	-54	4
12	JBIC Assisted Rengali Irrigation Project (EAP) Phase II	62	-58	
13	Bank Protection works on river embankments	62	-54	4
14	Improvement and Protection to Saline embankments.	62	-54	4
15	Dam Rehabilitation and Improvement Projects (EAP)	60	-48	
16	Odisha Integrated Irrigation Project for Climate Change Resilient Agriculture (OIIPCRA) (EAP)	60	-52	4
17	Rural Infrastructure Development Fund (RIDF)	59	-61	2
18	Revival & Renovation of defunct Lift Irrigation Projects through OLIC	59	-61	2
19	Other Plan Programmes for Medium Irrigation	59	-61	2
20	Medium Irrigation Project under State Plan	59	-61	2
21	Capacity building for RIDF/Other Projects	59	-61	2
22	Canal Lining and System Rehabilitation Programme	55	-57	2
23	Parvati Giri Megalift Project	52	-58	4
24	Parvati Giri Megalift Project RIDF	52	-48	4
25	CAD&WM work in AIBP Projects	52	-58	4
26	Biju KBK Yojana	52	-58	4
27	SCA for Special Programmes for KBK districts	52	-58	4
28	Grants in aid to Command Area Development Authority for Project Administration	52	-48	4
29	Grants in aid to Command Area Development Agency (Ayacut Development) for Project Administration for Jeypore	52	-48	4
30	Grants in aid to Command Area Development Authority for Construction of field channels	50	-50	
31	Grants in aid to Command Area Development Authority (Ayacut Development) for Topographical Survey and Investigation	50	-50	

S.No	Scheme	CCRS (%)	CCSS (-ve %)	CCSS (+ve %)
32	Establishment of Topographical Survey and Execution in OFD including RWS and Agricultural Extension	50		50
33	Grants in aid to Command Area Development Authority for construction of field drain	50		50
34	Grants in aid to Command Area Development Authority for Crop Demonstration	50	-75	
35	Survey Planning and Designing through Command Area Development Authority	50	-50	
36	Grants in aid to Command Area Development Authority for Farmers Training	50	-75	
37	Incentivising Scheme for Bridging Irrigation Gap (ISBIG)	48	-41	6
38	Grants	38	-32	9
39	Survey and Investigation	38	-37	9
40	Irrigation Road Improvement Programme	25	-75	
41	WALMI	25	-9	15

Annex 2: List of Grants analysed for Sectoral Public Expenditure (as part of the SAPCC)

Grant Number	Sector
12	Health and Family Welfare
13	Housing and Urban Development
17	Panchayati Raj
20	Water Resources
21	Transport
22	Forests and Environment
23	Agriculture
28	Rural Development
30	Energy
33	Fisheries and Animal Resources Development
42	Coast and Disaster Management

