

A New Economic Transition Framework for Jobs, Growth, and Sustainability in Odisha

A White Paper by ECONOMIC TRANSITION COALITION ODISHA

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Image: CEEW

Summary

In the past few years, Odisha has been one of the best-performing states in terms of growth and development. The state of Odisha has played an important role in India's growth story. Being a mineral-rich state provides an immense opportunity for Odisha to also develop its manufacturing base and become a manufacturing hub in the country. However, climate change is going to influence the growth and development story of the 21st century. Any form of growth and development will not be sustainable without considering the mitigation and adaptation aspects of climate change.

With this background, expert partners from industry, academia and civil society came together to form the

Economic Transition Coalition for Odisha (ETCO). The coalition aimed to design the New Economic Transition Framework for the state of Odisha to ensure jobs, growth and sustainability.

The coalition proposes the **New Economic Transition Framework**, which envisages five core elements for Odisha's economic transition. These elements include high and equitable incomes, sustainable food systems, climate resilience, zero biodiversity loss and animal-human conflict and a net-zero greenhouse gas (GHG) emission transition. We highlight the core challenges in achieving these targets and present our recommendations.

1. Background & context

Odisha is amongst the several states that have grown and continue to grow on their mineral wealth strength. Odisha stands out on several counts: a diverse mineral resource base, a long coastline, and a robust port infrastructure. With these unique advantages, Odisha aims to become a “one-and-a-half trillion dollar economy by 2047”¹ and drive India’s growth by becoming a manufacturing hub.

Odisha contributes around 2.89² per cent of the nation’s economy. Its own economy has registered robust growth in the last two decades and continues to be on a high-growth trajectory. This diverse state is India’s biggest producer of minerals and accounts for roughly 42 per cent of India’s total annual mineral production (excluding fuel oils and atomic minerals)³. Further, it has a long coastline and has developed port infrastructure for the trade of mineral products.

Odisha is known as the aluminium capital of South Asia and accounts for 54 per cent⁴ of India’s aluminum smelting capacity. It is also the country’s largest steel and stainless steel-producing state and a hub for micro, small, and medium enterprises (MSMEs). Aluminium and steel production, minerals mining, and related activities are significant sources of employment and revenue in Odisha.

In its quest to become a trillion-dollar economy, Odisha has a unique opportunity to set standards for a new kind of economic transition - one that focuses on jobs, growth and sustainability.

2. About ETCO

Given this macroeconomic background, stakeholders need to understand the unfolding realities of the economic transition and their impact on the state’s developmental outcomes.

The production and use of energy are critical for manufacturing goods and in providing livelihoods and economic opportunities for people across states. Also, taxes and royalties from the energy sector contribute significantly to the fiscal health of states such as Odisha, which rely on coal and the mining of other minerals to sustain jobs and state revenues. How will these states manage the transition to a low-carbon economy—a local, national, and global imperative—and the accompanying trade-offs? What frameworks can they use to navigate the coming changes? To arrive at these answers, the Council on Energy, Environment and Water (CEEW), IIM Sambalpur and the University of Maryland, USA, proposed to set up an Economic Transition Coalition for Odisha (ETCO) with key stakeholders in the state.

We called key stakeholders in Odisha who represent manufacturing industries, mining companies, the state machinery, and civil society organisations to join ETCO to:

ETCO leverages the deep local expertise of IIM Sambalpur and Odisha's industry and academic leaders, insights from CGS's work on energy transitions in India and other regions, and CEEW's modeling capabilities and flagship work on jobs, growth and sustainability.

1 <https://www.newindianexpress.com/states/odisha/2024/Sep/07/it-services-will-drive-15-trillion-economy-goal-of-odisha-cm-mohan-charan-majhi#:~:text=Majhi%20said%2C%20%E2%80%9CWe%20have%20set,helping%20us%20achieve%20these%20targets.%E2%80%9D>

2 <https://www.ceicdata.com/en/india/memo-items-state-economy-gross-state-domestic-product-contribution-national-gross-domestic-product/gross-state-domestic-product-contribution-to-national-gross-domestic-product-odisha>

3 <https://www.thestatesman.com/business/odisha-contributes-42-to-indias-mineral-production-report-1503324841.html>

4 https://investodisha.gov.in/Application/uploadDocuments/NewsLetter/NewsLetterDoc20180910_151702.pdf

ETCO's mission

The ETCO will deliberate on Odisha's economic transition narrative with a focus on the following aspects:



Rapid urbanisation



Income-induced growth in the demand for commodities and services



Increasing share of manufacturing in the state's GDP



Integration into global energy markets



State's fiscal resources



A just transition towards a net-zero world

- **Develop a shared understanding** of the most significant emerging challenges and opportunities in Odisha's economic development.
- **Create a shared narrative and define pathways** for the economic and energy transition that the state should pursue in line with this vision.

Through this white paper, we hope our recommendations for Odisha will help create a framework that other mineral-dependent states can use to understand state-specific issues of political economy and address challenges.

ETCO builds on existing research on Odisha's economic transition, leveraging IIM Sambalpur's deep knowledge of local issues. Our global partner, the Centre for Global Sustainability (CGS) at the University of Maryland (UMD), has offered insights drawn from their experience of working on energy transitions in India, China, and other regions.

ETCO also draws from CEEW's flagship work on jobs, growth, and sustainability. Analysis based on CEEW's in-house state level model GCAM-India was used to envision alternative futures to inform ETCO's deliberations. Our collaboration will help the state devise strategies for a smooth economic transition.

Key questions that ETCO sets out to answer are:

- What would be the key elements of Odisha's economy and society in 2050? (e.g. high urbanisation, service-based economy, low emissions footprint, etc.)?
- What should the New Economic Transition Framework in the context of Odisha entail?
- What are the most significant emerging challenges and opportunities for Odisha's economic development?

3. Core vision elements for Odisha's growth by 2050

To chart out a growth strategy and framework, it is important to outline the larger vision. In this section, we elaborate on the elements that we envisage for a robust and sustainable Odisha in 2050. Having an ambitious and long-term vision is critical to ensure orderly movement in the desired direction. India would have crossed 100 years of independence in 2047. The year 2050 gives us a reasonably long-term horizon, almost three decades from now, for us to envision a future for the state when the country has crossed the 100 year mark as an independent nation. The development goals listed below are rooted in long-term economic and ecological sustainability and inclusive growth.

3.1 A high-income and equitable state

An increase in income builds resilience in the economy and increases the welfare of the people. For 2050, we envisage Odisha to be a more equitable and high-income state. High income leads to an increase in the demand and supply of goods and services which consequently helps in generating more employment in the longer term. Odisha's per capita income in 2020 was less than US\$ 1400 (2020 prices). As per CEEW's assessment, this could increase to US\$ 8376 in 2050 and US\$ 16096 in 2070. Ensuring that this income is equitably distributed is critical for an inclusive society where the gap between the haves and have nots is eliminated. Equity in income growth leads to more spending than savings in the economy. Moreover, equity and high income will lead to an increase in demand and the development of better infrastructure in health, education, nutrition etc. This would result in a better Human Development Index (HDI) for the state of Odisha and consequently poverty reduction and availability of more trained and skilled human resources.

3.2 Odisha as a manufacturing hub of India

Manufacturing plays an important role in determining the long-term social and economic prosperity of the state. A high share of manufacturing will help in boosting employment for both skilled and unskilled workers and provide avenues for better income than what is realised in sectors like agriculture and mining. In FY 2021-22, industry, sector accounted for 39.5 per cent of state's value added of which manufacturing accounted for 56 per cent (recording a 14.3 per cent growth), and number of manufacturing units in Odisha as percentage of total manufacturing units in India was approximately 1.24 per cent. We envisage that by 2050, Odisha will become the manufacturing hub of the country. Odisha is a mineral-rich state having over 30% of India's iron-ore reserves and 90% chromite reserves. Odisha also has significant reserves of bauxite, manganese, nickel and coal.

Being a mining hub, Odisha is better suited for a more efficient supply chain for manufacturing plants for steel, aluminium, storage batteries, electronics etc., as compared to other states. Additionally, Odisha has a long coastline which makes seafood processing another lucrative industry that can be developed in the state. Being mineral rich also presents an opportunity for Odisha to become a leader in the production of hydrogen. Consequently, Odisha has a high potential to become an export hub of the country leading to an increase in foreign reserves at the state and the national level.

3.3 A highly-competitive state

In addition to becoming a manufacturing hub, it is imperative to ensure that in 2050, Odisha is a highly competitive state to attract manufacturing and service sector investors. To ensure competitiveness, the state will need some key structural reforms like reform in electricity pricing to ensure energy security and affordability. Additionally, the state will also need to build logistics infrastructure like an efficient transport system by road, rail and sea.

Strategic competitiveness is achieved through innovation and the state has to invest in promoting innovation. Rapid developments have happened in the last couple of years on machine learning, artificial intelligence, and robotics. The state should be cognizant of these macro trends and leverage these in a way that enhances Odisha's competitiveness while reducing economic risks due to unforeseen disruptions.

With the recently sanctioned Carbon Border Adjustment Mechanism (CBAM) by the European Union, to remain competitive, entities in Odisha should proactively prepare to understand and engage with the India Carbon Market (ICM) that has been announced by the Government of India to ensure investment in technologies of the future and be future-ready with the right infrastructure for the production of green steel, aluminium etc.

3.4 High farmer incomes and sustainable food systems

Sustainable food systems comprise multiple aspects of the production of food. Sustainable food systems need to ensure high and equitable farmers' income, deployment of resource-efficient food production techniques, food security, equity-based and democratised agricultural landscape, and climate-resilient agriculture. With the right interventions, we envisage that by 2050, Odisha will be a leading state in sustainable food systems in India. The state will have the right infrastructure to provide equitable access to credit, information, technology and government benefits for farmers to get the right price for their produce along with a safety net for the time when climatic conditions are not on their side. By 2050, Odisha will also have a sustainable food production system with high farmers' income and minimal greenhouse gas emissions.

Odisha's policies need to be aligned with the Gol's Indian Carbon Market.

3.5 Net-zero future through a Just Transition and carbon pricing

Justice and equity need to be at the heart of the transition towards a low-carbon economy. Odisha will undergo a low-carbon transition in the sectors of energy, mining, manufacturing, agriculture and the development of essential infrastructures. We envisage that by the year 2050, the government of Odisha will have developed and implemented extensive Just Transition frameworks for low-carbon transitions in all of these sectors with keeping people, the economy and ecology at the heart of these transitions. To fund Just Transition, we envisage that the government will align its policies with a GoI driven Indian Carbon Market (ICM). In addition, the state government would devise supportive policies to push higher penetration of renewable energy, energy efficient appliances and buildings, low carbon vehicles, and low carbon technologies in the industrial sector.

3.6 Highly urbanised

For the first time in history, more people are living in towns and cities than in rural areas. The global population living in urban areas are expected to grow to 6.7 billion in 2050. Urbanisation, when managed and planned meticulously has the potential to drive transformations in every aspect of sustainability in society. High urbanisation can lead to the generation of employment and a reduction in poverty and inequality. In 2020, Odisha's urbanisation rate was 20%, much lower than the average number for India. For 2050, we envisage that Odisha will be a highly planned and urbanised state with 35% population living in urban areas which will increase to 44% by 2070. Odisha will have better employment and skill development opportunities in every sector and better and more inclusive infrastructure for the people residing in the state. For a more equitable and urbanised Odisha, it will have affordable housing, availability of basic infrastructures and services and equal access to them, and affordable and well-connected public transport.

3.7 Disaster resilient

Odisha has been at the forefront of several natural disasters. Over the decades, Odisha has also successfully built strategies to deal with nature's fury in the most efficient manner. Today, the entire nation can

learn from adaptation and risk-management strategies that Odisha has developed over the years. However, with climate change, natural disasters are projected to get worse. Based on the climate risk assessment study done by CEEW, Odisha is tenth most vulnerable state to impacts of climate change with overall vulnerability index of 0.368. At district level, the study highlights Nayagarh and Puri districts in Odisha as being one of the most vulnerable districts to hydro-met disasters in India. Along with the violent cyclones that Odisha faces, the state is also at risk of other climate-related disasters like an increase in the number of heatwaves, the occurrence of diseases propelled by climate change etc. To deal with the climate of 1.5 degrees warmer world compared to the pre-industrial level, we envisage that by 2050, Odisha will develop a climate adaptation strategy and create infrastructures that are disaster resilient. Additionally, we envisage that the state will have world-class infrastructure in health, education and nutrition that will develop a stronger and more resilient population to deal with climate change.

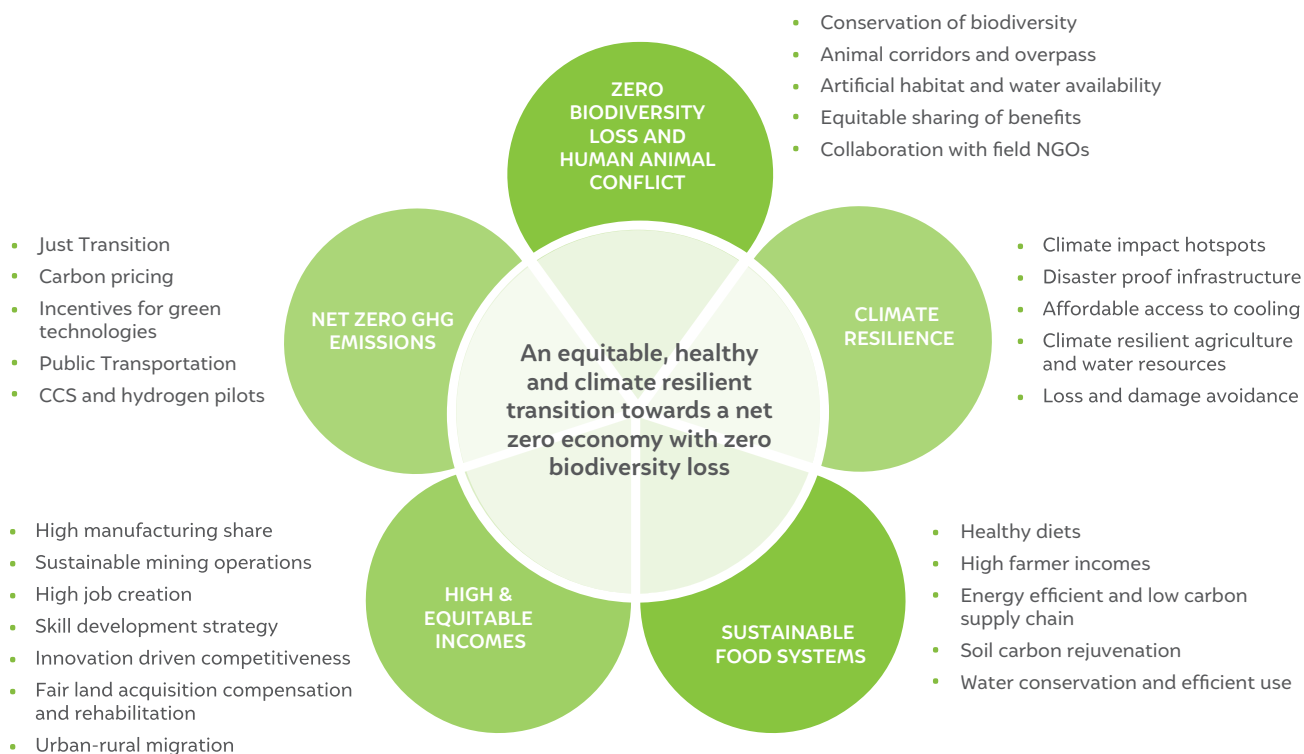
3.8 Flourishing biodiversity

The importance of flourishing biodiversity has been explained in the 'Rivet-Popper' hypothesis provided by Paul Ehrlich⁵. The hypothesis compares the species of the ecosystem with the rivets of an aeroplane with the aeroplane signifying the entire ecosystem. For a sustainable future, it is highly important to protect and conserve natural biodiversity. Odisha has diverse, well-stocked and dense forests which are also habitats of several wildlife flora and fauna. We envisage that by the year 2050, Odisha has a flourishing ecosystem and biodiversity. By 2050, there will be zero animal-human conflict in the state and zero biodiversity loss due to any development project.

The vision described above will make Odisha a high-income, high-growth, inclusive and competitive state by 2050. In order to chart out the path to the vision described above, the ETCO partners designed the New Economic Transition Framework. The subsequent section elaborates on the core elements of the transition framework.

The ETCO partners designed a new economic transition framework to achieve the 2050 vision for the state.

5 Hobbs, R.J., Higgs, E. and Hall, C.M. (2013) "Perspective : From rivets to rivers," in Novel ecosystems: Intervening in the New Ecological World Order. Chichester, West Sussex: Wiley-Blackwell.

Figure 1 The New Economic Transition Framework

4. A new economic transition framework

After multiple consultations, the coalition has designed A New Economic Transition Framework. The framework underlines the need for sustainable economic growth that results in an equitable, healthy and climate-resilient transition within the planetary boundaries.

The New Economic Transition Framework consists of five objectives that emerged in the various ETCO stakeholder meetings. The elements are – high and equitable incomes, sustainable food systems, climate resilience, zero biodiversity loss and animal-human conflict and net zero GHG emissions.

4.1 High and equitable incomes

Odisha aims to become a trillion-dollar economy. It is a mineral-rich state and mining has been a major contributor towards state revenue. To generate high incomes, Odisha's economy should also have a high share of manufacturing-based revenue and employment. Since mining is going to remain one of the primary sources of revenue generation for Odisha, the mining industry needs to deploy sustainable mining practices in accordance with the laws of biodiversity protection and net zero goals.

Developing Odisha to become a manufacturing hub also opens up the possibility of creating a large number of jobs in varied domains of manufacturing. Figure 2 shows sectoral employment elasticity and underlines the role the mining sector plays in providing employment in Odisha.

To become a manufacturing hub, the government needs to devise a skill development strategy for the entire state. The strategy should not only include skills for jobs related to manufacturing and mining, but it should also include skill development for the green jobs which will be the required jobs of tomorrow. The training for green jobs should also include imparting the skills required to innovate and make the existing infrastructures of mining and manufacturing more sustainable. The state could explore an industrial cluster approach with raw material to value added production in the clusters, and plan skilling for the same. A skill development plan that focuses on various stages of value creation, from primary to tertiary, will simultaneously ensure that productive employment opportunities are available for all sections of the society making growth equitable.

To expand the manufacturing base, the state will need to make the land acquisition system more

efficient and transparent. This will not only aid rapid industrialization of the state but also increase the trust between the industry and community and build an industry friendly image of the state.

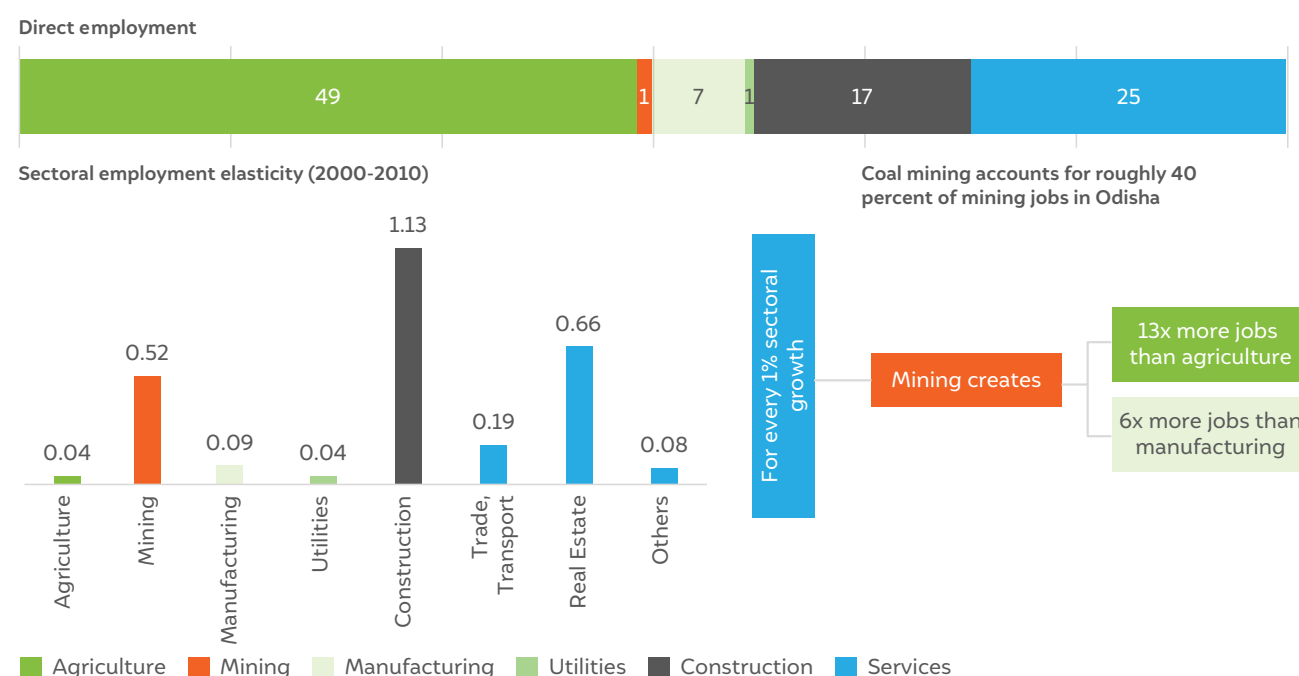
Further, with such large natural resources and potential for rapid industrialization, the state has potential to promote more special economic zones (SEZs) and industrial zones toward value added production. Through these, the state can accelerate industrial growth with a provision of single window clearance and infrastructure support for industry to operate in plug and play model. Moreover, the state government will also need to plan the infrastructure development considering rural-urban migration and its implications.

4.2 Sustainable food systems

Climate change poses a grave threat to food security. While it is important to develop sustainable and less resource-intensive food supply chains, it is equally important to ensure that the basic dietary and nutrition needs of the larger population are fulfilled. Therefore, the New Economic Transition Framework emphasises the need to develop sustainable food systems.

Due to rising temperatures, weather patterns are becoming more erratic across the globe. This trend has graver implications for farmers whose livelihoods are getting affected due to untimely heavy rains, heatwaves and other severe weather events. Therefore, as an adaptation measure, the government needs to promote climate resilient crops and technologies and soil moisture conservation through economic incentives, and promote research and implementation of adaptation programs towards sustainable and climate resilient agriculture practices and livelihoods. For climate mitigation, the government also needs to invest in more energy-efficient and low-carbon supply chains for the food system. Agroforestry can prove to be a good way to enhance resilience against climate change and agricultural productivity. Along with carbon sequestration, there could be many additional benefits of agroforestry like increased water retention, wood production, erosion control and livelihoods augmentation amongst other benefits. The government should also explore ways to enrich the agricultural land soil carbon rejuvenation. It could serve as a potent Carbon Dioxide Removal (CDR) technique.

Figure 2 Sectoral employment elasticity in Odisha underlining the importance of the mining industry



Source: Odisha Economic Survey 2021-22; 12th Five Year Plan, Government of India

Additionally, the government should educate the people of Odisha to consume healthy, sustainable, and seasonal food to ease the burden on the existing supply chain and to ensure the fulfilment of dietary needs in the state.

4.3 Climate resilience

While it is important to accelerate climate mitigation efforts, it is now highly unlikely to escape the effects of warming from the emission of GHGs that have already happened. In the coming days, the frequency of extreme weather events is going to increase and a robust climate resilience infrastructure is going to become imperative. To build climate resilience, the coalition suggests that the government develops a state-level climate adaptation strategy.

The climate adaptation strategy should include mapping potential climate hotspots throughout the state. Through the mapping exercise, the government should plan on building relevant disaster-proof infrastructure, especially in the areas that have been and will be prone to cyclones. There should also be provisions to provide loss and damage assistance to the people affected by cyclones and other extreme weather events. Increased levels of warming will also result in frequent heat waves. Therefore, the government should develop a plan to provide affordable and sustainable cooling to the people of the state of Odisha.

As discussed earlier, the changing climate is going to be particularly damaging for agriculture. Therefore, the government should invest in research and development to build climate-resilient agriculture and also develop techniques to safeguard its water resources.

4.4 Zero biodiversity loss and animal- human conflict

The coalition recommends that the government adopts a 'Zero biodiversity loss' approach, where commercial decisions should be taken considering its impact on biodiversity and natural ecosystems. Biodiversity loss can happen due to a variety of activities like highway construction or mining activity for which forests might need to be cut. While it is important to undertake infrastructure development, it is equally important to be mindful of the ecological damage that a project could cause.

The government should also build essential infrastructures like animal corridors and underpasses to avoid the detrimental effects of animal-human conflict. Habitat loss and biodiversity loss are closely intertwined. In order to minimise the ill effects of habitat loss, the government can create artificial habitats and water resources for different species. Many interventions like reserve corridors, artificial habitats, avoiding large projects around core animal habitat, etc. are some of the recommended steps for avoiding animal-human conflict.

Local communities play a critical role in managing the forests and natural ecosystems. The government should take initiatives to develop trust and consequently a partnership with the local communities to manage and safeguard the forests. The government should also ensure equitable sharing of benefits that come from the forests and natural ecosystem management between different stakeholders including the local communities. Additionally, the government should also promote public, private and people partnership towards protection and enhancement of biodiversity. The role of local NGOs can be at various levels- for informing policy, for executing government policies and programmes, as well as for social audits and regular monitoring of the on ground effectiveness of policies and programmes.

4.5 Net zero GHG emissions

The New Economic Transition Framework cannot overlook the importance of reaching net zero emissions as part of the state's growth strategy. The state government should undertake an extensive exercise to determine its target net-zero year. While designing its Net-Zero strategy, the government should prioritise that the transition should be just. It is important because a net zero transition can lead to vulnerable communities getting affected disproportionately while they were not responsible for the climate emergency. People associated with the mining industries and thermal power plants run the risk of losing their jobs if the government overlooks climate justice in the transition process.

The state government should undertake an extensive exercise to determine its target net-zero year.

A cost-effective way to reach net-zero emission is to price the carbon either through market-based or non-market-based instruments. Carbon pricing promotes green technologies along with generating revenue for the government which can be earmarked to upgrade green infrastructure in the state. As mentioned earlier, technologies like CCS and green hydrogen are an important part of the net zero transition in Odisha. Odisha government can promote CCS and hydrogen pilot projects which could prove beneficial in decarbonising the mining and energy sector. Investors face a multitude of challenges while investing in new technologies, ranging from regulatory uncertainties to market related uncertainties, fragmented markets, as well as lack of market data among other challenges.

Therefore, the government should create additional incentives across different sectors for the adoption of cleaner technologies like solar and pumped hydro power systems as metal and mining industry are power intensive in addition to heavy reliance on fossil fuels.

An important part of reaching Net-Zero also comes from managing transport sector emissions. The government should aim to invest in public transport in the areas of infrastructure, pricing, and transit route management. The government can plan effective bus or metro routes and lines ensuring multi-modal integration for last-mile connectivity. Additionally, more investments should be made in features like smart ticketing and GPS tracking.

5. Challenges and opportunities in the transition towards achieving the vision

The economic transition comes with its share of challenges and opportunities. In terms of challenges, due to low carbon transition, effects on the **state's fiscal revenue** is one of the key challenges as royalties coming from coal mining would be adversely impacted. Moreover, implementing a mechanism to put a price on carbon can lead to emission leakage. The state could decide to implement policies like Border Carbon Adjustment Tax to hedge the risk.

Just transition is another critical challenge facing Odisha. It will require engagement with mining companies and labour unions to ensure that the people who have done little towards climate change are not paying the heftiest price towards a green transition. Additionally, **electricity pricing reform** which is critical to achieve deep decarbonisation is another challenge facing the state government. Given that power pricing is a hugely political issue, structural electricity pricing reforms are expected to be politically unpopular and challenging to implement. However, the biggest challenge in this increasingly warming world is posed by climate change. The state government of Odisha will need to map climate hotspots and plan adaptation strategies so that **climate change** does not affect the growth of the state.

In terms of opportunities, Odisha can become the manufacturing hub of solar panels and batteries that can play a key role in India's energy transition. Additionally, Odisha can also lead the innovation in sustainable ways of aluminium mining and the production of green steel.

Another set of challenges and opportunities arise from the water and air-quality related aspects. Industrial development, if not managed properly, could negatively impact air and water quality. Clean air and water are critical for human health. An important outcome of a transition towards net-zero is improvement in air-quality as reduction in the use of fossil energy will lead to lower air pollution. The state has to be cognizant of the risks related to enhanced air and water pollution due to continuing industrial development, while at the same time harness the opportunities that the new economic transition framework presents to address these potential challenges.

Odisha is already hailed for its disaster management capabilities. In its economic transition, Odisha has the potential to become a model state with disaster-resistant infrastructure. Additionally, it could also invest in **green infrastructure** like EV charging stations and hydrogen plants. The economic transition will result in a shift from mining jobs to manufacturing and construction-based jobs in Odisha. Therefore, it presents an opportunity for the state government to also invest in **skill development** to smoothen this transition.

6. Recommendations for the government

The new economic transition framework proposed by the ETCO would be achieved only through dedicated government interventions. The Odisha government is already doing a lot to propel economic growth of the state as well as to alleviate poverty. The group proposes the following additional recommendations for the consideration of the state government:

- The government should explore announcing a net-zero year and the implications of the same for Odisha's economy. It should start understanding the state's long term energy and emission pathways and scenarios for informing policy.
- The government should prioritise and incentivise low emission technologies through various incentives, policy support, and mandates. R&D in low carbon technology should be promoted.
- The government should map the climate hotspots in the state and devise relevant adaptation strategies and institutional arrangements.
- The government should explore the implications of a "Zero Biodiversity Loss" policy and strive to achieve it.
- The government should adopt a target for dietary shift and natural farming.
- Government should partner with industry, local academia and non-government organisations (NGOs) to mobilise the local communities in order to protect the existing forests and natural ecosystems.
- The government should explore ways for using district mineral fund (DMF) for supporting just transition and devise institutional arrangements for the same.

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The views expressed in this work are those of the members of the Economic Transition Coalition Odisha in their individual capacity and do not necessarily reflect the views and policies of their organisations.

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