CVF V20
CLIMATE VULNERABLE FORUM
VULNERABLE TWENTY GROUP

SRI LANKA CLIMATE PROSPERITY PLAN

PRELIMINARY REPORT

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FOREWORD

H.E. MOHAMED NASHEED

Former President of the Maldives and Speaker of the People's Majlis
Secretary-General of the CVF

Sri Lanka has always been a friend to the Maldives, and we have supported each other through good times and bad. With the challenge of the climate crisis comes another opportunity for mutual assistance and friendship. Both our nations are island communities which are intensely vulnerable to the worsening storms, higher seas and more intense droughts brought along by climate change. Both are committed to doing our utmost to tackle the climate crisis.

As former president of the Maldives and current speaker of the Maldives parliament, I was therefore honoured to be asked by President Wickremesinghe to act as his climate advisor, a role which aligns with my ambassadorship for the Climate Vulnerable Forum, of which both our nations are active members. I am therefore especially delighted to see Sri Lanka progressing with the CVF's Climate Prosperity agenda. The Maldives too is progressing our Climate Prosperity Plan, and once again we have much to share in terms of our strategies and ambitions.

I have long seen climate change as much as an opportunity as a crisis. Yes, it is an existential threat to my country and perhaps even to human civilisation itself. But if we tackle it using innovation and economic growth we can use the clean energy transition as a springboard to a more prosperous and resilient future for the most climate-vulnerable countries like ours. We want to be at the forefront of developing and deploying the new technologies that will be central to this cleaner future, from electric boats to islands powered by offshore solar PV.

Once again Sri Lanka and the Maldives have a lot in common. We are both highly climate-vulnerable, but we also believe we can achieve prosperity by going quickly to net zero, with clean technology and a low-carbon future. We wish to be the victors of the future, not the victims. I hope this Climate Prosperity Plan can be the start of that important effort.

TABLE OF CONTENTS

TABLE OF CONTENTS

BRIEF INTRODUCTION TO CLIMATE PROSPERITY PLANS

What are Climate Prosperity Plans?

A national investment strategy and pathway to prosperity in a climate-insecure world

Climate Prosperity Plans seek to maximise socio-economic outcomes for countries on the frontline of the climate emergency.

A climate vulnerable country can no longer achieve its best socio-economic outcomes without becoming resilient to climate change.

We have a better chance at maximizing socio-economic outcomes if we leverage the maximum of domestic renewable energy resources and nature-based solutions

Climate Prosperity Plans...

... study optimizing economy-wide resilience, renewable energy and nature-based solutions

... propose a plan over a specific timeframe (5 years, 10 years, to the 2040s)

... propose projects to deliver the plan

... detail financing and investment needed to realise them

Why Climate Prosperity Plans?

The Problem

All CVF & V20 member states are struggling to mobilize the necessary finance and investment to realize climate action

The Consequences

Climate-smart approaches to social and economic development are prevented from being mainstreamed

Many countries are building in new vulnerabilities rather than becoming more resilient

Missed opportunities to have greater energy independence and access to green investment and export opportunities

The Solution

Climate Prosperity Plans seek to respond to this challenge by designing actionable investment and implementation pathways to

CPPs have three main dimensions

1. We estimate how socio-economic outcomes could be improved

2. We outline what projects and programs can deliver those

3. We identify and itemise the financing and investment needed to deliver the project and achieve those outcomes

STRATEGIC AIMS

This is the Preliminary Report of Sri Lanka's Climate Prosperity Plan. This version of the document aims to allow for broad-based national and international consultation towards the further refinement and a final, updated and expanded version of the Plan is set to be completed in 2023.

Sri Lanka's Climate Prosperity Plan outlines a national investment strategy from the near to long-term (current decade to mid-century perspective) for climate proofing the nation and in doing so to secure Sri Lanka's pathway to prosperity in a climate-insecure world.

GOALS

Sri Lanka's Climate Prosperity Plan is anchored around three major goals focused on energy, finance, and resilience. Each goals is underpinned by further objectives and a number of keystone projects.

I. UNLOCK DOMESTIC ENERGY ABUNDANCE THROUGH RENEWABLES, MODERNIZATION AND SUSTAINABLE TRANSPORT

TARGET HIGHLIGHTS:

- Sri Lanka a net energy exporter by 2025
- Sri Lanka renewable energy production exceeds 100% of domestic power needs by 2040

Sri Lanka aims to fully tap into its renewable energy resources, with, given the island geography, an increasing focus on offshore wind power generation. Fossil fuel end use and electricity generation will plateau as a share of the energy mix thanks to accelerated, fiscally incentivized growth of the electric vehicle fleet and non-motorized transportation reaching a growing share of all vehicle trips, in addition to a shift to less carbon intensive fuels (from oil to gas). Due to a modernized grid network and the growing application of latest technologies and efficiency measures, Sri Lanka will increasingly make every Kw/h of power deliver more for end-use applications, ultimately doubling output per unit of energy, generating further macro-level cost efficiency benefits. Investments in training, skills and digital technologies are to underpin a green jobs expansion, enabling Sri Lanka to maximize the employment benefits of a sustainable and climate-secure transition.

OBJECTIVES

1 Financing maximized renewable energy and grid modernization potential and connectivity

Sustainably exploit the full potential of national renewable energy resources, optimising energy efficiency, as well as increase grid connectivity by upgrading the grid and connecting Sri Lanka to neighbouring countries.

2 Sustainable transportation

Support the transition towards a RE-based, resilient mobility network, promoting sustainable lifestyles and sustainable mobility.

3 Accelerated Transition and Modernization Through Re-skilling and Training

Promote sustainable economic transformation by incentivizing & leveraging local opportunities for climate resilient & green jobs, and training of the population to increase jobs and decrease poverty.

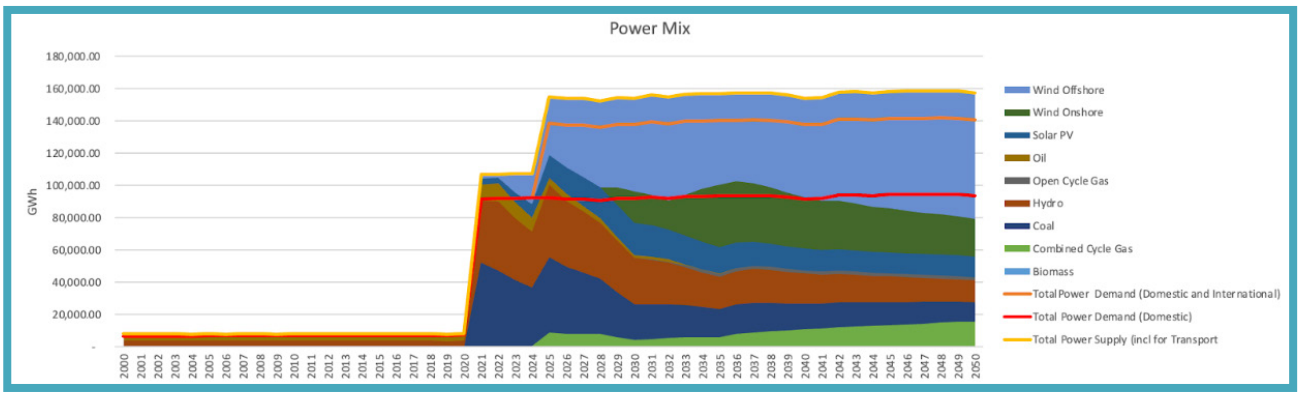


Figure 1: Evolution of energy demand/supply forecasted to 2050

KEYSTONE & HALLMARK PROJECTS

Sri Lanka Offshore Wind Array:

Offshore wind mega-project to harness the abundant wind resources in the ocean area between Jaffna and Puttalan. Reaching 5GW – more than total current electricity generation capacity – by the year 2030, this keystone project aims to realize national scale potential of offshore wind resource harvesting. Commencing in 2023, the project aims to leverage $16 billion US over an eight-year implementation period (operational lifespan: 35 years–2065).

Indo-Sri Lanka power marine cable line (Madurai–Anuradhapura):

Project to link the national grids of India and Sri Lanka through power marine cable. A subsea high voltage direct current (HVDC) interconnector with an initial capacity of 2.5GW (275 kV) would link the Anuradhapura and Madurai grids as of 2025 to be scaled up to 10+ GW capacity by 2040. Initial installation at a provisional estimated cost of $100 million over two years (operational lifespan: 30-40 years–2065).

Sri Lanka Climate University:

Program to establish a Climate University as a hub for tertiary education with a focus on building capacity and knowledge around climate change as well as skilling students for the jobs of the future. By 2035, this program aims to set up a higher education institution with the capacity to train 10,000 students a year, reaching a total of 55,000 students trained over the first decade. Commencing in 2023, the program will aim to leverage $20 million US over 12 years.

GOAL	1	Unlock domestic energy abundance through renewables, modernization and sustainable transport
OBJECTIVE	1	**Financing maximized renewable energy and grid modernization potential and connectivity**
Description		Sustainably exploit the full potential of national renewable energy resources, optimising energy efficiency, as well as increase grid connectivity by upgrading the grid and connecting Sri Lanka to neighbouring countries.
OBJECTIVE	2	**Sustainable transportation**
Description		Support the transition towards a RE-based, resilient mobility network, promoting sustainable lifestyles and sustainable mobility.
OBJECTIVE	3	**Accelerated Transition and Modernization Through Re-skilling and Training**
Description		Promote sustainable economic transformation by incentivizing & leveraging local opportunities for climate resilient & green jobs, and training of the population to increase jobs and decrease poverty.

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**1.1**	70% of renewable energy in electricity production.		✓		
		80% of outstanding renewable energy potential financed			✓	
		90-100% of outstanding renewable energy potential financed.				✓
TARGET	**1.2**	Contribute to grid connection partnership in South Asia.		✓		
TARGET	**1.3**	Leverage the latest innovative technology (e.g. waste to energy maximization, wave technology, etc.).	✓			

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**1.4**	Promoting energy efficient equipment, technology and systems improvement to increase overall energy efficiency by 20%.	✓			
		Promoting energy efficient equipment, technology and systems improvement to increase overall energy efficiency by 40%.		✓		
TARGET	**2.1**	Promotion of electric mobility and hybrid vehicles.	✓			
TARGET	**2.2**	50% of new road vehicles are electric or hybrid.		✓		
		90-100% of new road vehicles are electric or hybrid.			✓	
		50% of public transportation, including suburban railway, is electrified including through retrofitting.		✓		
		100% of public transportation, including suburban railway, is electrified including through retrofitting.			✓	
TARGET	**2.3**	5km of bike lanes integrated into relevant roads in 10 key urban locations	✓			
		50% of relevant roads include bike lane.		✓		
		90-100% of relevant roads include bike lane.			✓	
TARGET	**2.4**	Promotion of non-motorized transportation in key urban centers.	✓			

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**2.4**	Share of non-motorized transportation increases to 20% of all road trips.		✓		
		Share of non-motorized transportation increases to 30% of all road trips.			✓	
TARGET	**3.1**	50% of new jobs supported by re-skilling and training for industries of the future.	✓			
		75% of new jobs supported by re-skilling and training for industries of the future.		✓		
TARGET	**3.2**	Clean technologies are leveraged to digitize or provide new digital support to 50% of the economy across all sectors.	✓			
		Clean technologies are leveraged to digitize or provide new digital support to 75% of the economy across all sectors.		✓		
		Clean technologies are leveraged to digitize or provide new digital support to 90-100% of the economy across all sectors.			✓	

II. FINANCIALLY ENGINEER A CLIMATE SECURE TRANSFORMATION

TARGET HIGHLIGHTS:

- Doubling of the financing envelope of climate projects through the leveraging of debt-for-climate swaps, by 2040
- One third of Sri Lanka forested with the support of global carbon markets
- 90-100% of key supply chains and industry financially protected against climate related disasters

At the centre of the feasibility of Sri Lanka's Climate Prosperity Plan is the concept of debt arrangements that would protect national creditors by enabling financing to be redirected to sustainable and resilience investments that would protect existing underlying investments for all concerned. Innovative financing through global carbon markets, will aim to support reforestation of Sri Lanka to reach one third of all terrestrial territory and an up to 30% increase in elephant conservation areas and corridors and habitat enrichment. Commencing with the extension of financial protection and affordable insurance for the poorest national population groups, Sri Lanka aims to cultivate its domestic insurance sector, in cooperation with international partners, to ultimately ensure complete (90-100%) financial protection coverage of key supply chains and industries.

OBJECTIVES

4 Shifting sustainable debt through conversion and attrition of capital to climate projects

Repurpose and reduce the debt of Sri Lanka through debt-for-climate swaps, shifting the debt towards climate-smart investments and improving debt sustainability.

5 Carbon Financing Hub to value blue carbon, soil carbon, forest carbon

Maximize access to carbon financing to support investment efforts while supporting conservation & ecosystem services for multi-industries (agriculture, industry, tourism etc.).

6 Financially protect the economy and livelihoods

Promote risk informed investment and enable progressive coverage of financial/social protection including insurance for all core climate and disaster risk (flooding, erosion damage, agricultural losses etc.) and protect and increase livelihood options.

KEYSTONE & HALLMARK PROJECTS

Debt for Climate Swaps:

This project proposes to kick-start the implementation of debt-for-climate swaps by allocating budget to the Ministry of Finance to work on debt-for-climate swaps with the goal to reduce the level of indebtedness as well as free up fiscal resources to be spent on green investment. The project investment amounts to $10 million US, over a timeline from 2023 to 2025.

Subsidy Account:

This project aims to set up a subsidy account to pay for a local currency hedge so that Sri Lanka would be borrowing effectively in local currency but indexed to the dollar, with the goal to reduce the cost of capital and de-risk Sri Lanka from exposure from borrowing in USD. This project requires $2 billion US over a timespan of 7 years.

Sustainable Insurance Facility:

This project will integrate MSME insurance as a core offering via Sri Lanka private sector banks and wholesale buyer/seller associations during digitization of 600 branches of the national bank, in order to extend financial protection to key small-scale actors of local industries. The project is set over the timeframe 2023-2028 with an investment level of $7 million US over the period.

GOAL	**2**	**Financially engineer a climate secure transformation**
OBJECTIVE	**4**	**Shifting sustainable debt through conversion and attrition of capital to climate projects**
Description		Repurpose and reduce the debt of Sri Lanka through debt-for-climate swaps, shifting the debt towards climate-smart investments and improving debt sustainability.
OBJECTIVE	**5**	**Carbon Financing Hub to value blue carbon, soil carbon, forest carbon, etc.**
Description		Maximize access to carbon financing to support investment efforts while supporting conservation & ecosystem services for multi-industries (agriculture, industry, tourism etc.).

OBJECTIVE	6	Financially protect the economy and livelihoods
Description		Promote risk informed investment and enable progressive coverage of financial/social protection including insurance for all core climate and disaster risk (flooding, erosion damage, agricultural losses etc.) and protect and increase livelihood options.

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**4.1**	Reforestation including participation in carbon markets to increase forest cover in Sri Lanka up to 32%.		✓		
TARGET	**4.2**	Increase available financing envelope for climate projects by 10% through debt-for-climate swaps.	✓			
		Increase available financing envelope for climate projects by 30% through debt-for-climate swaps.		✓		
		Increase available financing envelope for climate projects by 100% through debt-for-climate swaps.			✓	
TARGET	**5.1**	Projects representing 100'000 tons of CO2 activated through carbon financing.	✓			
		Projects representing 200'000 tons of CO2 activated through carbon financing.		✓		
TARGET	**5.2**	10% increase in elephant conservation areas and corridors and habitat enrichment.	✓			
		30% increase in elephant conservation areas and corridors and habitat enrichment.		✓		

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**6.1**	Extend financial protection including through risk transfer against climate related disasters for 70% of the population living in poverty.	✓			
		Extend financial protection including through risk transfer against climate related disasters for 100% of the population living in poverty.		✓		
TARGET	**6.2**	Extend financial protection including through risk transfer against climate related disasters for 10% of key supply chains and industry.	✓			
		Extend financial protection including through risk transfer against climate related disasters for 30% of key supply chains and industry.		✓		
		Extend financial protection including through risk transfer against climate related disasters for 70% of key supply chains and industry.			✓	
		Extend financial protection including through risk transfer against climate related disasters for 90-100% of key supply chains and industry.				✓

III. GALVANIZE CLIMATE PROTECTION AGAINST KEY RISKS

TARGET HIGHLIGHTS:

- 90-100% of rural communities in Sri Lanka practising sustainable land and water management practices inclusive the active restoration of 100% of threatened reefs, by 2040
- 100% of workers protected from extreme heat stress by 2040
- Plant-based share of the national diet is maintained as economic and population expansion progresses to mid-century

Sri Lanka's Climate Prosperity Plan includes a strategy of accelerated adaptation of those sectors most exposed to climate risks, which includes the agricultural and fisheries' sectors. In addition, Sri Lanka will aim to significantly strengthen protections against climate risks for high-value economic sectors, where smaller scale losses could nevertheless generate greater economic damages, such as services, tourism and manufacturing. The strategy includes a number of measures to ensure the full protection of the workforce against rising extreme heat, which are already responsible for macro-significant economic losses for the economy, including high efficiency HVAC and promoting locally-sourced building insulation. Protecting food production is a particular priority in addition to the water intensity and land efficiency gains of maintaining the plant-based share of the national diet, which also generates health benefits. Finally, additional measures for the management vector-borne diseases affected by climate change are also prioritized.

OBJECTIVES

7 Climate-smart agriculture

Accelerate the adaptation of the agricultural sector to strengthen and climate-proof national food systems, enhancing food security and reducing dependence on food imports, safeguarding jobs and livelihoods.

8 Strengthening fisheries value chains to safeguard food security and nutrition

Investment in reefs restoration to preserve marine biodiversity, sustain fisheries and ocean-centered livelihoods to increase food production and food security by relying on domestic production.

9 Building resilience to heat and climate-sensitive diseases

Implement preventative measures to minimize the negative impacts of heat stress and dengue on the public and workers' well-being and productivity, harnessing nature-based solutions.

KEYSTONE & HALLMARK PROJECTS

Climate Resilient Villages (CRVs) Programme:

This program focuses on enhancing resilience to reduce the climate vulnerability and improve the adaptive capacity of local communities and villages, thereby providing stability to agriculture productivity and household incomes. The initial investment amount for the project is set at $5 million US with scale up to $500 million US by 2025, with the project timeframe ranging from 2023 to 2030.

Quashing the Bug – Prevention Program Against Mosquito Proliferation:

This program aims to prevent the proliferation of mosquitoes by deploying mosquito traps across Colombo and community hotspots, with the aim to reduce mosquito population and prevent the spread of dengue and other vector-borne diseases which are bound to increase with raising temperatures. The program investment level is $2 million USD over 7 years, with the program planned to be deployed in the timeframe 2023-2030.

Incubator for domestic production of food, beverages, and insulation materials:

This program will support the creation of incubators to host community level farmers, fisherfolks and food processing enterprises and local businesses producing insulated materials at community level, to support community-level agriculture and aquaculture, with the goal to enhance economic independence and self-sufficiency. The proposed timespan is 2023-2025 with an investment amount of $7 million US.

GOAL	3	Galvanize climate protection against key risks
OBJECTIVE	7	Climate-Smart Agriculture
Description		Accelerate the adaptation of the agricultural sector to strengthen and climate-proof national food systems, enhancing food security and reducing dependence on food imports, safeguarding jobs and livelihoods.
OBJECTIVE	8	Strengthening fisheries value chains to safeguard food security and nutrition
Description		Investment in reefs restoration to preserve marine biodiversity, sustain fisheries and ocean-centered livelihoods to increase food production and food security by relying on domestic production.

OBJECTIVE	9	Building resilience to heat and climate-sensitive diseases
Description		Implement preventative measures to minimize the negative impacts of heat stress and dengue on the public and workers' well-being and productivity, harnessing nature-based solutions.

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	7.1	Reduce impacts of salinity by 25% to minimize the impacts of sea level rise on agriculture in coastal areas and increase coastal food production yields by 25%.	✓			
		Reduce impacts of salinity by 50% % to minimize the impacts of sea level rise on agriculture in coastal areas and increase coastal food production yields by 50%.		✓		
TARGET	7.2	Community-based rainwater harvesting and management for agriculture communities increased by 25%, including both lakes and tanks.	✓			
		Community-based rainwater harvesting and management for agriculture communities increased by 75%, including both lakes and tanks.		✓		
TARGET	7.3	20% of climate at-risk communities implementing sustainable land and water management practices	✓			
		50% of climate at-risk communities implementing sustainable land and water management practices		✓		
		75% of climate at-risk communities implementing sustainable land and water management practices			✓	
		90-100% of climate at-risk communities implementing sustainable land and water management practices				✓

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**7.4**	75+% of the population consume largely plant-based, nutrient-rich, locally grown and traditional diets.	✓			
		90-100% of the population consume largely plant-based, nutrient-rich, locally grown and traditional diets.		✓		
TARGET	**8.1**	Active restoration of 30% of threatened reefs.	✓			
		Active restoration of 80% of threatened reefs.		✓		
		Active restoration of 100% of threatened reefs.			✓	
TARGET	**8.2**	25% increase in production in domestic food, including aquaculture and culture-based fisheries, fresh produce and high protein food stocks.	✓			
		75% of national food consumption is domestically produced.		✓		
		100% of national food consumption is domestically produced.			✓	
TARGET	**9.1**	25% of workers protected from extreme heat, including workers in the informal economy.	✓			
		50% of workers protected from extreme heat, including workers in the informal economy.		✓		
		75% of workers protected from extreme heat, including workers in the informal economy.			✓	
		100% of workers protected from extreme heat, including workers in the informal economy.				✓

RESULT INDICATOR	#	DESCRIPTION	2025	2030	2035	2040
TARGET	**9.2**	75%-100% of new buildings are equipped with insulation (using locally sourced materials) and high-efficiency HVAC.	✓			
TARGET	**9.3**	25% of existing built structures in capital and high density areas are equipped with insulation (using locally sourced materials) and high-efficiency HVAC.	✓			
		50% of existing built structures in capital and high density areas are equipped with insulation (using locally sourced materials) and high-efficiency HVAC.		✓		
TARGET	**9.4**	Mosquito traps against dengue and vector-borne diseases deployed in capital.	✓			
		Mosquito traps against dengue and vector-borne diseases deployed in 100% of community hotspots.		✓		

SCENARIOS AND TIMEFRAMES

The Climate Prosperity Plan considers the following key parameters which frame strategy design, macro-economic, fiscal and environmental modeling, and measures planning.

SCENARIOS

There are three Climate Prosperity Plan scenarios considered:

BUSINESS AS USUAL (BAU):

This scenario represents the national development pathway that would automatically prevail as the case, and is a scenario absent any specific climate-related interventions of any kind. It represents a continuation of the current development trajectory and trends for the country.

NATIONALLY DETERMINED CONTRIBUTION (NDC):

This scenario is a version of the BAU scenario that is modified by the core commitments presented in Sri Lanka's NDC. It represents how the country would develop if the Paris Agreement NDC targets are met.

CLIMATE PROSPERITY PLAN (CPP):

This scenario simulates the macro socio-economic outcomes based on the strategic aims (goals, objectives and targets), key measures and investment and fiscal strategies defined in this Preliminary CPP report. It enables testing of strategies and interventions and the control for the difference in strategy outcomes for the economy and society versus the BAU and NDC scenarios.

TIMEFRAMES

The CPP spans the full period 2020 to 2050 in terms of modeled outcomes. The strategic aims of the CPP are mapped until 2040, while key measures (keystone, hallmark and other project and programme activities) are mapped through to 2030.

CPP MODEL

All scenarios are modeled using the bespoke CPP model, which is a highly modified and customized variation of the Green Economy Model (GEM) designed to suit the range and type of macro-economic and societal decision-making facing CVF and V20 countries due to accelerating global climate change, its adverse effects and transition pressures.

FINANCING

Sri Lanka CPP's realization relies on the full realization of its co-dependent investment and fiscal strategies as outlined below. The level of implementation towards strategic aims will in particular be conditioned by the extent to which these two strategies are implemented, with, in particular, the investment strategy relying on significant international concessional finance and economic cooperation.

INVESTMENT STRATEGY

The total resource mobilization opportunity is USD 26.53 billion through 2030 of which a large composition is from international sources. To ensure that finance can be delivered at quality, scale and speed to deliver a course-correction from climate vulnerability to climate prosperity, our investment strategy includes a variety resource mobilization initiatives including:

1. broad technology partnerships through the promotion of innovative business models and technology transfer with equipment leases, especially for renewable energy and storage;
2. project preparation support from inception to evaluation;
3. bringing down the cost of capital through credit strengthening, long-term financing, and local currency financing (including maximizing domestic participation across all investments and subsidy accounts for hedging options);
4. increased multilateral resources from the the headroom to crowd in private sector participation;
5. blended finance can be used as catalytic capital from philanthropic or public sources to increase private participation;
6. credit strengthening for domestic banks can enable the financing of adaptation and resilience projects, including partial credit guarantees or insurance and risk sharing, including subordinated debt investment, thus lowering the cost of capital;
7. export credit agencies in developed countries can reinforce the cooperative relationship among financial institutions and government agencies through financial support for resilient infrastructure projects; and
8. comprehensive risk financing strategy for pre-arranged and trigger based financing for business continuity and financial protection.

Table 1: Investment breakdown

GOVERNMENT	$705,050,000
INTERNATIONAL EQUITY	$3,460,175,000
DOMESTIC EQUITY	$1,051,075,000
DOMESTIC PRIVATE LOAN	$1,002,500,000
INTERNATIONAL PRIVATE/ BILATERAL LOAN	$8,755,750,000
MDBS	$8,009,050,000
GUARANTEE	$3,046,875,000
GRANTS	$498,300,000
OTHER (CHARITABLE DONATIONS)	$1,100,000
TOTAL	**$26,529,875,000**

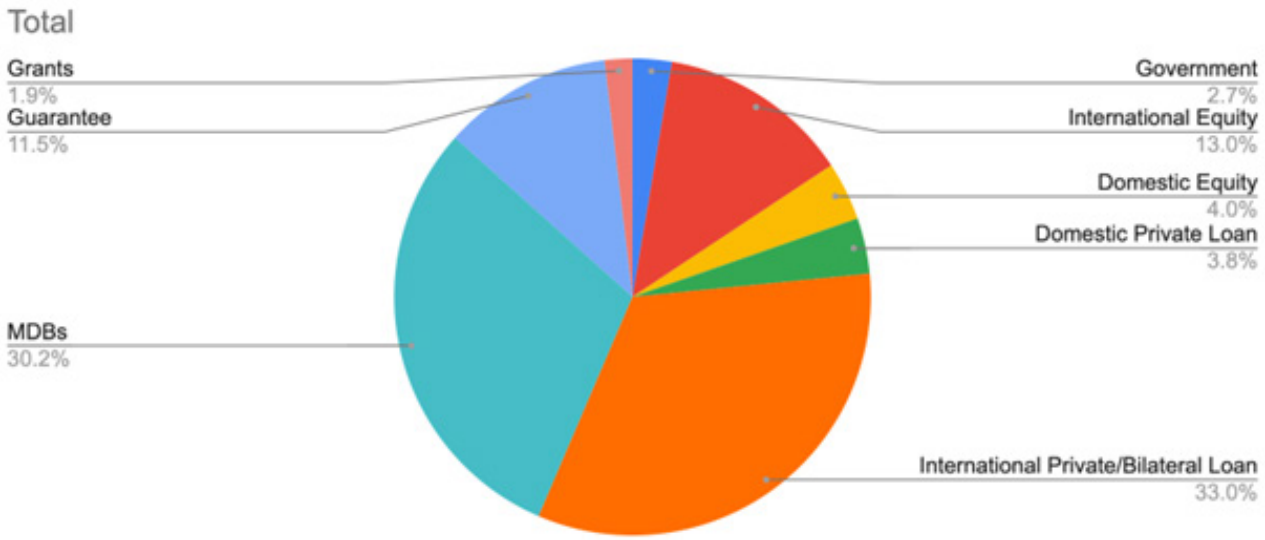


Figure 2: Investment breakdown

Given the considerable debt overhang, debt restructuring through debt relief and debt-for-climate swaps at a portfolio level is a key component of the investment strategy with a grand-scale climate-debt swap where the debts and debt servicing payments of Sri Lanka are reduced on the basis of our Climate Prosperity Plan to achieve climate resilience and prosperity. Specifically by redirecting debt servicing payments towards new investments where the existing creditors can participate with preferred equity opportunities to render the underlying projects more resilient to climate change and compatible with the green transition. This can include investments in adaptation and nature-based solutions to render infrastructure projects more resilient to climate harm, while outdated thermal coal, fossil gas, or diesel could be retired or recapitalized and transformed into hubs for green hydrogen production, waste to energy or biomass power generation facilities. Below is an overview of debt service payments to creditors illustrating the potential supporters and investor base to support Sri Lanka reach debt sustainability and climate prosperity. The multilateral system can act as a guarantor of restructured debt through guarantee facilities for inclusive, sustainable, and resilient recovery efforts, and to support a smooth re-access re-entry into capital markets.

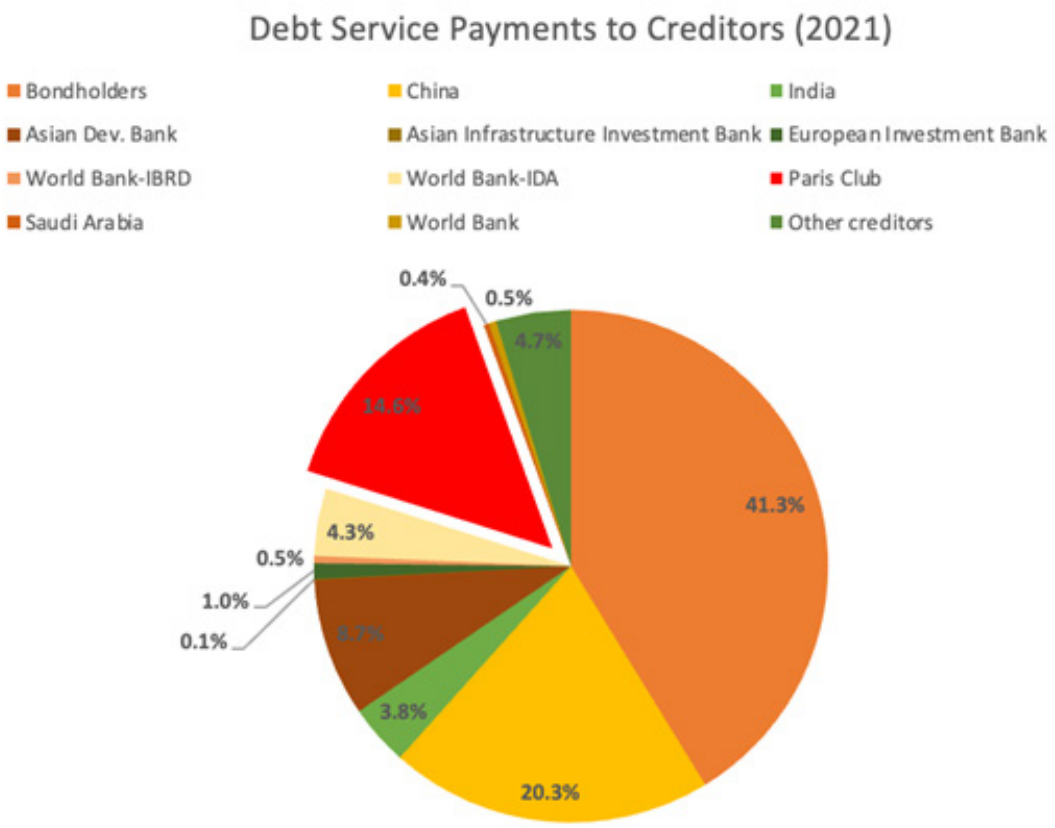


Figure 3: Debt Service payments to creditors (2021)

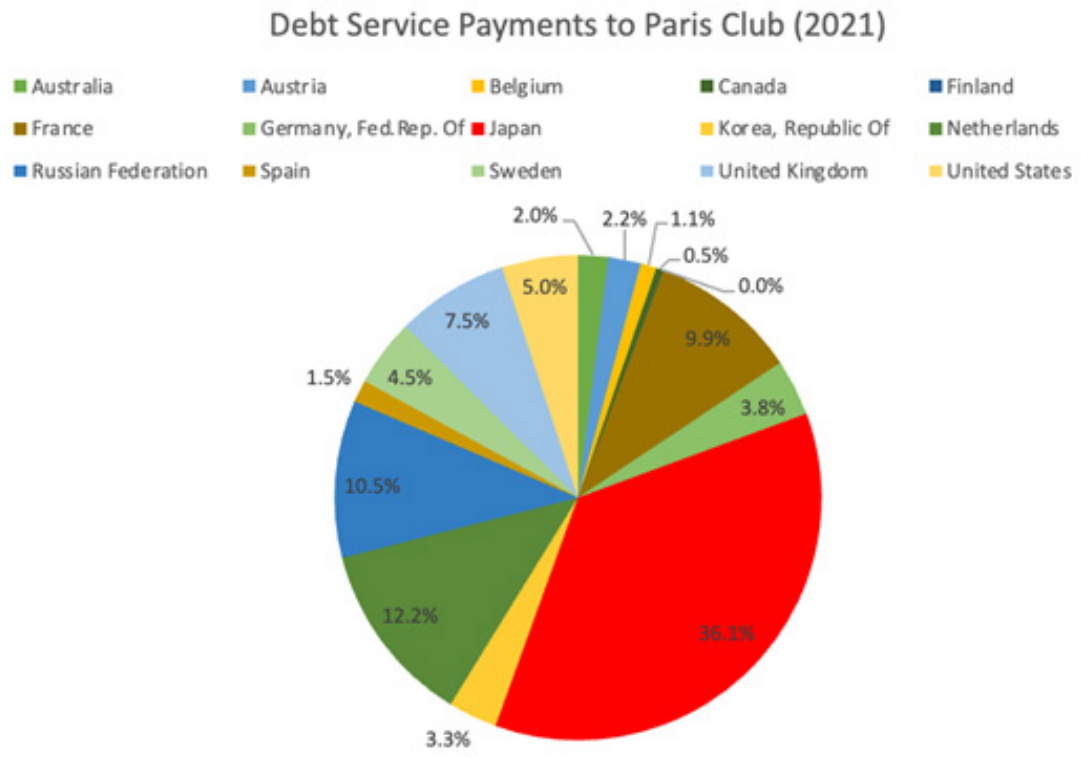


Figure 4: Debt Service payments to Paris Club (2021)

FISCAL STRATEGY

OVERVIEW

In order to accelerate implementation of the Climate Prosperity Plan, Sri Lanka will also avail of available fiscal tools. The fiscal strategy aims to shifting market-wide dynamics in such as way as to promote stronger economic growth and higher public revenues on a continuous basis (without interruption) even as certain income and expenditure flows would change compared to the present situation.

Total government revenues are projected to increase in the BAU scenario, from LKR 2.2 trillion in 2022 to LKR

19.6 trillion by 2050, mostly driven by economic performance. In the CPP scenario, total government revenues in 2050 increase to LKR 26.1 trillion, which is a third higher (32.8% higher) than the BAU scenario. This is despite the fact that the composition of energy taxes changes with the implementation of transition and resilience measures. The development of total government revenues is presented in Figure 1.

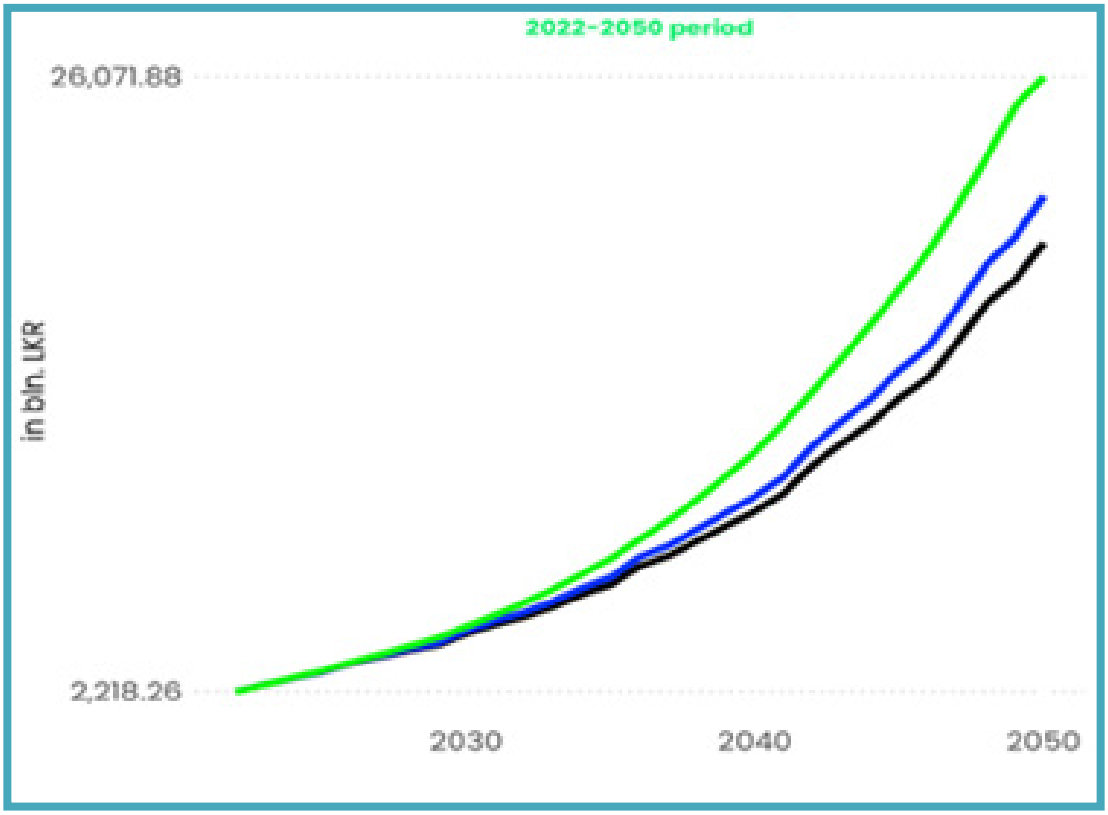


Figure 5: Total government revenues

TAX REVENUES & EXEMPTIONS

The increase in government revenues projected under the CPP scenario is mainly driven by the effect of increased VAT and income/profit tax taking due to greater expected economic activity due to lower climate losses, more efficient energy, land and water use, and a financially protected economy, among other aspects unique to the CPP scenario. In these respects the CPP scenario is not only budget neutral – it does not require any net additional outlays in public expenditure over the medium or long-term – but also public revenue positive at all stages.

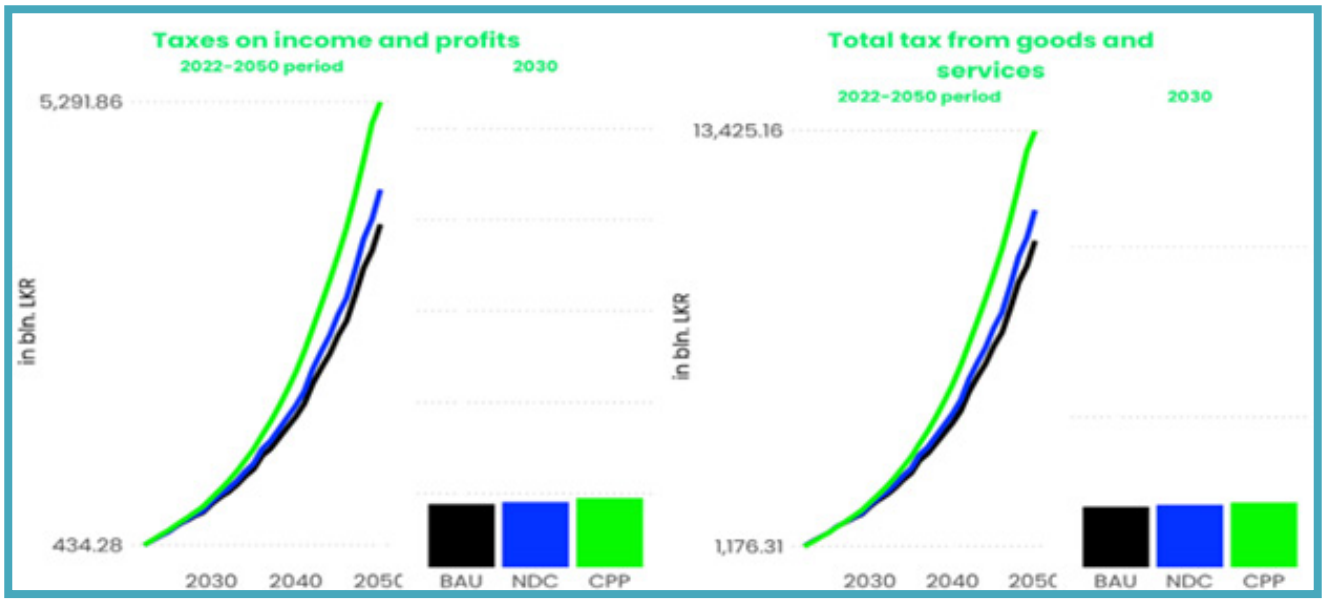


Figure 6: Taxes on income and profits and total tax from goods and services

The CPP scenario also proposes a gradual introduction of VAT on electricity between 2022 and 2025. This is in order to recoup forgoing fuel tax revenues as energy use gradually shifts in focus to electrification. Under this proposal, VAT would apply on 25% of all electricity supply in the period 2023-4, and on 50% of electricity supply as of 2025, reflecting exemptions for lower income and at-risk economic sectors.

The CPP scenario includes a temporary fiscal incentive via an exemption to VAT and import taxes on electric vehicles in order to accelerate the transition to an electrical vehicle fleet. The cumulative tax break between 2022 and 2030 is estimated to total LKR 157.8 billion at which point it would be phased out due to projected future electric vehicle purchase costs reaching parity with fuel-powered vehicles, if not being more price competitive than them.

KEY MEASURES

Target 1.1 90-100% of outstanding renewable energy potential financed.

PROJECT NAME	Sri Lanka Offshore Wind Array
PROJECT TYPE	Renewable energy
PROJECT SECTOR/SUBSECTOR	Wind energy
PROJECT DESCRIPTION	Offshore wind mega-project to be implemented for domestic consumption and potential electricity export to the region, harnessing the wind resources in the ocean area between Jaffna and Puttalan.
PROJECT RATIONALE	Considering Sri Lanka's land constraints as well as the abundant wind resources at disposal around the island, the Sri Lanka Offshore Wind Array will be implemented with a primary view for domestic consumption, maximizing opportunities for the island, harvesting renewable energy to meet domestic needs and enhancing national energy security, while also building capacity to position Sri Lanka as a regional exporter of electricity. The project will harness the great offshore wind potential of the area between Jaffna and Puttalan. There is also a good opportunity to situate offshore wind towards India to support electricity export opportunities.
OBJECTIVES	500 MW by 2025 2 GW by 2027 3GW by 2028 4GW by 2029 5 GW installed capacity by 2030
FINANCING VOLUME	USD 16 billion over 8 years
GOVERNMENT	Support with a PPA guarantee for domestic and corporate guarantee for the domestic firm for international offtake
OFFICIAL PUBLIC SOURCES (MDBS)	25% MDB debt 5% first loss from MDBs or GCF
PRIVATE SECTOR	50% private debt and 20% equity
CONCESSIONAL/DE-RISKING TOOL OR GRANT	5% guarantees (including a subsidy account to index tariffs against the US dollar and to ensure local currency financing to the maximum)

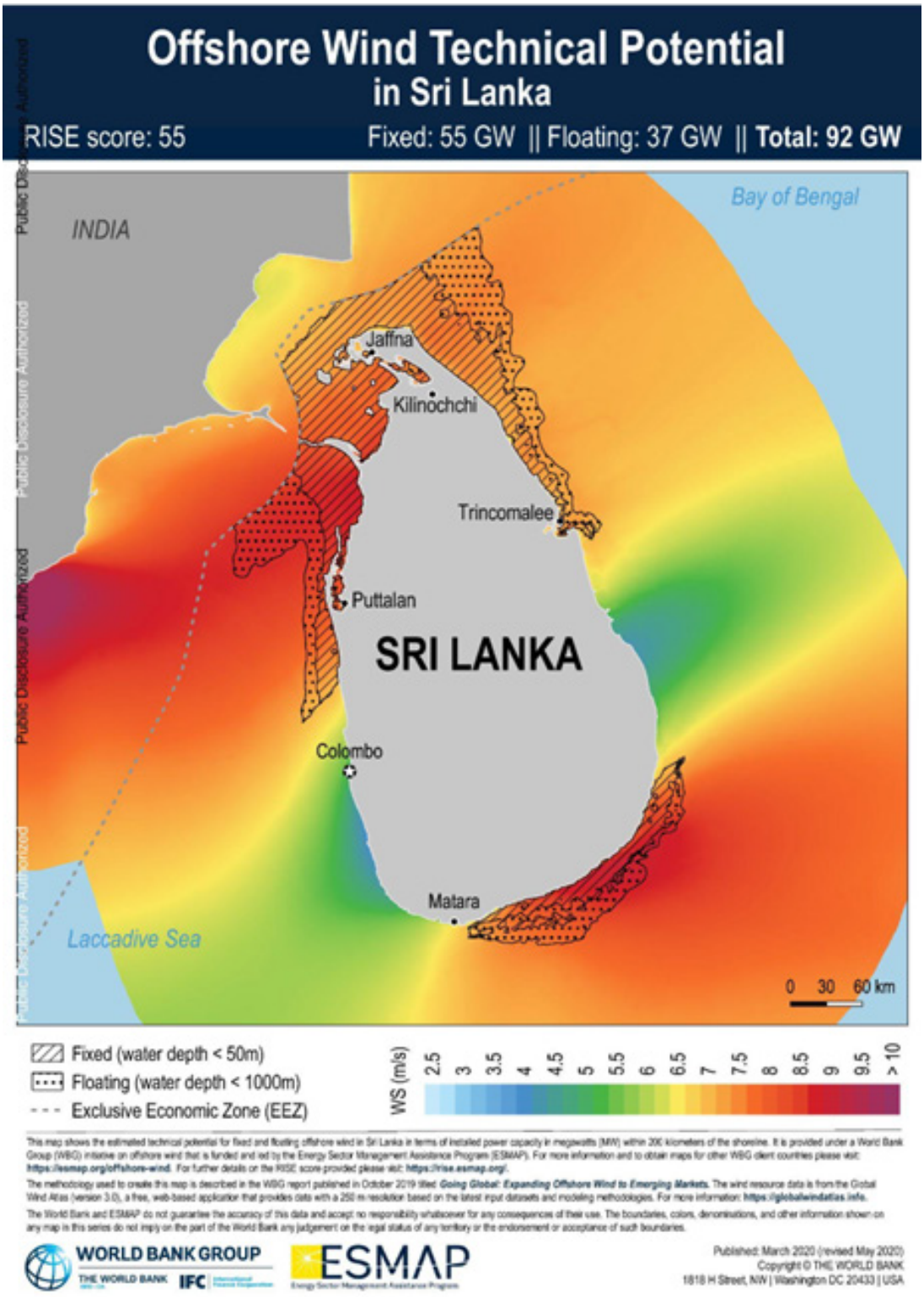


Figure 7: Offshore wind technical potential in Sri Lanka (World Bank, 2020)

Target 1.2 .Contribute to grid connection partnership in South Asia.

PROJECT NAME	India-Sri Lanka power marine cable line (Madurai–Anuradhapura)
PROJECT TYPE	Grid modernization
PROJECT SECTOR/SUBSECTOR	Power/Energy
PROJECT DESCRIPTION	Proposed project to link the national grids of India and Sri Lanka through power marine cable
PROJECT RATIONALE	A strong regional grid is vital for South Asia to benefit from the low-cost renewable energy resources across the subcontinent. The joint transmission network can create new job opportunities, crowd-in regional investment and electricity export opportunities for Sri Lanka.
OBJECTIVES	Strengthening of the electricity transmission network to meet additional regional generation capacity needs that deliver regional energy security and price stability
FINANCING VOLUME	USD 100 million over 2 years Official Public Sources (MDBs): 50% concessional loan Private sector: 15% private equity and 30% debt Concessional/de-risking tool or grant: 5% grant

Targets 2.1 (Promotion of electric mobility and hybrid vehicles), 2.2 (100% of public transportation, including suburban railway, is electrified including through retrofitting) & 2.3 (Share of non-motorized transportation increases to 30% of all road trips)

PROJECT NAME	Moving Green: Shifting the Transportation Landscape of Sri Lanka
PROJECT TYPE	Transportation
PROJECT SECTOR/SUBSECTOR	Electric vehicles, public transportation, non-motorized transport
PROJECT DESCRIPTION	The aim of this program is to decarbonize the transportation system of Sri Lanka through a range of interventions aiming at: Accelerating the shift towards electric vehicles through the provision of tax incentives for electric vehicle purchasers Expanding and electrifying the public transportation network, notably through the Colombo Light Rail Transit (LRT) Project Incentivizing non-motorized transportation through the expansion of the bike lanes network
PROJECT RATIONALE	As per capita income increases, more people favor private vehicles for their transportation needs. This contributes to growing rates of emissions from the transportation sector, in addition to densifying traffic and air pollution. Reversing this trend will require capturing the benefit of the transition upfront through incentives that can make electric vehicles more affordable earlier, and developing an efficient and well-connected public transportation system that makes private cars less essential; and creating an environment that is safe and enjoyable for people to bike and walk in. Shifting the transportation sector towards a greener, low-carbon alternative will not only have efficiency benefits for the economy, but also includes health co-benefits as a result of reduced air pollution and increased physical activity.The development of the LRT in Colombo will also generate opportunities for job creation.
OBJECTIVES	Set up a tax break to bring forward the benefits of electric mobility through incentivizing the purchase of electric vehicles over fossil-fuelled vehicles Develop light rail transportation in Colombo Set up bike lanes in relevant roads
FINANCING VOLUME	USD 2 billion over 20 years

Government	5% preferred equity
Official Public Sources (MDBs)	30% concessional debt
Bilateral Sources	50% concessional debt
Private sector	15% equity
Concessional/de-risking tool or grant	5% for subsidy to obtain currency hedge

Target 3.1 75% of new jobs supported by re-skilling and training for industries of the future.

PROJECT NAME	Sri Lanka Climate University
PROJECT TYPE	Education
PROJECT SECTOR/SUBSECTOR	Tertiary education, workforce skilling
PROJECT DESCRIPTION	The Sri Lanka Climate University will be created as a hub for tertiary education with a distinct focus on building capacity and knowledge around climate change as well as skilling for the jobs of the future, e.g. engineering for renewable energy and adaptation solutions, construction, installation and maintenance of renewable energy infrastructure, resilient agricultural practices, etc. The University will focus on training professionals that respond to the needs of the labor market. To do so, focus will be put on building practical skills and students will learn through both attending lectures and participating in traineeships that provide them with on-the-job experience. Lectures will be given by a mix of academics and experienced professionals in the field. As a further step, the University may open branches in other countries of the South Asia region, such as the Maldives.
PROJECT RATIONALE	As climate change transforms our societies and the nature of the labor market, it is crucial not only to adapt and mitigate the immediate impacts of the changing climate, but also to invest in long-term societal transformation through equipping workers with the skills and knowledge needed to fully harness the job-creating potential of the markets of the future. Having young professionals trained to understand the challenges of the climate crisis and skilled to deploy renewable energy infrastructure and adaptation solutions will enable Sri Lanka to rapidly transition its economy. In addition, the skilling of the workforce geared towards green industries of the future will also contribute to securing a transition that is just and that doesn't leave workers on the side of the road.
OBJECTIVES	Pilot the training programs with a cohort of 1000 students Build capacity to train 5000 students a year by 2030 Build capacity to train 10'000 students a year by 2035, with a total of 55'000 students trained over the decade
FINANCING VOLUME	USD 2 billion over 20 years

Private sector	10% Domestic Equity
Concessional/ de-risking tool or grant	80% Grant
Other Funding (type and amount)	10% Domestic Loan

Target 3.3 90-100% of climate at-risk communities implementing sustainable land and water management practices

PROJECT NAME	Climate Resilient Villages (CRVs) Programme
PROJECT TYPE	Resilience/Climate related
PROJECT SECTOR/SUBSECTOR	Climate Change
PROJECT DESCRIPTION	Enhancing resilience to reduce the climate vulnerability and improve adaptive capacity of local communities and villages in Sri Lanka to cope with adverse impacts of climate change.
PROJECT RATIONALE	Climate resilient village (CRV), is a concept developed to provide stability to agriculture productivity and household incomes and resilience through livelihood diversification in the face of extreme climatic events like droughts, floods, landslides, cyclones, heat wave, and seawater inundation.
OBJECTIVES	Activities identified by the project will contribute in achieving the objectives of NEP and NCCPSL while implementing the actions identified in NAP and NDCs. Enhancing resilience to reduce the climate vulnerability and improve adaptive capacity of local communities and villages in Sri Lanka to cope with adverse impacts of climate change
FINANCING VOLUME	USD 500 million by 2025

Government	20% budget support
Official Public Sources (MDBs)	40% blended funds
Private sector	20% equity
Concessional/de-risking tool or grant	20% grants

Target 4.2 Increase available financing envelope for climate projects by 100% through debt-for-climate swaps

<table>
<tr><td>PROJECT NAME</td><td>Debt for Climate Swap</td></tr>
<tr><td>PROJECT TYPE</td><td>Debt sustainability</td></tr>
<tr><td>PROJECT SECTOR/SUBSECTOR</td><td>Cross-cutting</td></tr>
<tr><td>PROJECT DESCRIPTION</td><td>Sri Lanka Finance ministry receives a budget line to have 5 people work on debt for climate swaps for 3 years, with the result that they should be able to increase available financing for climate projects through debt for climate swaps.</td></tr>
<tr><td>PROJECT RATIONALE</td><td>Portfolio-level DFC swaps can reduce the level of indebtedness as well as free up fiscal resources to be spent on green investments. The idea is to unlock fiscal space for increasing momentum on climate investments while reaching levels of debt sustainability.</td></tr>
<tr><td>OBJECTIVES</td><td>Create the enabling conditions and project documents for debt for climate swaps with a climate vulnerable economy framework. For example, though refined policy commitments and identification of practical climate interventions for swap with business as usual fossil fuels or other projects in the portfolio.</td></tr>
<tr><td>FINANCING VOLUME</td><td>USD 10 million to 2025<table><tr><td>Official Public Sources (MDBs)</td><td>40% grant/technical assistance</td></tr><tr><td>Private sector</td><td>50% grant support to enable a debt restructuring</td></tr><tr><td>Concessional/de-risking tool or grant</td><td>10% grant</td></tr></table></td></tr>
</table>

Target 6.2 Extend financial protection including through risk transfer against climate related disasters for 30% of key supply chains and industry.

PROJECT NAME	Sustainable Insurance Facility: Sri Lanka MSME Digital Bank Insurance
PROJECT TYPE	Resilience / Insurance
PROJECT SECTOR/SUBSECTOR	Economic growth / Livelihoods / Poverty reduction
PROJECT DESCRIPTION	Integration of MSME insurance as core offering via Sri Lanka private sector banks and wholesale buyer / seller associations during digitization of 600 branch national bank.
PROJECT RATIONALE	Micro and small enterprises are severely affected by climate risk but uninsured in Sri Lanka's core economic sectors of tea, coconut, telecommunications, and transportation. This negatively impacts their ability to recover from loss events as well as to invest in adaptation measures. An active insurance industry, supported by reinsurers, is prepared to underwrite but lacks an efficient and effective last mile. As a result, product tailoring for each sector is also constrained as underwriters require representatives of the insured's to propose their need for quotation.
OBJECTIVES	Businesses with less than 20 employees including survivalist farmers, shop kiosk owners, delivery truck drivers, and their families (direct beneficiaries). Sri Lanka large corporations and economy which rely on the MSMEs (indirect beneficiaries).
FINANCING VOLUME	USD 7M investment 2023-2028 Official Public Sources (MDBs): $6M VAR Private sector: $1M Concessional/de-risking tool or grant: $1M Grant

MACRO-ECONOMIC OUTCOMES

Pursuing Sri Lanka's Climate Prosperity will enable a significant improvement of a wide range of the most important socio-economic and environmental outcomes compared with BAU or even with full implementation of Sri Lanka's Paris Agreement NDC. This includes enhanced economic outcomes, improved social conditions, better health and enhanced biodiversity. Indeed, a boost is provided across all relevant Sustainable Development Goals by pursuing the CPP, enabling these to be met faster or earlier.

ECONOMIC

- With the CPP, economic growth until 2030 is 1% on average more than a BAU scenario, but on average 1.5 times as strong thereafter, representing a significant expansion in overall economic and business activity under the CPP scenario

- This expansion in economic output is accompanied throughout by constantly expanding disposable incomes and savings, with 1.5 times the level of disposable income by 2050 versus the BAU scenario in the CPP case as well as close to 1.5 times the level of savings

- Consequently the population living in poverty reduces at a faster rate in the CPP scenario than either BAU or NDC, with almost 4% less of the national population living in poverty by 2050

- Driven by CPP creation of some 300,000 additional green jobs' over the strategy timeframe, total unemployment is consistently better in all time periods and less than half of that of the BAU or NDC scenarios by 2030

- The net trade balance is evenly maintained over all scenarios, but in the CPP scenario there is a fast-declining reliance on fossil fuel and food imports and a shift in focus to other goods and services

- There is a substantial increase in the level of investment mobilized in the economy under the CPP scenario, driven by new transition and resilience measures with total additional real investment (as % GDP) compared to BAU reaching 6.3 percent in 2030 in CPP, though reverting to 1.5 percent by 2050.

SCENARIO	2022-2030	2030-2040	2040-2050	2022-2050
BAU (PERCENT)	3.7	2.9	2.8	3.1
CPP (PERCENT)	4.4	4.3	3.9	4.2
CPP vs BAU	+21.6%	+48.1%	+37.3%	+35.9%

Real GDP growth rate comparison within each scenario.

ENERGY

- As renewable harvesting scales over time, energy affordability constantly scales over time with the CPP scenario demonstrating approximately 5 times the level of energy affordability in 2050 versus the BAU scenario
- Energy efficiency also expands at a much faster rate in the CPP versus BAU scenario, ultimately also reaching close to 8 times the level of efficiency increases by 2050 than under BAU
- Non-motorized transport (NMT) scales to 30% of all vehicle trips by 2035, supported by 26,000 km of NMT infrastructure in the CPP scenario
- The health benefits of NMT entail a reduction in the relative risk for diabetes and overall mortality of 39%, while the relative risk for cardiovascular diseases and cancer-related mortality declines by 33% respectively, compared to the BAU scenario

ENVIRONMENT

- Lethal levels of outdoor and indoor air pollution are steadily minimized and reach near zero levels by the early 2040s, with very significant public health benefits under the CPP scenario – the annual death rate due to air pollution falls from 0.1% of the population to zero prior to 2050 – whereas under BAU relatively high levels of air pollutants prevail throughout the strategy timeframe

- In a significant boost to biodiversity, under the CPP scenario forest cover rebounds beyond the NDC target from around 2 million hectares today to 2.4 million hectares in 2050, supported by international carbon finance, compared to stable or slight declines in forest cover under a BAU scenario

- The CPP strategy to maintain the high proportion of the population of Sri Lanka whose diets are overwhelmingly or exclusively plant-based (mainly vegetarian/vegan) runs against BAU trends towards increasing imports and domestic production of meat.

- GHG emissions decline steadily and steeply and cross into net negative territory in the 2040s, making Sri Lanka a carbon and GHG negative – a net climate pollution negative - economy

SDGS

- The CPP scenario significantly boost 10 of the most relevant of the 17 Sustainable Development Goals

- The largest boost to progress is felt to the health (3) and climate (13) SDGs of around 50% versus what progress would have been achieved under BAU

- Other SDGs with strong boosts include Industry and Energy, whose progress is accelerated by around 20% or more versus BAU

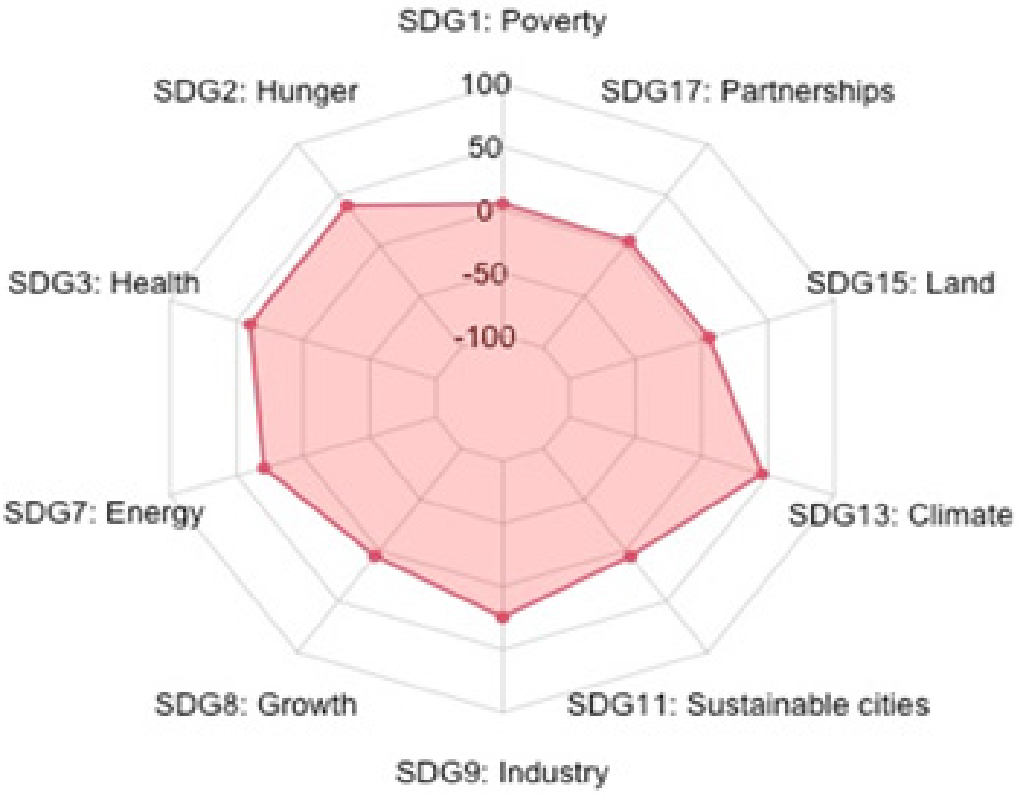


Figure 8: SDG boost

DETAILED MACRO-ECONOMIC ANALYSIS

OVERVIEW

The Climate Prosperity Plan (CPP) is a new framework for energy transition and resilient development conceived for the Climate Vulnerable Forum (CVF) and the Vulnerable 20 (V20) members to prosper in a context of climate change. The CPP aims at planning energy transition and advocating for a faster transition at both national and global levels. In this context, the Green Economic Model (GEM) is used to simulate the impact of a government-endorsed CPP strategy at the country level, based on different scenarios and pathways to identify the most viable investments. The analysis is multidimensional and takes into consideration many variables relevant to sustainable development: economic (e.g., GDP growth or trade balance), social (e.g., employment) and environmental (e.g., air pollution) indicators. The results provide a robust perspective on the benefits associated with the implementation of the CPP in Sri Lanka.

The CPP scenario, one of the scenarios tested by GEM, is a competitive economic development strategy and is profitable for Sri Lanka as it allows significant improvements in various sectors of the society. Indeed, it accelerates the country's growth, increasing the real GDP by 35.9% between 2022 and 2050. In the same way, under this scenario, the poverty rate decreases by -9.7% driven by a 20.4% increase in the per capita disposable income compared to the baseline scenario.

Another perspective of this analysis is to see how the CPP scenario impacts the fiscal space at the country's level. For the case of Sri Lanka the government revenue will vary on average during the period 2022-2050 by +23.5% compared to the baseline supported by the +24.9% and +22.1% change in the taxes on income and profit and the total taxes on goods and services. By focusing on the energy taxation, the energy tax income will go from 86.0 billion LKR 2022 to 19.0 billion LKR in 2050 which is an average variation of -60.1% in comparison to BAU.

From a social perspective, the CPP scenario also generates employment and supports a resilient economic growth in the future. In fact, the unemployment rate goes from 6.0 percent in 2022 to 3.7 percent in 2050. On average this represents a decrease of 47.9% over the period of 2022 to 2050 between the scenarios. In the CPP scenario, +553.6% more green jobs (see glossary for details on definition) are

created compared to the baseline scenario.

From an energy perspective, the implementation of the CPP also yields meaningful benefits. It allows the energy bill as share of GDP (see glossary) to go from 3.7 percent in 2022 to 0.8 percent in 2050. On average this is a decrease of 44.8% compared to the BAU scenario over the period. Energy becomes more affordable overall (+132.7%) driven by increased economic growth, the transition to renewables and higher energy efficiency. The electrification and higher efficiency also reduce energy demand and support the decoupling of economic growth and energy consumption. The CPP scenario, considering maximum effort for both energy transition and adaptation, stimulates economic performance and job creation both by reducing costs of climate change (adaptation) and by increasing economic productivity (transition).

From a health perspective, the CPP strategy will allow a complete removal of the mortality related to air pollution by 2050 due to the average 63.4% decrease of PM2.5 index over the course of the next 28 years compared to the BAU scenario. The mortality risk related to cardiovascular diseases and diabetes is respectively impacted by -25.7% and -30.4%. The cost of obesity as share of GDP will also be reduced in comparison the BAU by 16.1% by 2050.

The prosperity measures also lead to a significant reduction in GHG emissions down to -1.4 million tons GHG by 2050. The cumulative damages of climate change (see glossary for details on definition) will be reduced to to 6,405.6 billion LKR in 2050 in comparison to 7,666.6 billion LKR in BAU. The implementation of the CPP scenario increases the capacity for loss and damage payments by 16% compared to the baseline.

The implementation of the CPP scenario will require an average annual investment of 7 billion USD over the 2022-2050 period. This represents an additional investment of 6.5 billion USD compared to BAU. The investments in adaptation will result in 20.8 billion USD in avoided damage cost. The funding requirement to implement the CPP is commensurate with its impacts and the expected gains largely compensate for the investments, already by 2030. These investments in the CPP are economically viable as they stimulate economic activity, reduce poverty, generate jobs, and curb emissions and air pollution. Several funding options are available, and a good balance between public and private financing should be sought, based on the benefits accrued by different economic actors.

As a whole, the CPP scenario generates a benefit to cost ratio of 2.3, meaning that every dollar invested in transition and low-carbon activities will result in a gain of US$2.3.

MODELING GUIDELINES AND FINDINGS

SCENARIO OVERVIEW

The CPP strategy is a development framework that has the objective of supporting a faster transition towards a low-carbon and climate-resilient development model through policy making, programs and investments. The pertinence of the CPP is here simulated and tested through GEM which has been augmented with new indicators relevant for the strategy. For that GEM is structured into four components: 1) The creation of several low carbon development pathways that maximize economic and social development; 2) The identification of the most viable resilient investments that strengthen the economy and society by ensuring their ability to withstand climate shocks; 3) The assessment of the most relevant mechanisms for risk transferring; And 4) The production of a Cost Benefit Analysis (CBA).

The CPP strategy's impact is simulated through three scenarios: 1) The Business as usual (BAU) scenario; 2) The Nationally Determined Contribution (NDC scenario); And; 3) The Climate Prosperity Plan (CPP) scenario which follows the policy's target of the strategy.

THE BAU SCENARIO CONSTITUTES THE BASELINE SCENARIO

in which no additional adaptation nor mitigation measures (beyond those that are currently approved by law) are implemented. In essence, the BAU scenario represents the scenario of inaction in which current trends continue to play out according to past behavior.

THE NATIONALLY DETERMINED CONTRIBUTION (NDC)

is the scenario where the climate change mitigation and adaptation ambitions for reducing sectoral emissions outlined in the official NDC document are implemented.

THE CLIMATE PROSPERITY PLAN (CPP)

scenario shows the pathway where the country leverages the maximum potential of its domestic renewable energy resources and fully climate-proofs its economy. The assumptions for mitigation and adaptation considered in the CPP scenario are presented in the complementary documentation.

On top of each of these scenarios it is also considered the possibility to invest in reconstruction after an extreme climate event, via the use of a loss and damage fund. This investment is assumed to be conventional, and hence not climate resilient. The adaptation investment of the CPP scenario is instead assumed to be fully climate resilient. While the loss and damage investment is reactive (triggered by climate damage), adaptation investment is implemented to anticipate and avoid climate damage and increase future resilience.

KEY CPP OBJECTIVES

The implementation of the CPP is tailored according to the country's objectives. For the case of Sri Lanka the following objectives from the results framework in particular are expected to be achieved through the implementation of the CPP scenario:

- Financing maximized renewable energy and grid modernization potential and connectivity
- Climate-Smart Agriculture
- Carbon Financing Hub to value blue carbon, soil carbon, forest carbon, etc.
- Sustainable transportation
- Financially protect the economy and livelihoods
- Building resilience to heat and climate-sensitive diseases

KEY CPP TARGETS

The main targets of the CPP strategy in Sri Lanka are:

- Transition to producing in excess of 100RE
- Full electrification and increased energy efficiency
- Implementation of climate smart agriculture and adaptation measures
- Additional resource allocation for compensating loss and damages
- Reforestation and restoration
- Implementation of adaptation measures across various sectors

SIMULATION OUTCOMES

This chapter presents the results of the simulations of GEM in various spheres of the economy. The results presented demonstrate the impact of the strategy on the economy, the society, the energy sector, the environment, and the SDGs.

ECONOMIC

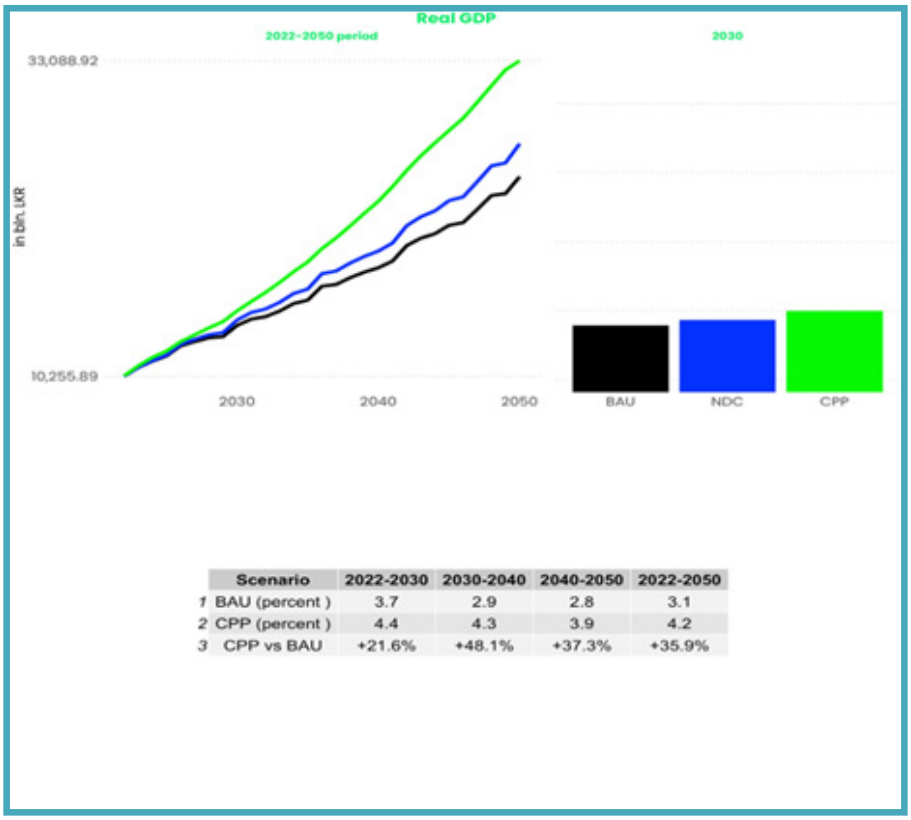
The economic section presents the results of the CPP scenario simulation on the GDP growth and Sri Lanka's disposable income indicators, the stock performance, the trade balance both overall and adjusted for energy trade, the poverty level, the fiscal space and the carbon credit.

GDP GROWTH

The total real GDP is the Gross Domestic Product in constant terms, which is calculated by GEM, calibrated to match the data obtained from the World Bank and the IMF. The base year of the GDP deflator, which is used to calculate the nominal GDP (or GDP in current terms), is based on the World Bank Data Portal (2021). The real GDP growth rate is the annual percent change in the real GDP.

In the BAU scenario the real GDP reaches 10,260.8 billion LKR in 2022 and 13,945.5 billion LKR (2030), 18,115.2 billion LKR (2040), 24,710.9 billion LKR (2050) respectively. The average growth rate between 2022 and 2050 is 3.1 percent per year. This is due to the impacts of climate that continue to affect growth and become worse in the future, mainly driven by heat-related labor productivity impacts as well as increasing temperature-related impacts on agriculture production.

In the CPP scenario the total real GDP is projected to grow to 14,999.1 billion LKR and continue to increase to 22,926.9 billion LKR in 2040 (+26.6% vs BAU) and 33,088.9 billion LKR in 2050 (+33.9% vs BAU) respectively. The average real GDP growth rate in this scenario is 4.2 percent per year between 2022 and 2050. Through the earlier implementation of renewable power generation ambitions and higher transport electrification rates, the benefits of reducing the impact of energy cost and air pollution on total factor productivity are realized, contributing to additional growth. Added to that, compared to the BAU scenario, the volatility of growth is removed almost entirely thanks to the implementation of climate adaptation measures, indicating a more sustainable growth trajectory. The cumulative additional real GDP generated in the CPP scenario totals 1 053.5 billion LKR by 2030, 4 811.7 billion LKR by 2040 and 8 378.0 billion LKR by 2050 relative to BAU scenario.



Scenario	2022-2030	2030-2040	2040-2050	2022-2050
1 BAU (percent)	3.7	2.9	2.8	3.1
2 CPP (percent)	4.4	4.3	3.9	4.2
3 CPP vs BAU	+21.6%	+48.1%	+37.3%	+35.9%

Figure 9: Real GDP

DISPOSABLE INCOME

The real disposable income per capita is the disposable income divided by total population. It indicates the average income (at country level) per person in real terms.

The real disposable income in the BAU scenario increases from 440.0 thousand LKR/person in 2022 to 589.0 thousand LKR/person in 2030 and 1,064.4 thousand LKR/person by 2050.

In the CPP scenario, the real disposable income is projected to be on average over the period 2022-2050, 20.4% higher than in the BAU scenario. It increases from around 441.5 thousand LKR/person in 2022 to 634.5 thousand LKR/person in 2030 and 1,420.2 thousand LKR/person by 2050 which is respectively 7.7% and 33.4% higher compared to BAU.

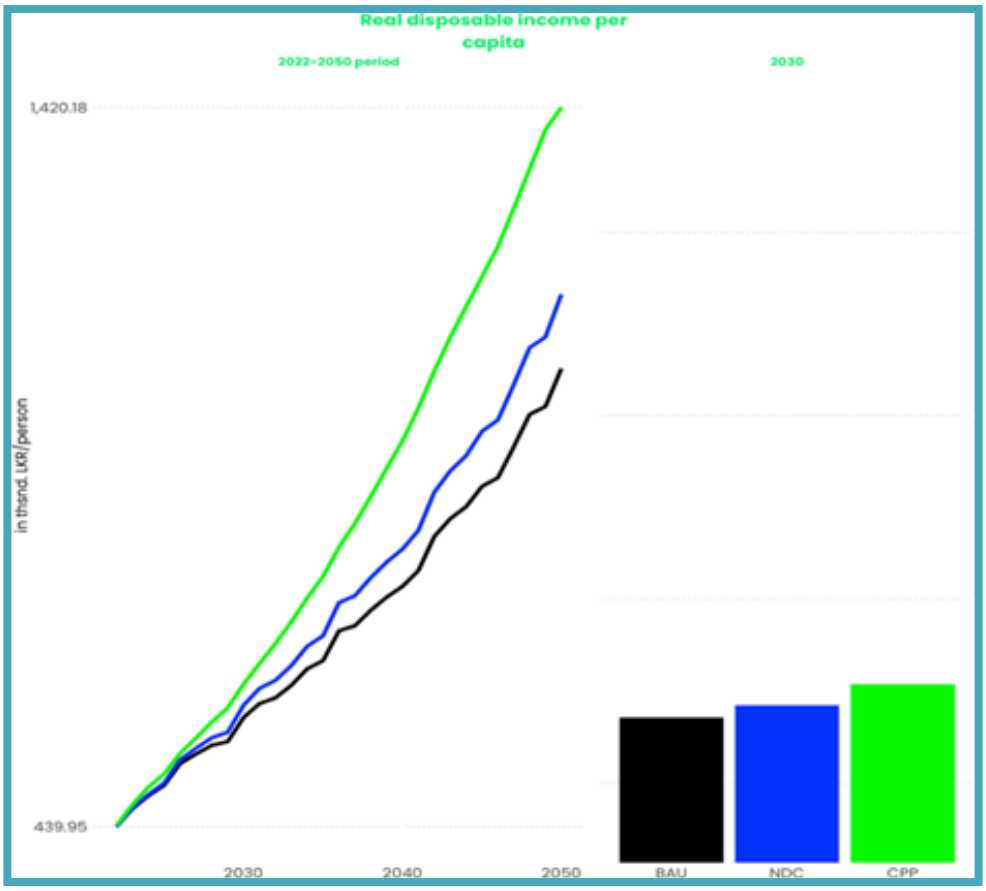


Figure 10: Real disposable income per capita

The increase in disposable income is driven by higher economic growth (+35.9% in the CPP scenario).

The private savings index allows the comparison of the change in private savings at a country level with base year 2020 depending on the simulated scenario.

In the BAU, the private savings index is projected to 1.1 in 2022, 2.3 in 2030, 5.3 in 2040 and will reach 12.1in 2050.

By comparison, the private savings index is projected to be higher in the CPP scenario thanks to the stimulation by additional growth. It is expected to reach 2.6 (+9.7% vs BAU) in 2030, 7.0 (+32.1% vs BAU) in 2040 to finally 17.1 (+41% vs BAU) which represents an average gain of +30.9% over the period.

This index increases as a result of higher economic performance and income leading to higher savings.

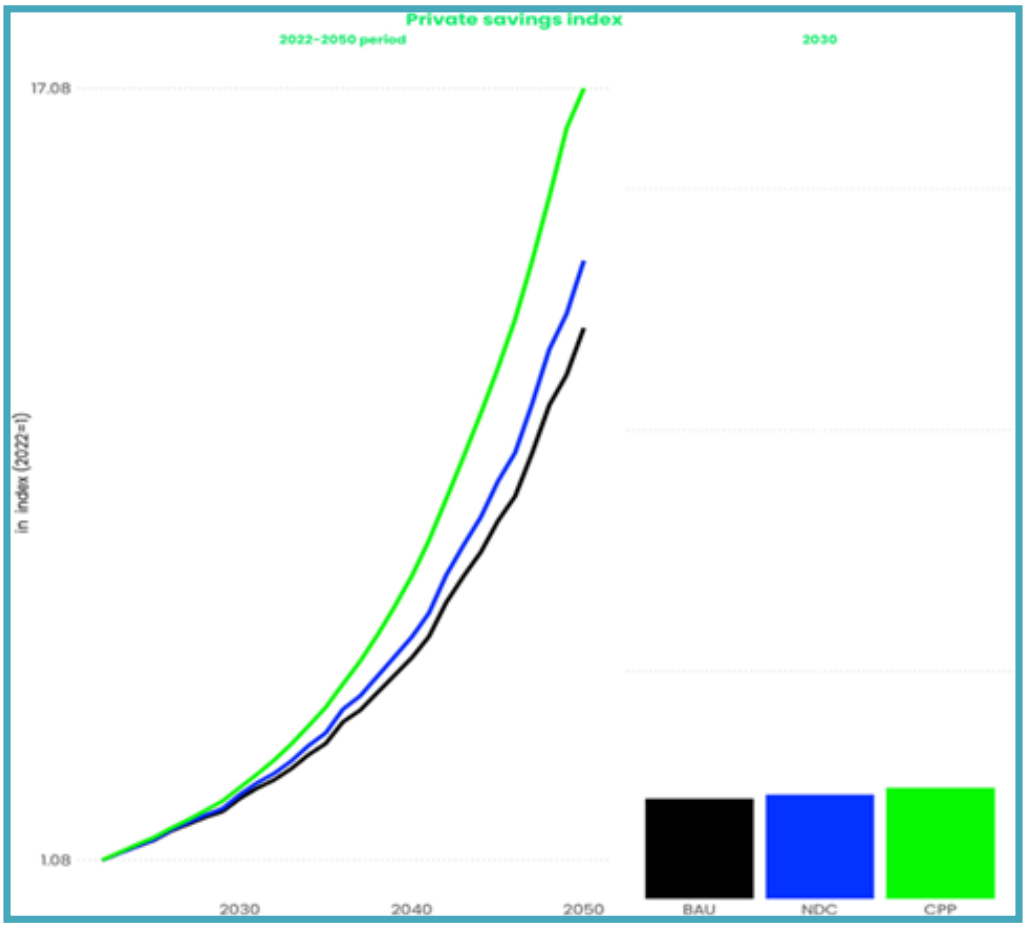


Figure 11: Private savings index

STOCK PERFORMANCE

The base year for all the indexes is 2022 and captures the change across multiple scenarios. The total employment index indicates the change in total employment relative to the base year. It serves for comparing the development of total employment, or more specifically the total number of jobs in the economy across agriculture, industry, and services sectors. The services and industry capital indexes indicate the change in total services capital and total industrial capital relative to the base year. The indexes serve for comparing the performance of the services and industrial sectors, or more specifically their capital accumulation. The forest index indicates the change in total forest land. It serves for comparing the amount of forest land compared to the year 2022, hence the total hectares covered by trees, across multiple scenarios.

The employment index in the CPP scenario is projected to reach 1.1 in 2030, 1.2 and 1.3 in 2040 and 2050 respectively. This represents a gain of performance of +3% by 2030, +3.6% by 2040 and +3.1% by 2050 compared to the BAU scenario.

The industry and services indexes are projected to reach 1.5 and 1.5 in 2030, 2.5 and 2.6 in 2040 and 4.0

and 4.2 in 2050. This represents a gain of performance of +14.2% and +13.6% over the period 2022-2050 in comparison to the BAU scenario.

The forest index, in the CPP scenario also increases to 1.1 in 2030, 1.1 and 1.2 in 2040 and 2050 respectively. The gain of performance is therefore +9.4% at 2030, +16.9% at 2040 and +20.4% by 2050 compared to the BAU scenario.

The changes in industry, services and employment stock performance are driven by higher economic performance unlocked from reduced energy spending and energy related externalities, as well as reductions in climate change damages (CPP scenario). For the forest stock, the land use change and reforestation ambitions are triggers for the increase.

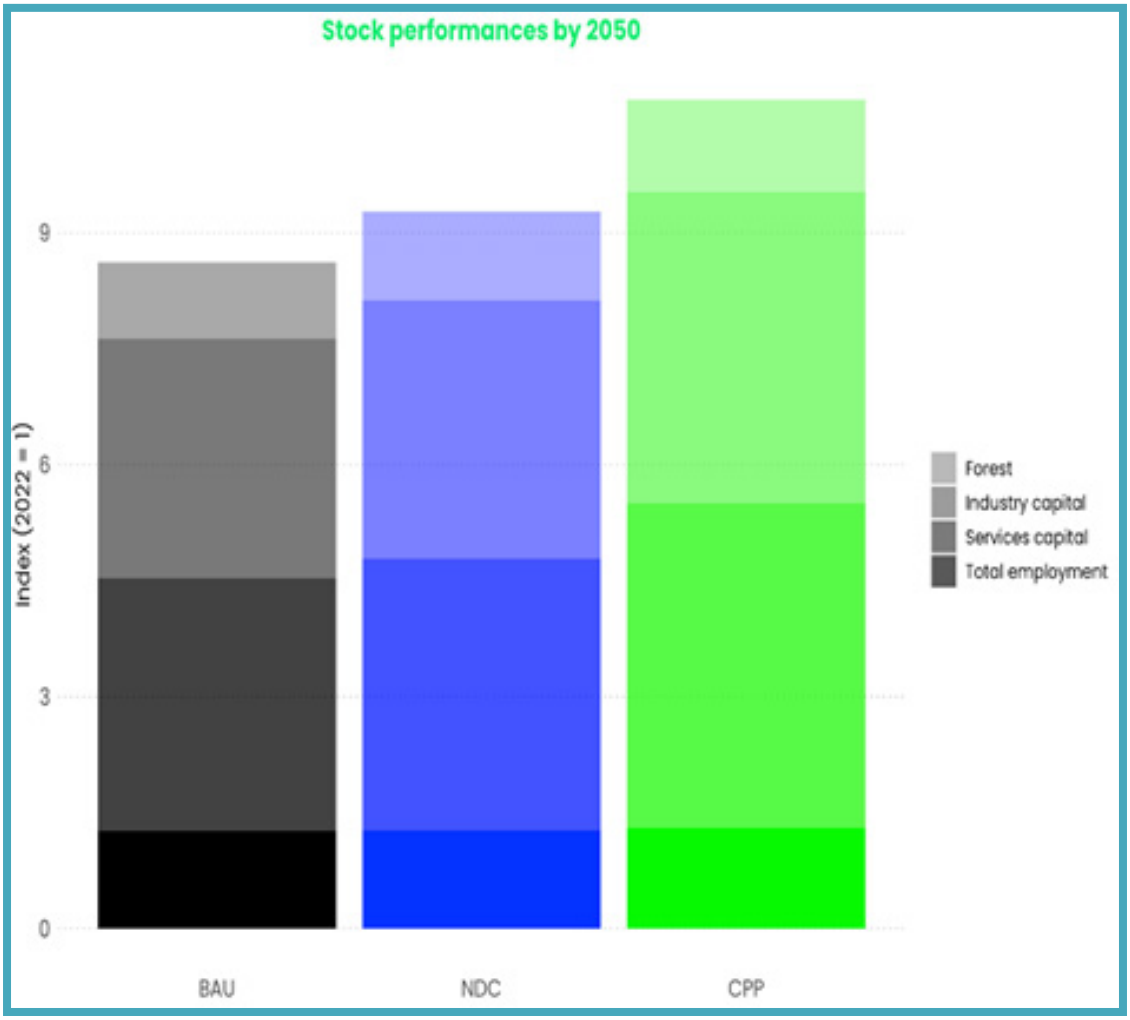


Figure 12: Stock performance

TRADE BALANCE

The trade balance is calculated by deducting total imports from total exports. It indicates whether a country is a net exporter or net importer.

The trade balance rises from 1,200.6 billion LKR in 2022 to 3,736.5 billion LKR in 2050 by gradually reaching 758.4 billion LKR and 1,683.9 billion LKR in 2030 and 2040. When reported to the share of GDP, these amounts represent respectively 2.1 percent , 2.2 percent , and 2.3 percent of the country's GDP.

In the CPP scenario, the trade balance amounts 1,152.7 billion LKR (2022), 591.8 billion LKR (2030), 1,999.8 billion LKR (2040) and 5,064.5 billion LKR (2050). The implementation of the prosperity measures then allows a dynamic of -22% (2030), +18.8% (2040), +35.5% (2050) compared to the baseline. In terms of trade balance as share of GDP, an average -14% change is observed over the period 2022 to 2050.

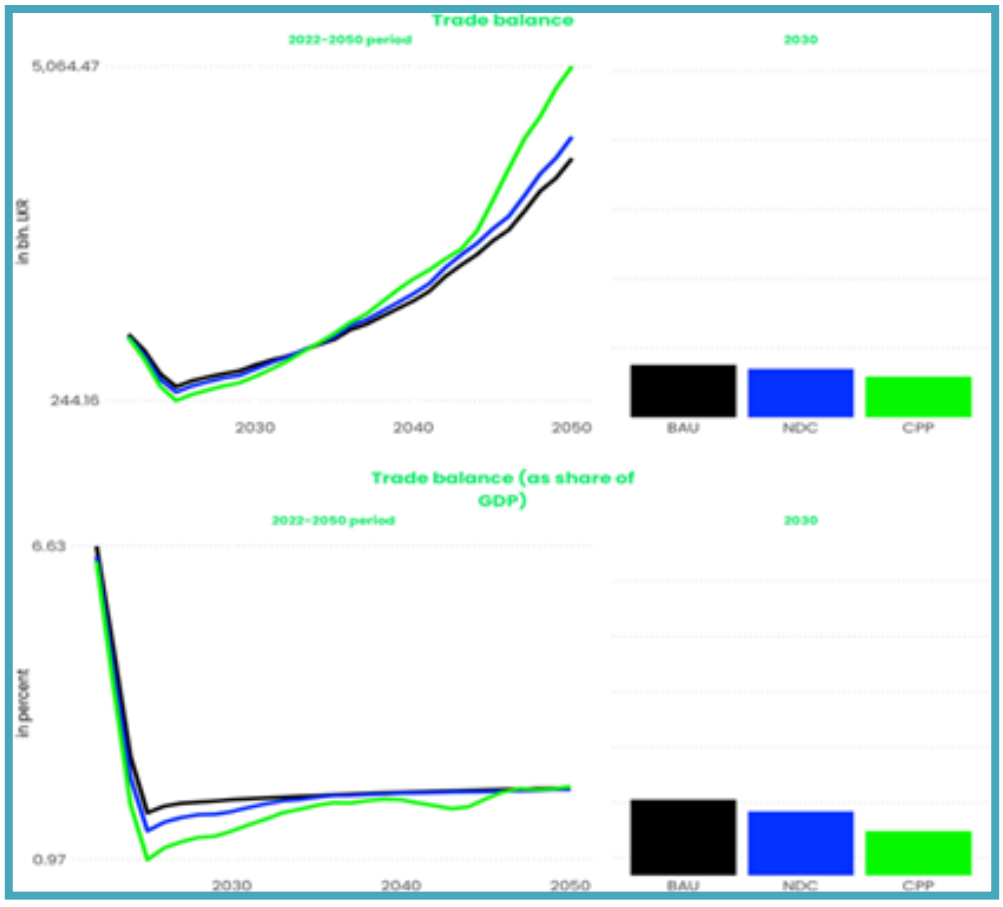


Figure 13: Trade balance

The trade balance is driven by nominal GDP, imports, and exports. More specifically, imports and exports are affected by the dynamics between consumption, investment, and total nominal GDP.

The trade balance adjusted for energy trade is obtained by deducting non-energy imports from non-energy exports. The evolution is presented in absolute values and as share of nominal GDP. In the BAU scenario, the trade balance adjusted for energy trade reaches 1,635.6 billion LKR (2030), 3,494.5 billion LKR (2040) and 7,448.8 billion LKR (2050). These values represent respectively 4.4 percent , 4.5 percent and 4.5 percent as share of GDP.

In the CPP, the trade balance adjusted for energy trade changes in comparison to BAU by -15.8% by 2030 -13.9% in 2040 and reaches a deviation of -13.5% in 2050. This average change when considered as share of GDP is -24.9% over the period 2022-2050.

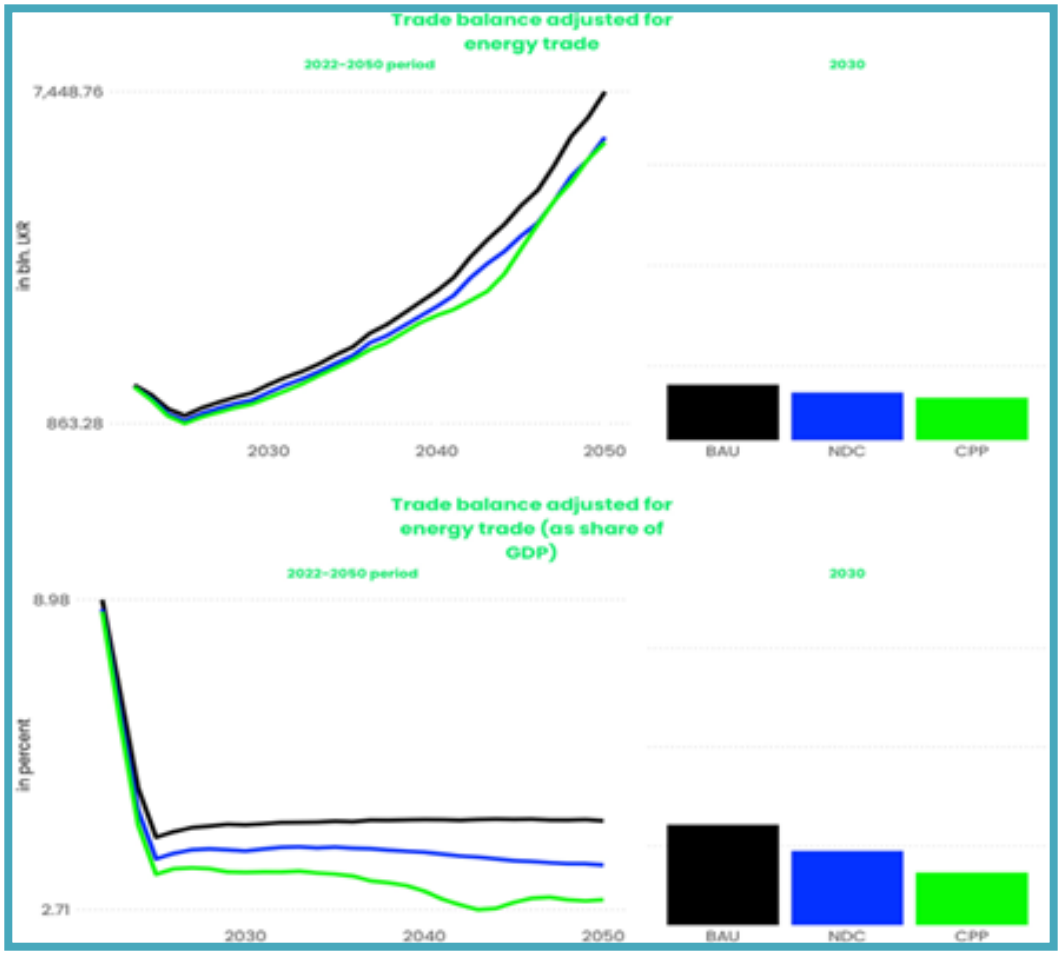


Figure 14: Trade balance adjusted for energy trade

The trend observed in these variables comes from the imports and exports dynamics and the nominal GDP.

The fossil fuel expenditure as share in total imports indicator shows how the share of fossil fuel costs in total imports develops over time.

In the BAU, the fossil fuel expenditure (as share in total imports) is projected to to 8.0 percent in 2022 to 8.1 percent in 2030, 8.0 percent in 2040 and will reach 7.7 percent in 2050.

In the CPP scenario, the fossil fuel expenditure (as share in total imports) amounts 7.9 percent (2022), 4.2 percent (2030), 1.0 percent (2040) and 0.0 percent (2050). The implementation of the prosperity measures then allows a dynamic of -48.6% (2030), -87.2% (2040), -100% (2050) compared to the baseline. The

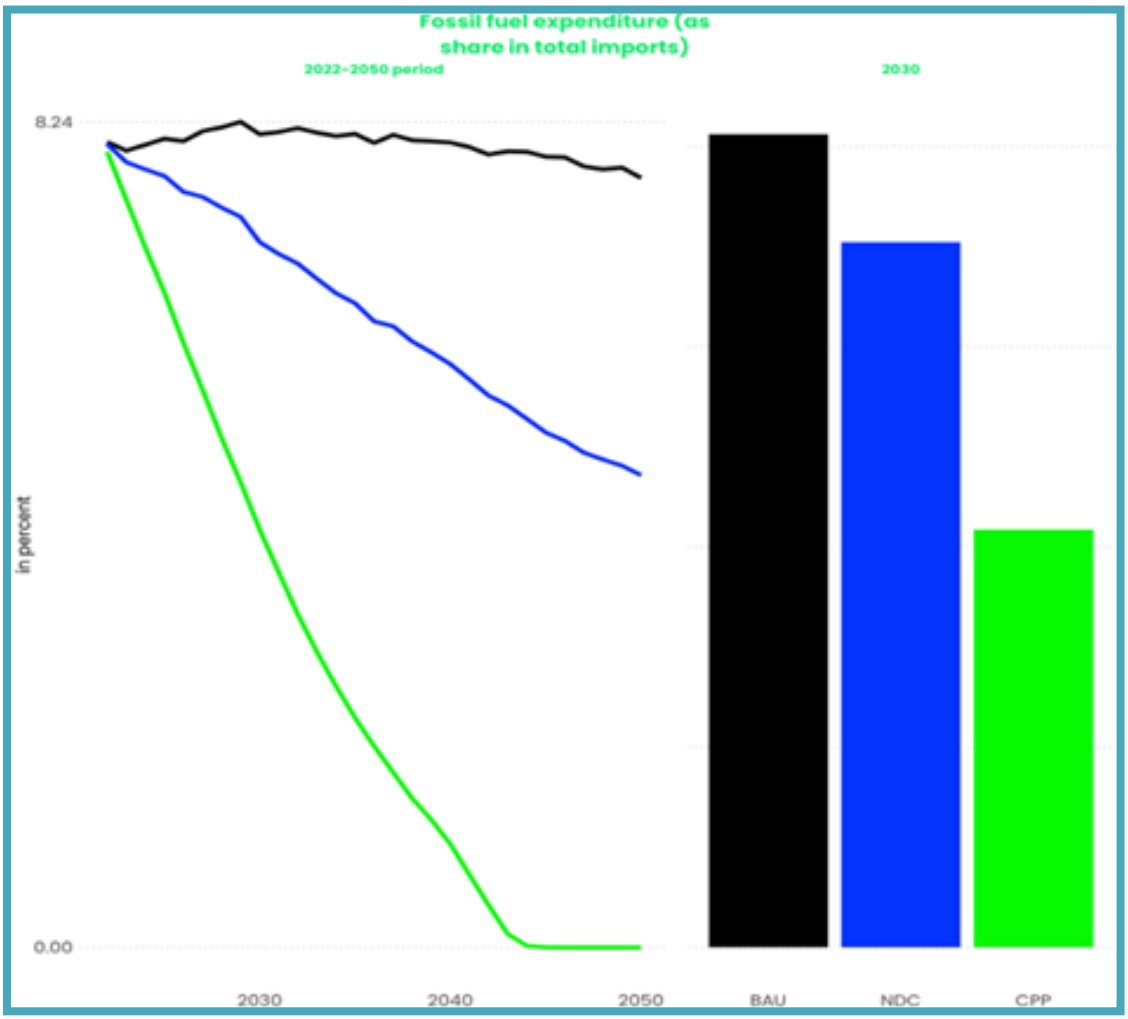


Figure 15: Fossil fuel expenditure (as share in total imports)

implementation of the CPP scenario results in a decline of the fossil fuel expenditure compared to BAU, eventually fully phasing out fossil fuel imports.

FISCAL REVENUE

The total government revenues represent the total annual revenues for the government from taxes, grants and other sources. The taxes on income and profits are the sum of income taxes paid by private individuals and profit taxes paid by corporations and the tax from goods and services constitutes the VAT category of government revenues. The last one is estimated as the sum of energy tax income and the residual VAT. Tax breaks for electric vehicles (EVs) are accounted for in this category.

Total government revenues are projected to go from 2,226.4 billion LKR in 2022 to 19,628.7 billion LKR in 2050 in the BAU scenario with an average of 7,983.8 billion LKR during the period. When focusing on the taxes on income and profits and the total tax from goods and services, these values are projected to 434.5 billion LKR in 2022, 883.7 billion LKR in 2030, 1,844.2 billion LKR in 2040 and 3,952.5 billion LKR in 2050 for the income and profits taxes. The projected amounts in the BAU for the goods and services taxes are 2,355.5 billion LKR in 2030, 4,811.5 billion LKR in 2040 and 10,183.5 billion LKR in 2050.

In the CPP scenario, total government revenues increase from 2,218.3 billion LKR in 2022 to 26,071.9 billion LKR in 2050 (+32.8% vs BAU) by gradually reaching 4,750.4 billion LKR (+6.3% vs BAU) in 2030 and 11,525.1 billion LKR (+25% vs BAU) in 2040. This represent an increase of government revenue between 2022 and 2050 of 23.5% compared to the baseline. The income and profits as well as goods and services taxes are also projected to 435.9 billion LKR (+0.3% vs BAU) and 1,176.3 billion LKR (-1% vs BAU) in 2022 and 5,291.9 billion LKR (+33.9% vs BAU) and 13,425.2 billion LKR (+31.8% vs BAU) in 2050 which represent an average increase over the period 2022-2050 of respectively +24.9% and +22.1% compared to the BAU scenario.

The energy tax income is the sum of taxes from the sales and production of petroleum products and electricity. The reduction in tax revenues from EVs indicates the tax breaks that are paid for the transition phase until cost parity between EVs and internal combustion engine vehicles is reached.

One of the special interests to tax revenues from goods and services is the energy tax income. It is composed of the revenues from sales and production of petroleum (e.g., royalties) and electricity tax income. In the baseline scenario, the total energy tax revenues are projected to 86.9 billion LKR in 2022, 116.1 billion LKR in 2030, 139.8 billion LKR in 2040 and 171.7 billion LKR in 2050. It means an average variation of 105.2 billion LKR between 2022-2030 and 130.2 billion LKR between 2022 and 2050.

In the prosperity scenario, the phase out of fossil fuel vehicles, the electrification of the economy in combination with higher energy efficiency cause energy tax revenues to decline. More specifically the energy tax income goes from 86.0 billion LKR in 2022 to 19.0 billion LKR in 2050 by reaching 70.1 billion LKR 35.5 billion LKR in 2030 and 2040. This is respectively a change of -39.6% in 2030,-74.6% in 2040 and -89% in 2050 in comparison to the BAU.

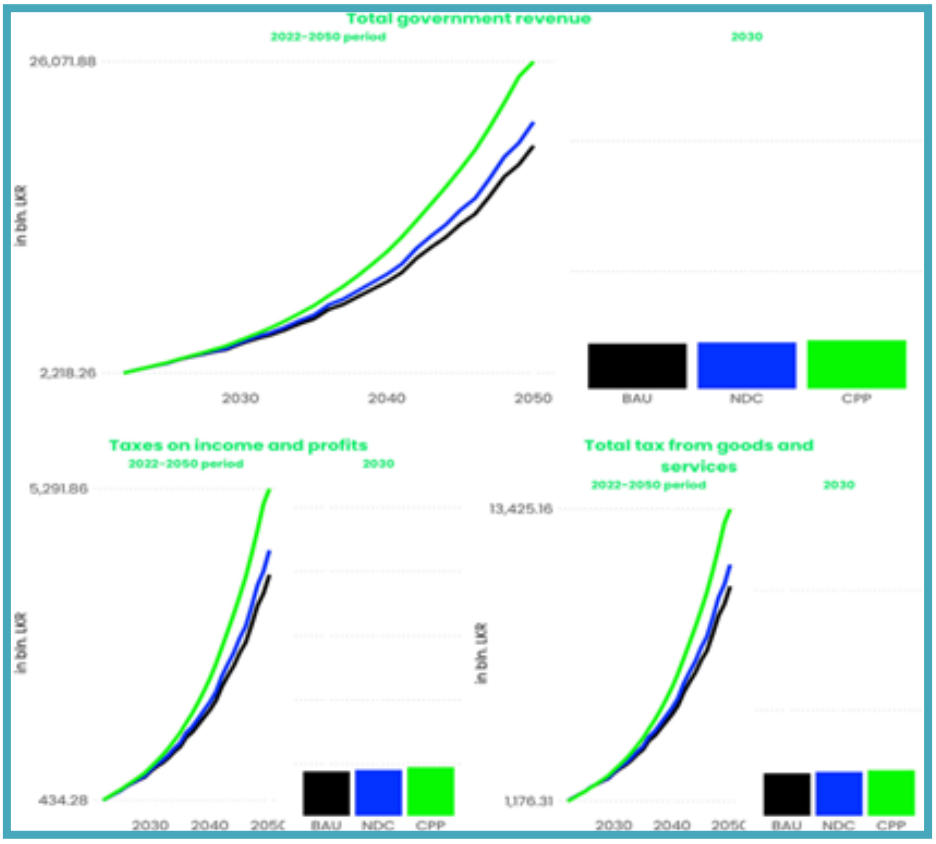


Figure 16:
Government revenue

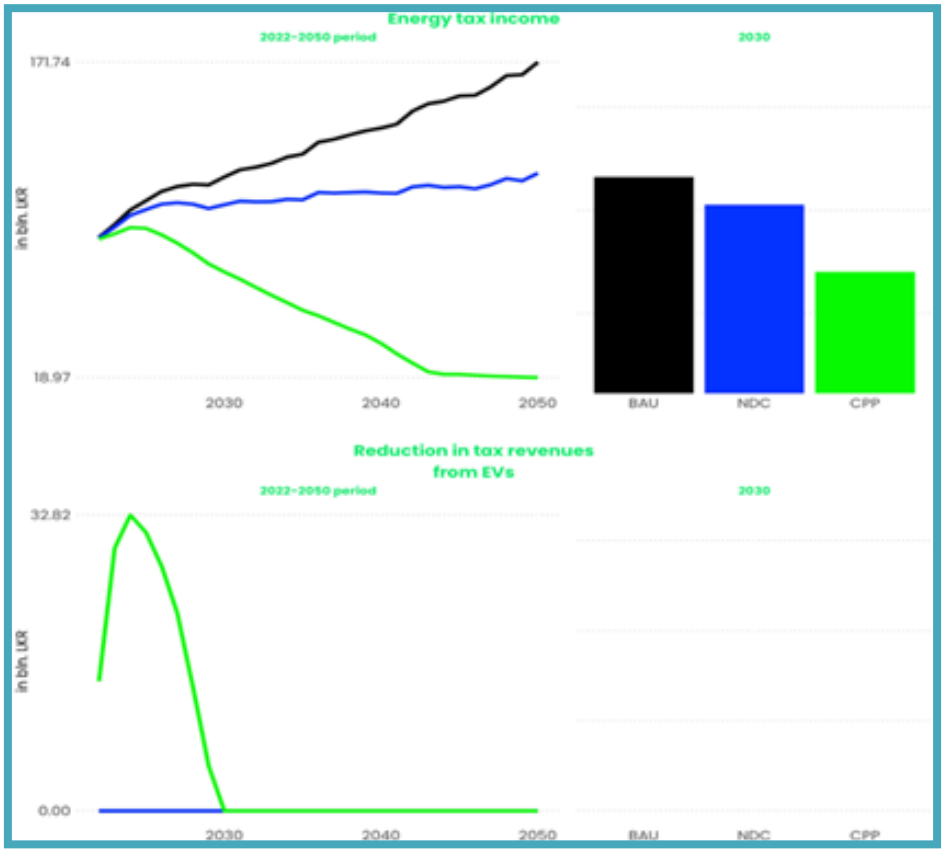


Figure 17:
Energy taxation

The progressive introduction of a VAT on electricity in Sri Lanka will allow the country to balance out the loss of revenue from energy taxation.

Tax revenues from electricity are the revenues generated from electricity sales.

In the BAU scenario, the tax revenues from electricity goes from 2.2 billion LKR in 2022 to 11.3 billion LKR in 2030, 14.1 billion LKR in 2040 and 17.5 billion LKR in 2050.

In the Prosperity Plan, the tax revenues from electricity amounts to 19.0 billion LKR in 2050. More specifically, it goes from 2.2 billion LKR in 2022 to 12.8 billion LKR (+13.5% vs BAU) in 2030, 15.3 billion LKR in 2040 (+8.5% vs BAU) and 19.0 billion LKR in 2050 (+8.4% vs BAU).

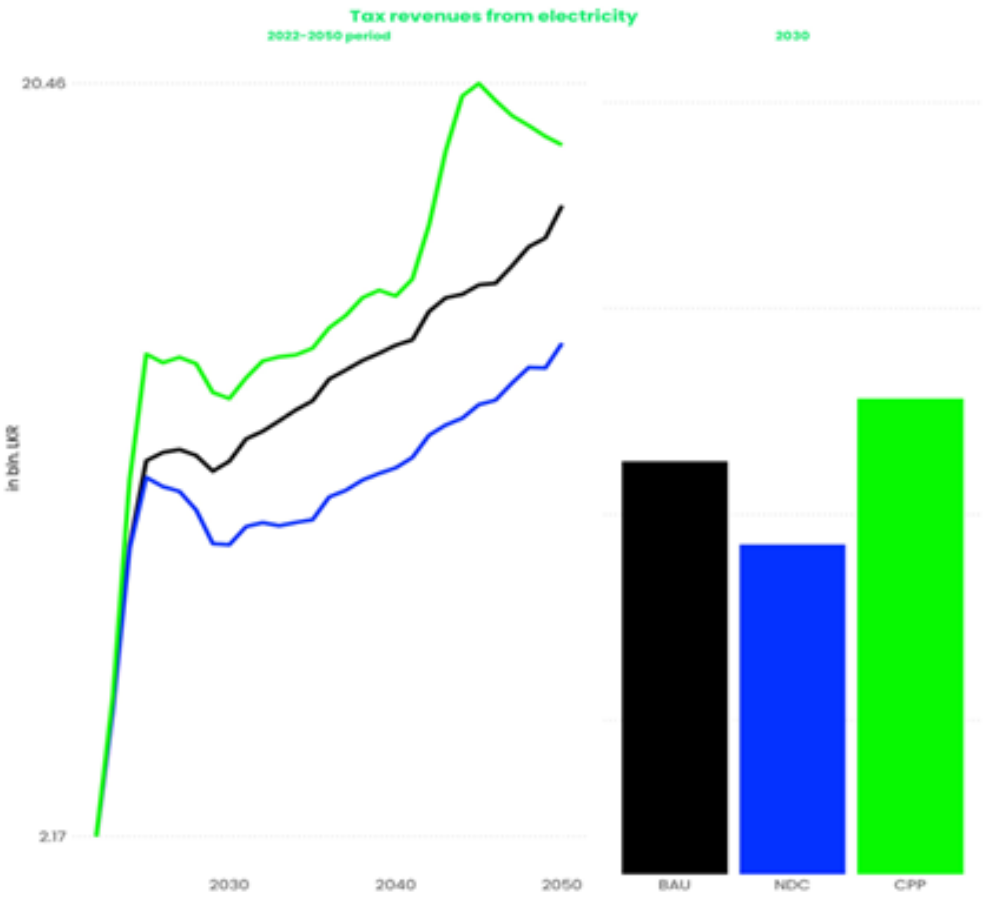


Figure 18: Tax revenues from electricity

Tax revenues from petroleum products constitute the excise taxes paid on petroleum products as well as income related to petroleum production (e.g. royalties).

In the case of Business As Usual, the tax revenues from petroleum products is projected to reach 104.8 billion LKR (2030), 125.7 billion LKR (2040) and 154.2 billion LKR (2050).

In the CPP scenario the tax revenues from petroleum products reaches 0.0 billion LKR in 2050 (-100% vs BAU) with a value of 57.3 billion LKR (-45.3% vs BAU) in 2030 and 20.2 billion LKR (-83.9% vs BAU) in 2040. The average variation over BAU during the period 2022-2050 is -68.3%.

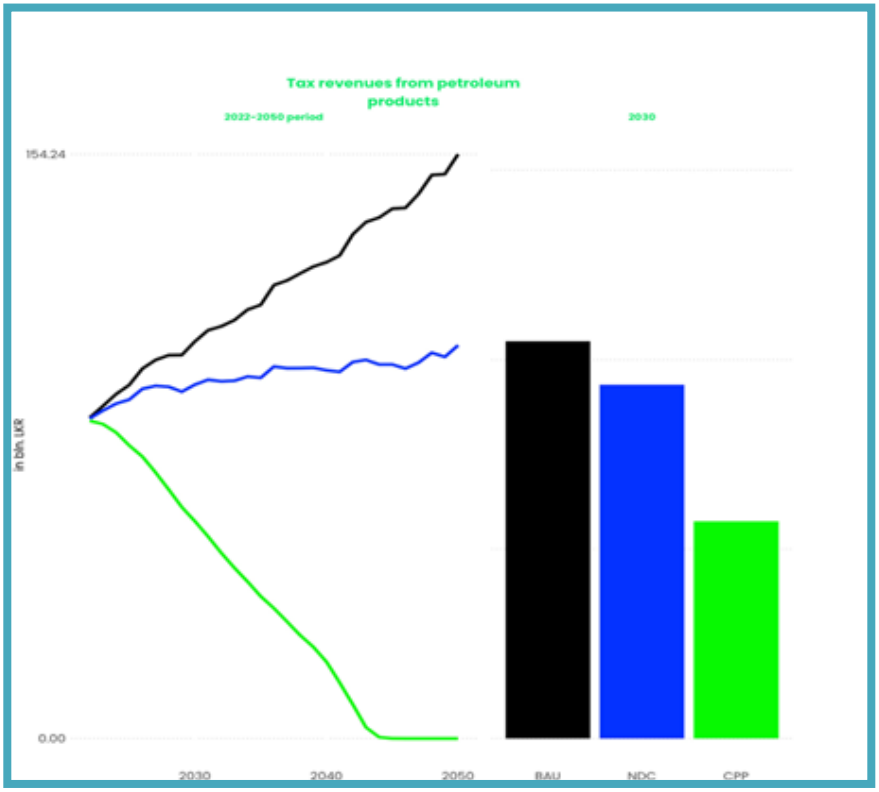


Figure 19: Tax revenues from petroleum products

CARBON CREDITS

GEM estimates carbon credits that can be generated at country level, either by exporting clean energy products, which avoids GHG emissions at the import destination, as well as through additional reforestation and restoration, contributing to domestic sink capacity. The total value of carbon credits is calculated as the sum of carbon credits from energy exports, mangrove restoration and reforestation

In the CPP scenario, the total value of carbon credit is in average 84.6 million USD between 2022 and 2030, 128.3 million USD between 2022 and 2040 and 298.5 million USD between 2022 and 2050. By focusing on the carbon credit generated by reforestation the average gains are respectively over the period 2022-2050, 257.0 million USD.

The CPP scenario has an overall positive impact on the economic dimensions of Sri Lanka by for example increasing growth and reducing poverty levels. This impact could also be assessed on the social dimensions of the country which will be presented in the following part.

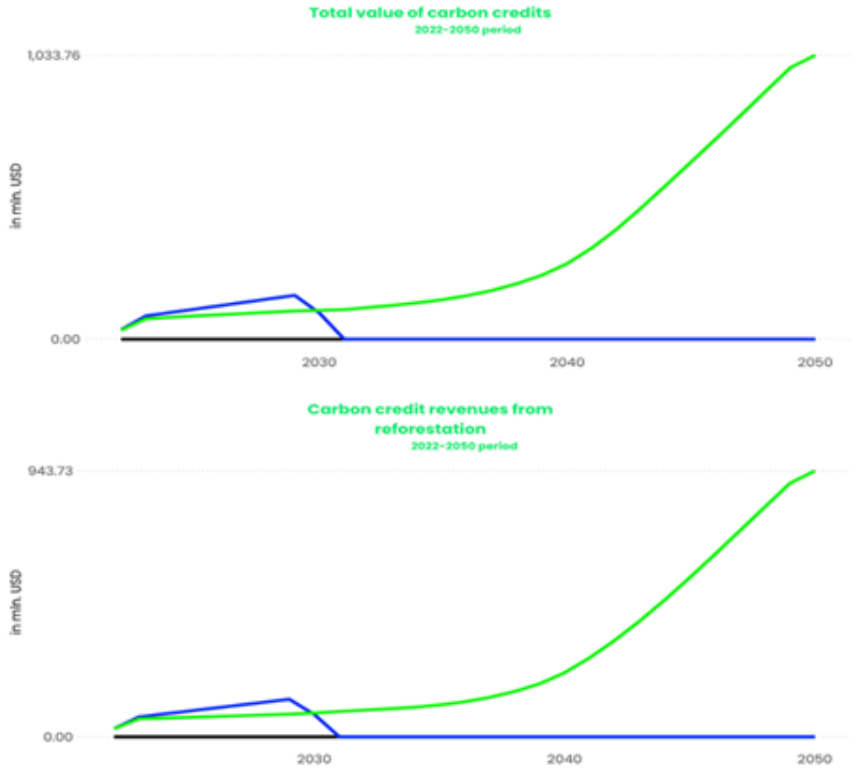


Figure 20: Carbon credits

SOCIAL

Following the impact on the economic aggregates, within this section the impact of the CPP scenario on the level of employment, both in relative and absolute terms, are evaluated. Added to that, as one of the targets of the CPP, the number of new green jobs is also estimated.

EMPLOYMENT

The unemployment rate corresponds to the ratio of total unemployed individuals to active population across all sectors, including green jobs. The total employment is the total number of jobs in the economy across agriculture, industry, and services sectors, including additional green jobs resulting from interventions.

In the baseline, the unemployment rate variates from 6.4 percent in 2022 to 6.6 percent in 2050, by gradually reaching 5.2 percent in 2030 and 6.5 percent in 2040. In the BAU scenario, the total employment goes from 8.1 million people in 2022 to 8.8 million people in 2030, 9.6 million people in 2040 and 10.2 million people in 2050.

In the Prosperity Plan, the unemployment rate amounts to 3.7 percent in 2050. More specifically, it goes from 6.0 percent in 2022 to 2.3 percent (-55.1% vs BAU) in 2030, 3.1 percent in 2040 (-51.9% vs BAU) and 3.7 percent in 2050 (-43.8% vs BAU). In the prosperity scenario the total employment amounts 8.1 million people (2022), 9.0 million people (2030), 9.9 million people (2040) and 10.5 million people (2050). The implementation of the prosperity measures then allows a dynamic of +3% (2030), +3.6% (2040), +3.1% (2050) compared to the baseline. This means an average of +2.5% change between 2022 and 2030 and +3% between 2022 and 2050 of the total employment, due to additional growth induced from the implementation of CPP ambitions.

The dynamic of these variables is induced by the change in the different sectors. Employment from agriculture is driven by the total amount of agricultural land and an employment intensity per hectare. Employment from industry and services is driven by economic growth and investments, leading to higher capital accumulation, and hence accelerated job creation. Additional green jobs result from the use of more sustainable technologies and land-based interventions.

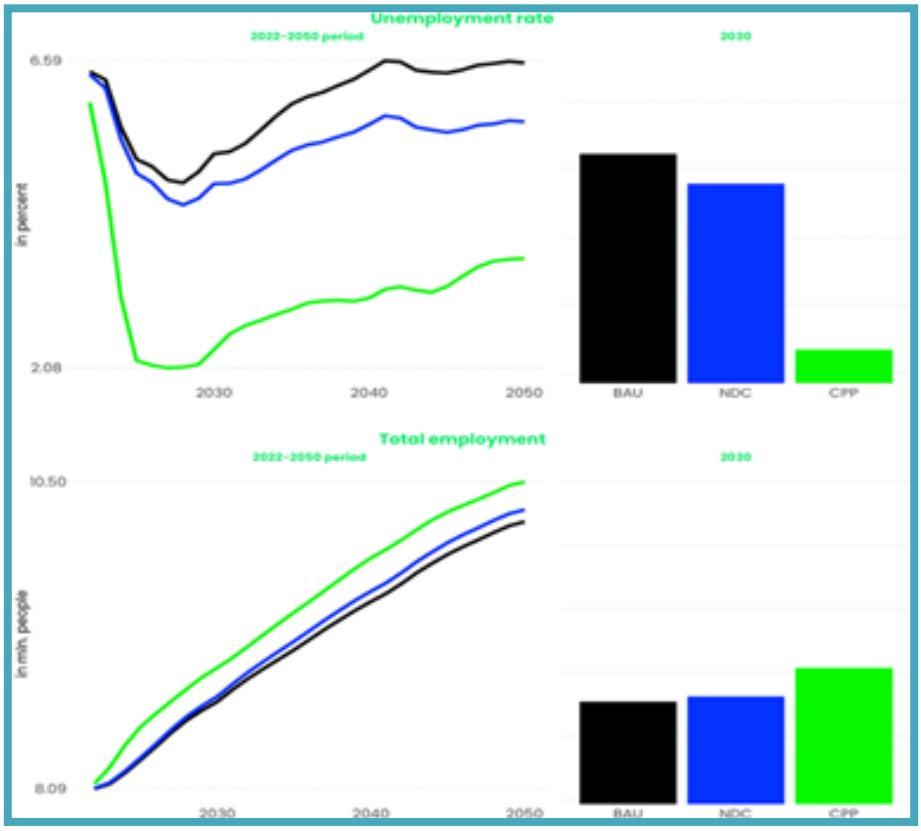


Figure 21: Employment

GREEN JOBS

Green jobs are considered jobs that result from the implementation of interventions in the CPP scenario. The total number of green jobs in GEM consists of the sum of jobs generated from climate change mitigation actions (e.g., reforestation, renewable energy, energy efficiency, etc.) as well as climate adaptation (e.g., flood proofing of houses, installation of irrigation systems, implementation of CSA practices, etc.).

In the baseline, the green jobs variates from 38.5 thousand people in 2022 to 41.1 thousand people in 2050, by gradually reaching 40.1 thousand people in 2030 and 41.4 thousand people in 2040.

In the CPP scenario the green jobs reaches 337.6 thousand people in 2050 (+720.5% vs BAU) with a value of 242.6 thousand people (+504.9% vs BAU) in 2030 and 333.2 thousand people (+705.1% vs BAU) in 2040. The average variation over BAU during the period 2022-2050 is +553.6%. The increase in ambition for electrification and renewable power generation causes green jobs to peak in the years 2030-2040. However, the number of green jobs during later years slightly declines, because (i) most of the transition is already implemented between 2022 and 2040 and (ii) higher energy efficiency improvements reduce the need for power generation capacity, which reduces the number of green jobs from renewable energy. The estimation of employment creation in all scenarios is performed considering that the manufacturing of EVs, electric buses etc. happens internationally, so only jobs from installation and maintenance are considered. In addition, there will be indirect employment creation in other sectors (e.g. agriculture, mangrove restoration, waste management).

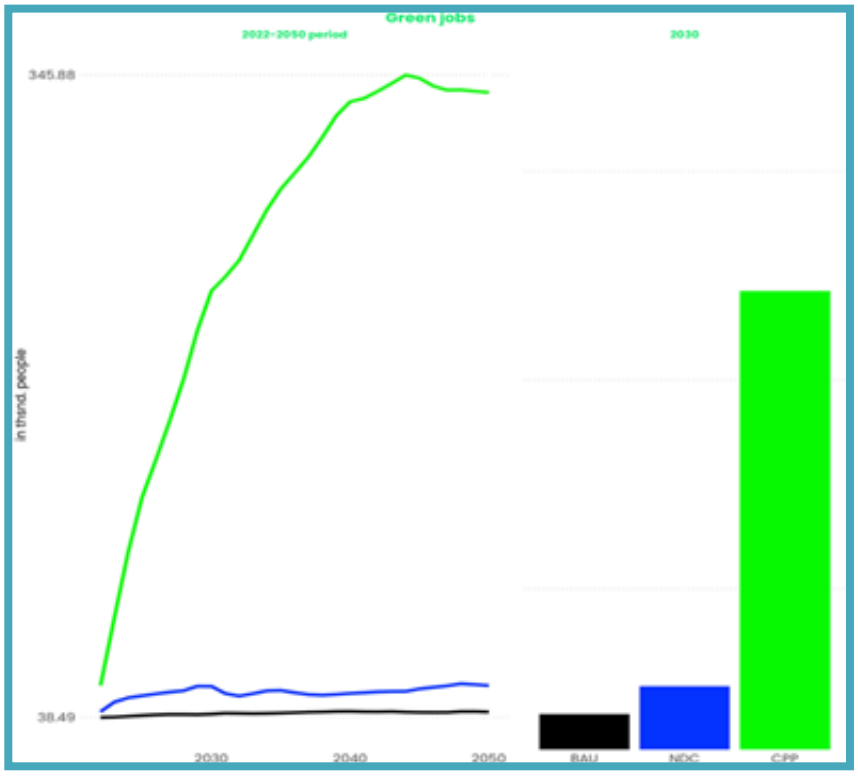


Figure 20:
Green jobs

The main boosters for green jobs are the implementation of CPP interventions (e.g., electrification, sustainable agriculture, energy efficiency, flood protection of roads and buildings, etc.) and the respective ambition of each intervention.

The decrease of the unemployment level and the increase in green jobs are an expected consequence of the implementation of the CPP strategy for Sri Lanka as shown by the CPP scenario. The impact of the CPP strategy in the energy sector is estimated in the following section.

ENERGY

The energy section allows the comparison between the baseline and the CPP scenario, of the total energy demand, the affordability through the comparison of disposable income and the energy bill, but also the unit cost of energy. Energy efficiency, as well as power generation (power generation capacity and electricity generation rate), are as well evaluated.

ENERGY DEMAND

The energy demand corresponds to the total final energy consumption at country level. It is calculated as the sum of demand across all fuels (petroleum, coal, electricity, natural gas and biomass) and sectors (residential, commercial, industrial and transport).

In the baseline, the energy demand variates from 435.1 thousand TJ in 2022 to 623.4 thousand TJ in 2050, by gradually reaching 498.8 thousand TJ in 2030 and 546.4 thousand TJ in 2040. This is mainly driven by economic growth.

Vehicles electrification and additional energy efficiency measures implemented in the CPP scenario reduce total energy demand below the BAU scenario, despite higher economic growth. In the Prosperity Plan, the energy demand amounts to 213.7 thousand TJ in 2050. More specifically, it goes from 431.0 thousand TJ in 2022 to 367.1 thousand TJ (-26.4% vs BAU) in 2030, 242.3 thousand TJ in 2040 (-55.6% vs BAU) and 213.7 thousand TJ in 2050 (-65.7% vs BAU). Furthermore, given the differential in energy use per km traveled between EVs and ICE vehicles, the full electrification of the vehicle fleet leads to additional energy savings relative to the other scenarios.

Breaking down the different components of the energy demand helps to understand its dynamic. The CPP scenario allows on the one hand more ambitious electrification of vehicles that leads to a decline in petroleum demand between 2022 and 2050 relative to the BAU scenario. On the other hand, the demand for electricity, driven by a combination of increased air conditioning, economic growth, and vehicle electrification, is foreseen to increase at the beginning. As the transition to EVs and air conditioning is assumed to be completed by the year 2040, the additional energy efficiency measures implemented lead to a reduction in electricity demand by 2050.

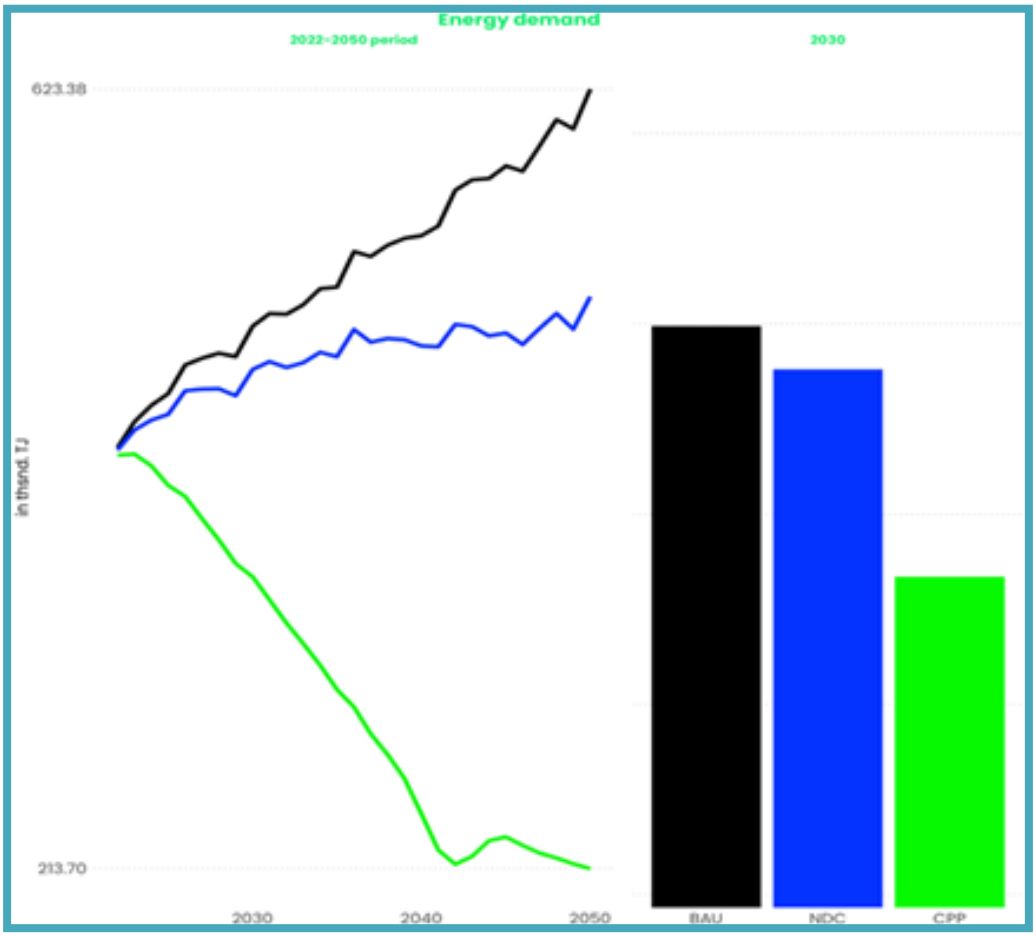


Figure 23: Energy demand

ENERGY AFFORDABILITY

The energy bill variable indicates the total country energy cost resulting from final energy consumption. It is calculated as the sum of costs for petroleum products, natural gas, coal and electricity. The cost of biomass is excluded. It is presented in absolute value, but also as share of total real GDP.

In the case of Business As Usual, the energy bill is projected to reach 4.3 billion USD (2030), 5.4 billion USD (2040) and 7.0 billion USD (2050). In the baseline, the energy bill (as share of GDP) variates from 3.8 percent in 2022 to 3.2 percent in 2050, by gradually reaching 3.5 percent in 2030 and 3.4 percent in 2040.

In the prosperity scenario the energy bill amounts 3.4 billion USD (2022), 3.1 billion USD (2030), 2.4 billion USD (2040) and 2.2 billion USD (2050). The implementation of the prosperity measures then allows a dynamic of -26.9% (2030), -55.6% (2040), -67.9% (2050) compared to the baseline. This means an average of -11.1% change between 2022 and 2030 and -43.2% between 2022 and 2050 of the energy bill. In the prosperity scenario the energy bill (as share of GDP) amounts 3.7 percent (2022), 2.3 percent (2030), 1.2 percent (2040) and 0.8 percent (2050). The implementation of the prosperity measures then allows a dynamic of -32.1% (2030), -64.9% (2040), -76.1% (2050) compared to the baseline. This means an average of -13.3% change between 2022 and 2030 and -44.8% between 2022 and 2050 of the energy bill (as share of gdp).

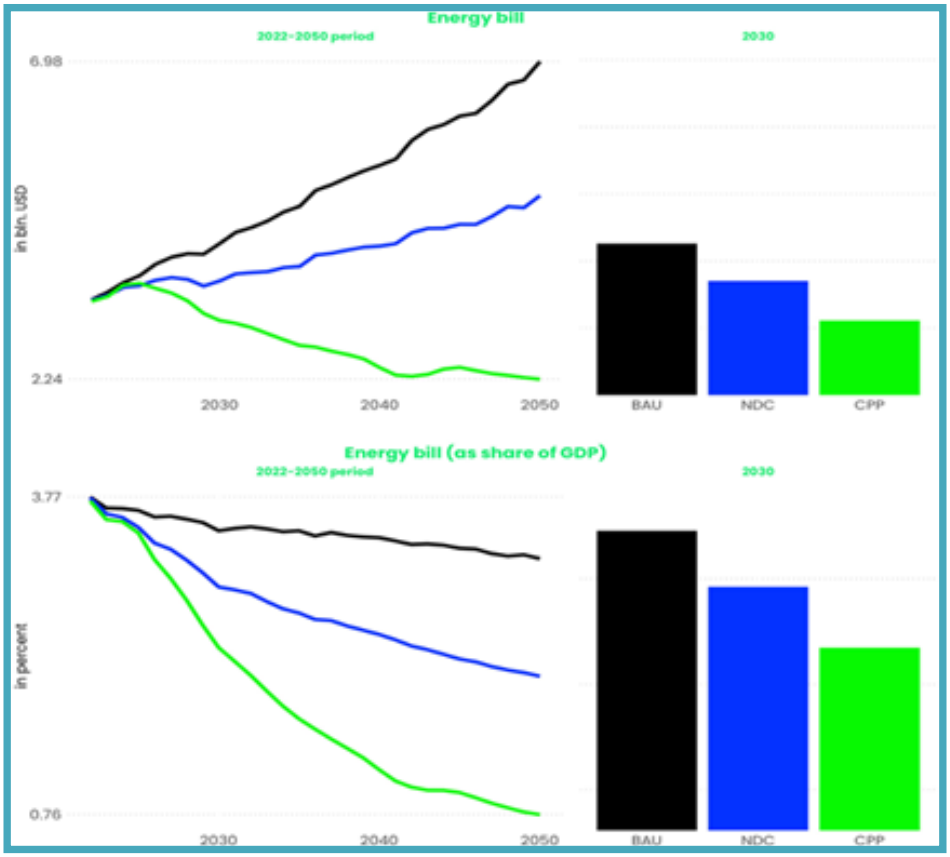


Figure 24: Energy bill

The unit cost of energy is the average cost per TJ of final energy consumed and is calculated by dividing the total energy bill (=cost of energy at country level) by total final energy consumption.

In the baseline, the unit cost of energy consumed is projected to reach 8.5 thousand USD/TJ (2030), 9.9 thousand USD/TJ (2040) and 11.2 thousand USD/TJ (2050).

In the Prosperity Plan, the unit cost of energy consumed amounts to 10.5 thousand USD/TJ in 2050. More specifically, it goes from 7.9 thousand USD/TJ in 2022 to 8.5 thousand USD/TJ (-0.7% vs BAU) in 2030, 9.9 thousand USD/TJ in 2040 (+0.1% vs BAU) and 10.5 thousand USD/TJ in 2050 (-6.4% vs BAU).

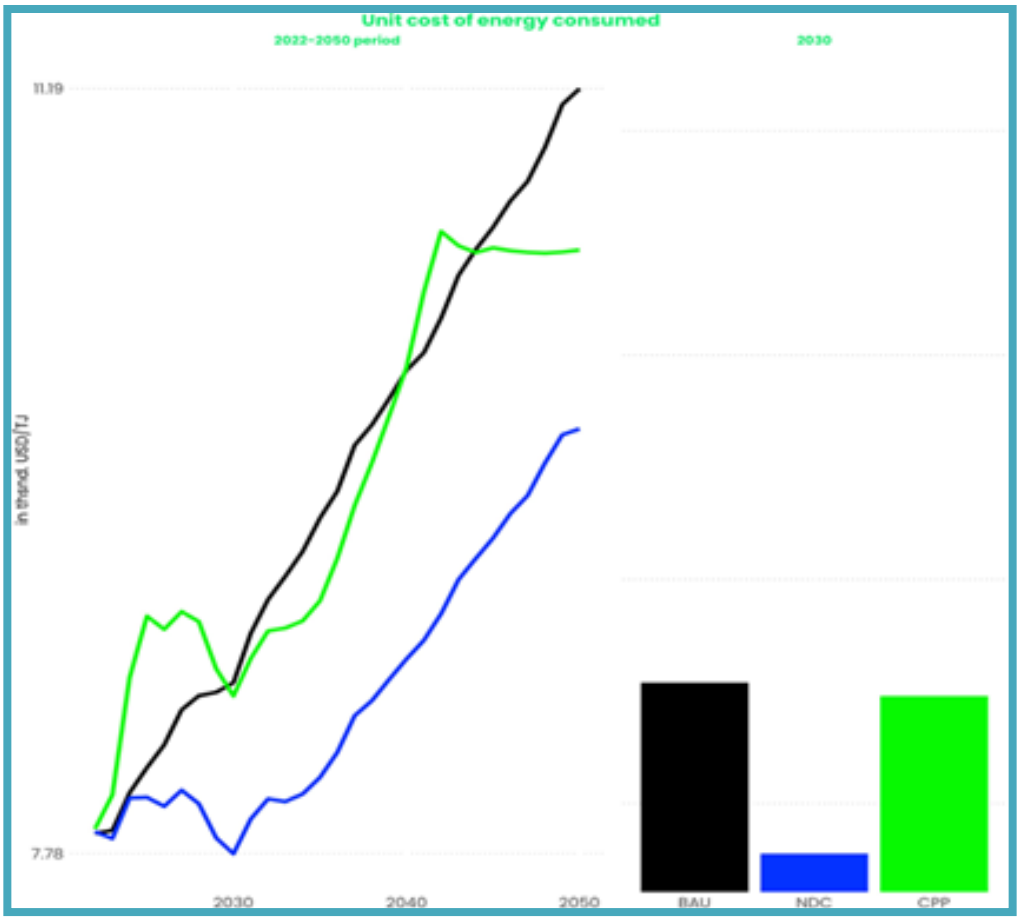


Figure 25: Unit cost of energy consumed

A change in energy affordability can also be assessed by comparing the change in disposable income to the change in total country energy cost. This can be done by calculating the indexes of both variables relative to the year 2022 and comparing their respective growth. These indicators are respectively the index of real disposable income and the index of total country energy cost with base year 2022.

In the BAU scenario, real disposable income relative to 2022 increases from 1 in 2022 to 1.36 in 2030 while the energy bill index goes from 0.99 in 2022 to 1.23 in 2030. By 2050, these values amount 2.44 for the disposable income index and 2.01 for the cost of energy index indicating that income grows faster than the cost of energy.

In the CPP scenario, the income index increases from 1.01 in 2022 to 1.47 in 2030 and 3.26 in 2050. This shows that the disposable income index is projected to be +20.5% higher than in the BAU scenario. On the other hand, the index for energy cost goes from 0.98 in 2022, 0.89 in 2030 and ends up at 0.64 in 2050. This dynamic of indexes indicate that, while income increases in the intervention scenarios, the total country's cost of energy starts declining from the year 2022.

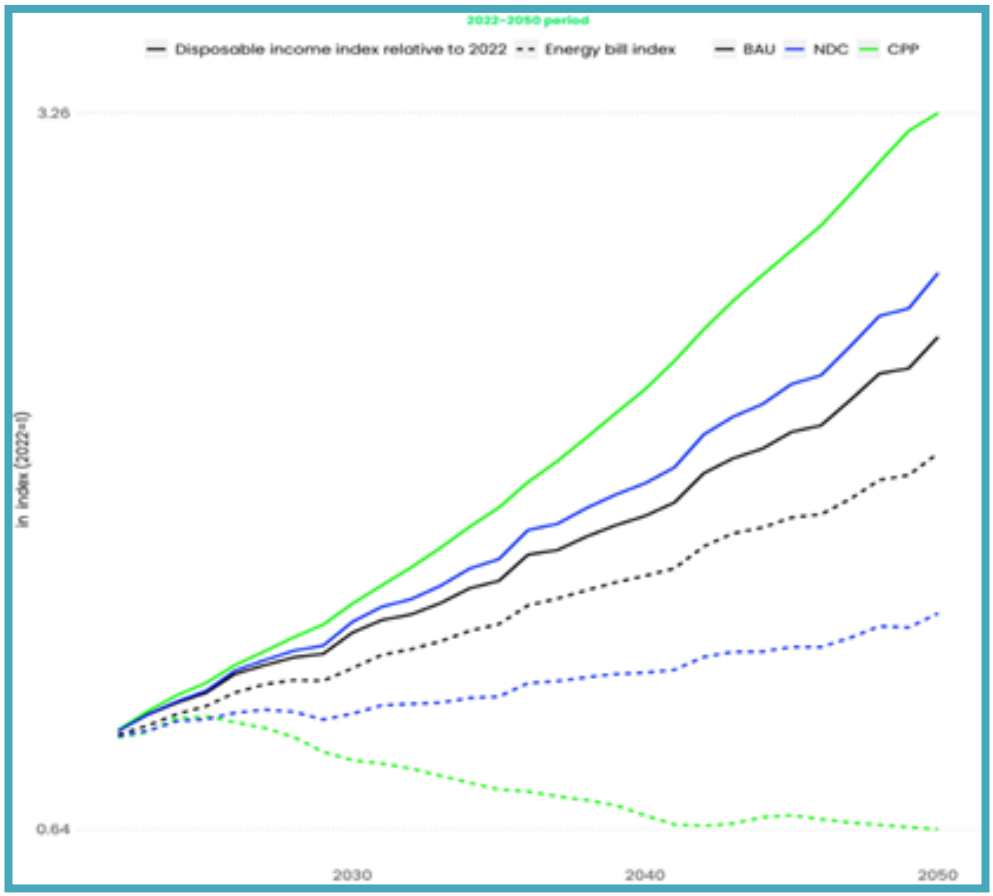


Figure 26: Disposable income and energy bill

The main driver for the change in disposable income index is economic growth, while the main drivers for the change in the energy bill index are total energy demand (by fuel) and the cost of energy (by fuel) (-41.3% in the CPP scenario). An increase in electrification and energy efficiency measures drive the decline of the energy bill index, leading to improved affordability of energy.

The energy affordability index is calculated by dividing the disposable income index (2022=1) by the energy bill index (2022=1). The base year of this index is hence 2022 and it indicates how the total (real) disposable income develops in relation to total country energy cost. An increase in this index signifies that energy becomes more affordable, while a decrease indicates that energy cost raises faster than income.

In the baseline, the energy affordability index variates from 1.0 in 2022 to 1.2 in 2050, by gradually reaching 1.1 in 2030 and 1.1 in 2040.

In the Prosperity Plan, the energy affordability index amounts to 5.1 in 2050. More specifically, it goes from 1.0 in 2022 to 1.6 (+48.2% vs BAU) in 2030, 3.2 in 2040 (+185% vs BAU) and 5.1 in 2050 (+318% vs BAU).

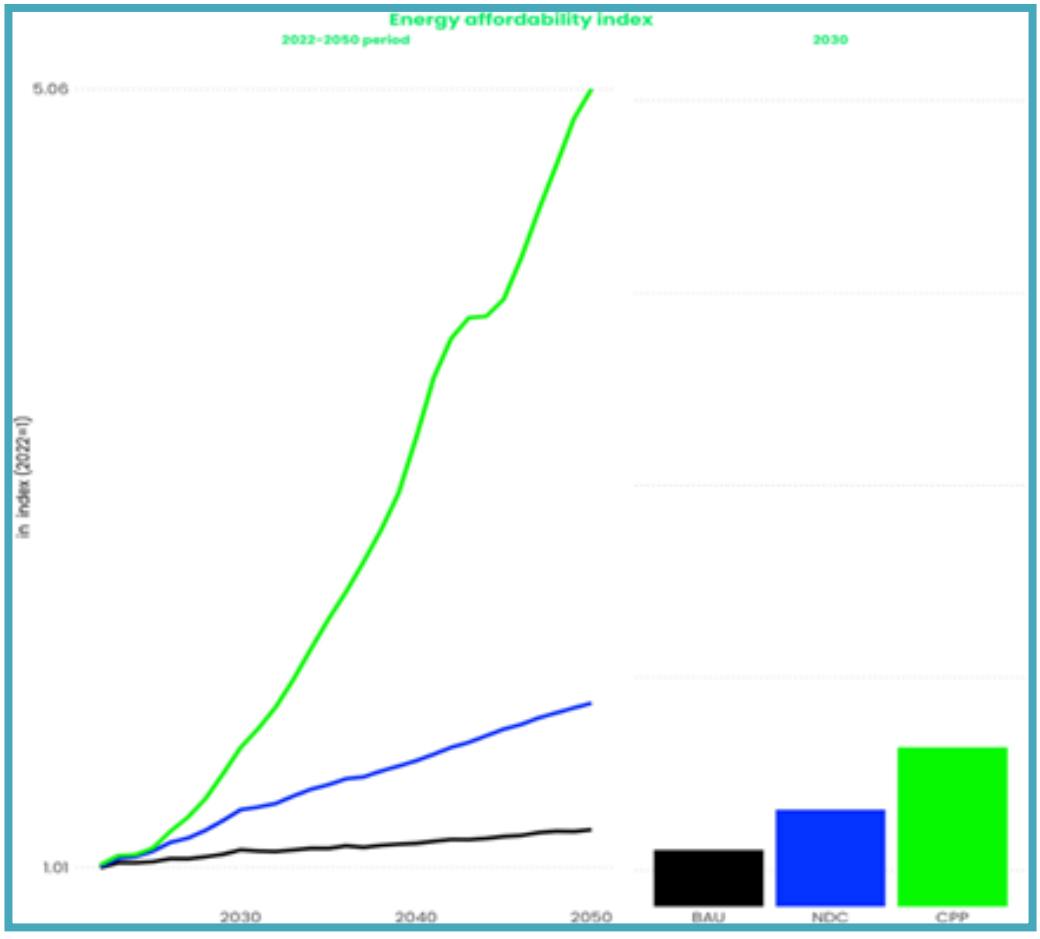


Figure 27: Energy affordability index

ENERGY EFFICIENCY

The cumulative net savings from energy efficiency is the cumulative net amount of final energy use that is avoided (relative to the baseline) thanks to the implementation of additional energy efficiency measures. The energy efficiency change indicates the rate of variation that is applied to the stock of energy efficiency. The indicator is subject to policy decisions, allowing for the simulation of different energy efficiency trajectories. The relative energy efficiency is an index relative to the year 2000 that indicates how energy efficiency is developing over time. This stock is modified by the "energy efficiency change", which is an annual growth rate applied to the stock level. This means that GEM uses a dynamic formulation (=stock * growth rate) for estimating energy efficiency improvements.

In the BAU scenario, the energy efficiency change variates from 1.3 percent in 2022 to 1.6 percent in 2050, by gradually reaching 1.4 percent in 2030 and 1.5 percent in 2040. The relative energy efficiency goes from 1.3 in 2022, 1.4 in 2030, 1.5 in 2040 and 1.6 in 2050.

In the prosperity scenario, the cumulative net savings from energy efficiency reaches, 1.15 thousand TJ (2022), 85.54 thousand TJ (2030), 235.14 thousand TJ (2040), 455.33 thousand TJ (2050). The energy efficiency change amounts 2.4 percent in 2022 and reaches 8.6 percent by 2050 by gradually reaching 4.8 percent (2030) and 6.4 percent (2040) which represent a variation of +251.4% (2030), +329.1% (2040), +419.2% (2050) in comparison to BAU. This is an average of +299.6% over the period 2022-2050. The relative energy efficiency goes from 1.3 in 2022, 1.6 in 2030, 2.1 in 2040 and 2.9 in 2050. The CPP scenario then allow a dynamic of +17.1% (2030), +43% (2040), +73% (2050) compared to the baseline. This means an average of +8.5% change between 2022 and 2030 and +34.3% between 2022 and 2050 of the relative energy efficiency.

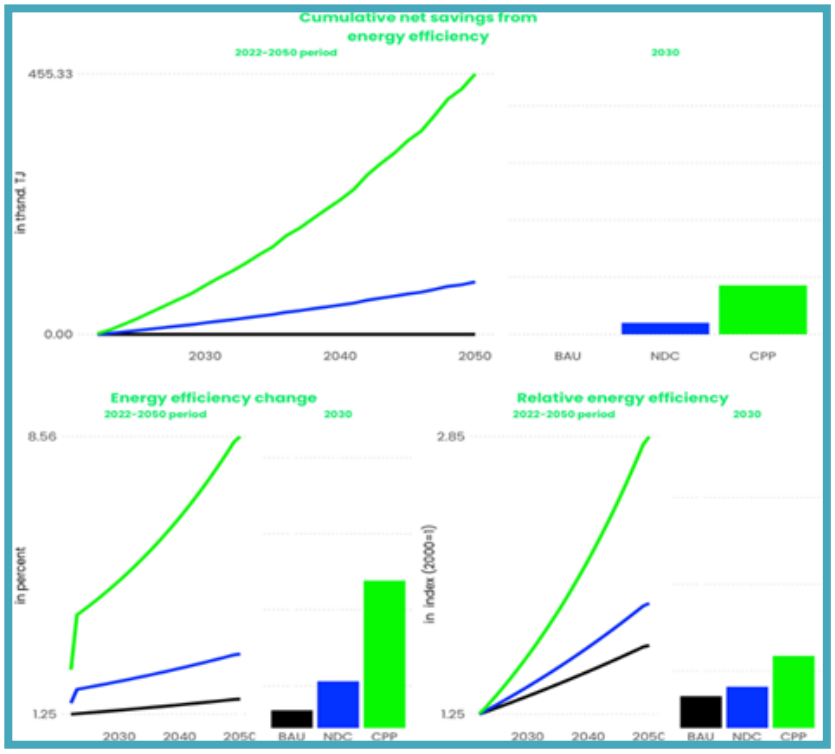


Figure 28: Energy efficiency

POWER GENERATION

The power generation capacity captures the total MegaWatts (MW) of power generation capacity installed at country level. This variable is calculated by summing up the total capacity installed across all technologies considered in GEM.

In the baseline, the power generation capacity variates from 3.9 GW in 2022 to 6.1 GW in 2050, by gradually reaching 4.4 GW in 2030 and 5.5 GW in 2040. In the BAU scenario, the share of power generation capacity from renewables goes from 44.8 percent in 2022 to 46.1 percent in 2030, 46.3 percent in 2040 and 50.0 percent in 2050.

In the CPP scenario the power generation capacity reaches 28.0 GW in 2050 (+361.4% vs BAU) with a value of 13.1 GW (+195.5% vs BAU) in 2030 and 23.8 GW (+334.1% vs BAU) in 2040. The average variation over BAU during the period 2022-2050 is +266.1%. In fact, there is intense electrification of the transport sector and more electricity generated from renewable capacity. Power generation capacity initially increases up to 2040 to supply the desired electricity but starts dropping later on as a consequence of efficiency induced reductions in total electricity demand. In the Prosperity Plan, the share of power generation capacity from renewables amounts to 87.6 percent in 2050. More specifically, it goes from 44.8 percent in 2022 to 80.4 percent (+74.7% vs BAU) in 2030, 86.9 percent in 2040 (+87.7% vs BAU) and 87.6 percent in 2050 (+75.3% vs BAU).

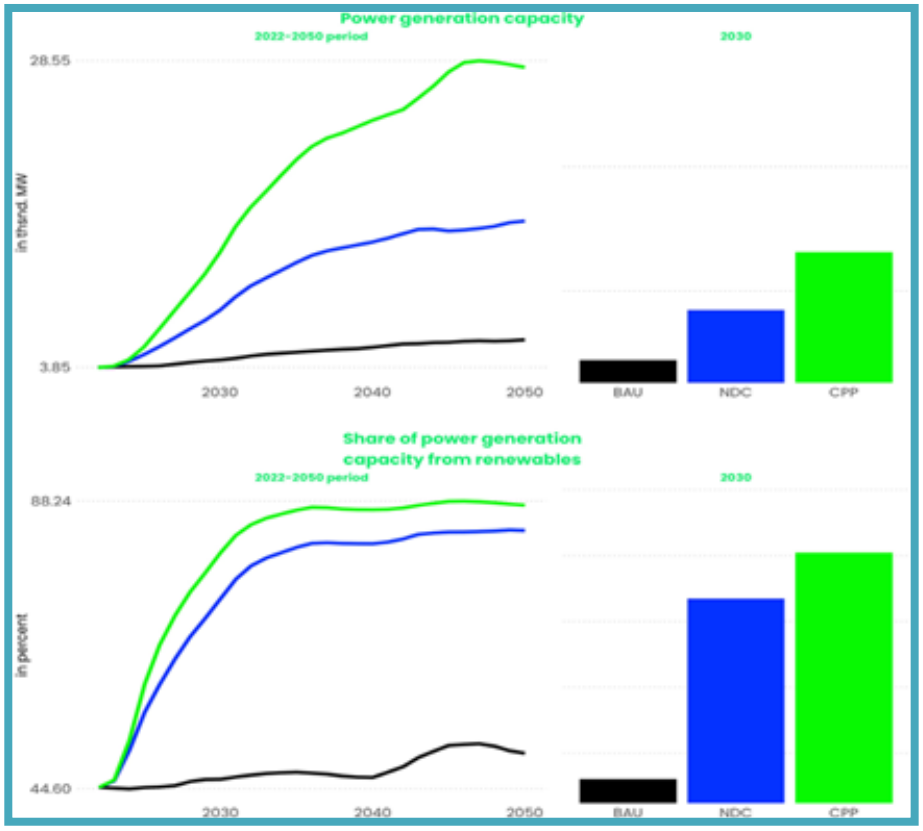


Figure 29: Power generation capacity

The dynamic of the power generation capacity is explained by the total demand for electricity (driven by population, economic growth, and energy efficiency) as well as electricity imports and exports. Added to that, the increase observed in the prosperity scenario is explained by the technology load factor. As it is typically lower for renewable capacity, more capacity is required to produce the same amount of electricity.

In the baseline, the electricity generation rate variates from 16.1 million MWh in 2022 to 31.9 million MWh in 2050, by gradually reaching 20.2 million MWh in 2030 and 26.1 million MWh in 2040. In the case of Business As Usual, the share of electricity generation from renewables is projected to reach 43.0 percent (2030), 42.4 percent (2040) and 40.2 percent (2050). Electricity generation in the BAU scenario is affected by (i) the impacts of heat and water scarcity on the load factor of thermal capacity, as well as (ii) heat and wind related impacts on transmission lines, both of which leads to strong fluctuations in total electricity supply.

Total electricity generation follows the trend in demand for electricity. In the Prosperity Plan, the electricity generation rate amounts to 80.1 million MWh in 2050. More specifically, it goes from 15.5 million MWh in 2022 to 39.7 million MWh (+96.4% vs BAU) in 2030, 67.8 million MWh in 2040 (+160.1% vs BAU) and 80.1 million MWh in 2050 (+151.4% vs BAU). In the Prosperity Plan, the share of electricity generation from renewables amounts to 79.5 percent in 2050. More specifically, it goes from 46.1 percent in 2022 to 77.6 percent (+80.7% vs BAU) in 2030, 81.1 percent in 2040 (+91.5% vs BAU) and 79.5 percent in 2050 (+97.8% vs BAU). Renewable power generation and comprehensive climate proofing of power infrastructures eliminate the fluctuations in final electricity almost entirely.

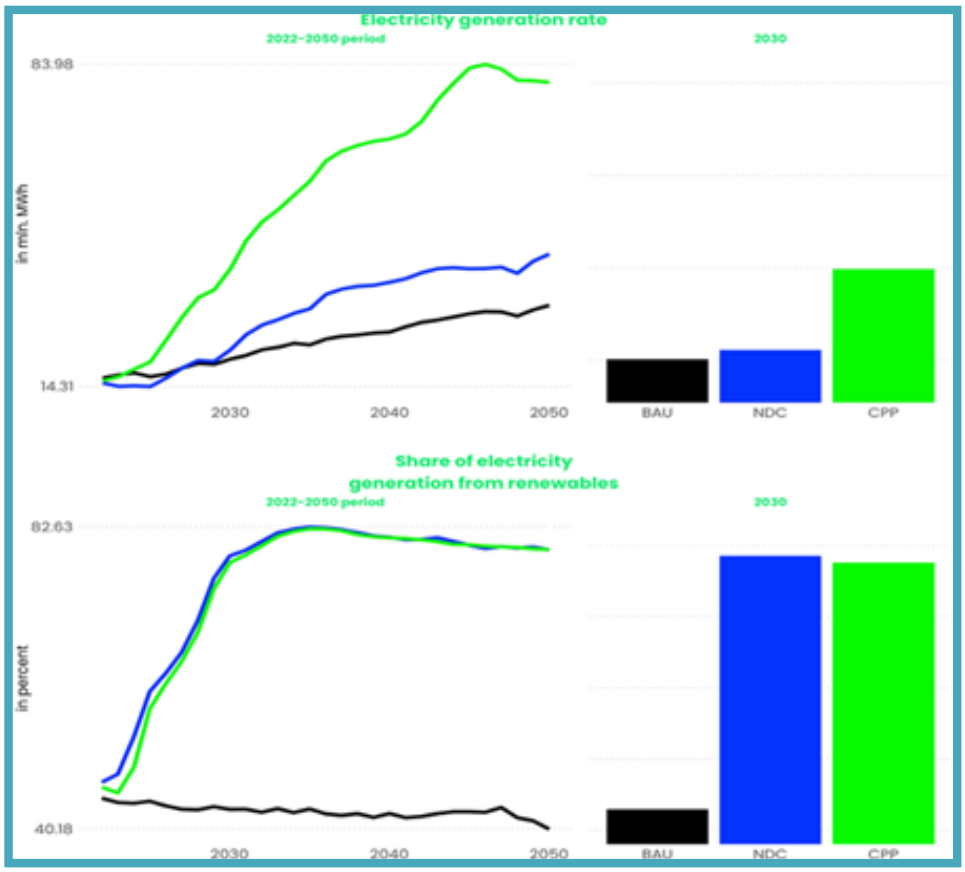


Figure 30: Electricity generation rate

In the CPP scenario, the energy sector is widely influenced by the CPP implementation throughout the course of the next 28 years and as shown in the previous sections, leads to positive economic and social impacts. Furthermore, the next section will capture its influence at the environmental level.

ENVIRONMENT

This section is composed of the evaluation of the volume of air pollutants such as the PM2.5 and black carbon emissions from energy and power, but also the air pollution by assessing the PM2.5 emissions index, the mortality rate and the total annual death resulting from air pollution, the impact of installed non-motorized transport infrastructure and the cost of obesity. Other items covered include the climate damages by comparing the cumulative damage resulting from climate change in the baseline and the CPP scenario, but also the money accumulation for loss and damages payments. The repercussions on the level of CO2e emissions and the forest cover are also predicted.

FOREST COVER

The forest cover represents the total amount of hectares (at country level) that is covered by forests.

In the BAU scenario, the forest cover goes from 2.09 million Ha to 2.07 million Ha in 2030, 2.06 million Ha in 2040 and 2.07 million Ha in 2050.

In the CPP scenario, additional reforestation and restoration are required to generate the sink capacity required for reducing total GHG emissions. The forest cover amounts 2.09 million Ha (2022), 2.26 million Ha (2030), 2.40 million Ha (2040), 2.49 million Ha (2050). The implementation of the prosperity measures then allows a dynamic of +9.4% (2030), +16.9% (2040), +20.4% (2050) compared to the baseline. This means an average of +4.9% between 2022 and 2030 and +12.7% between 2022 and 2050 of the forest cover.

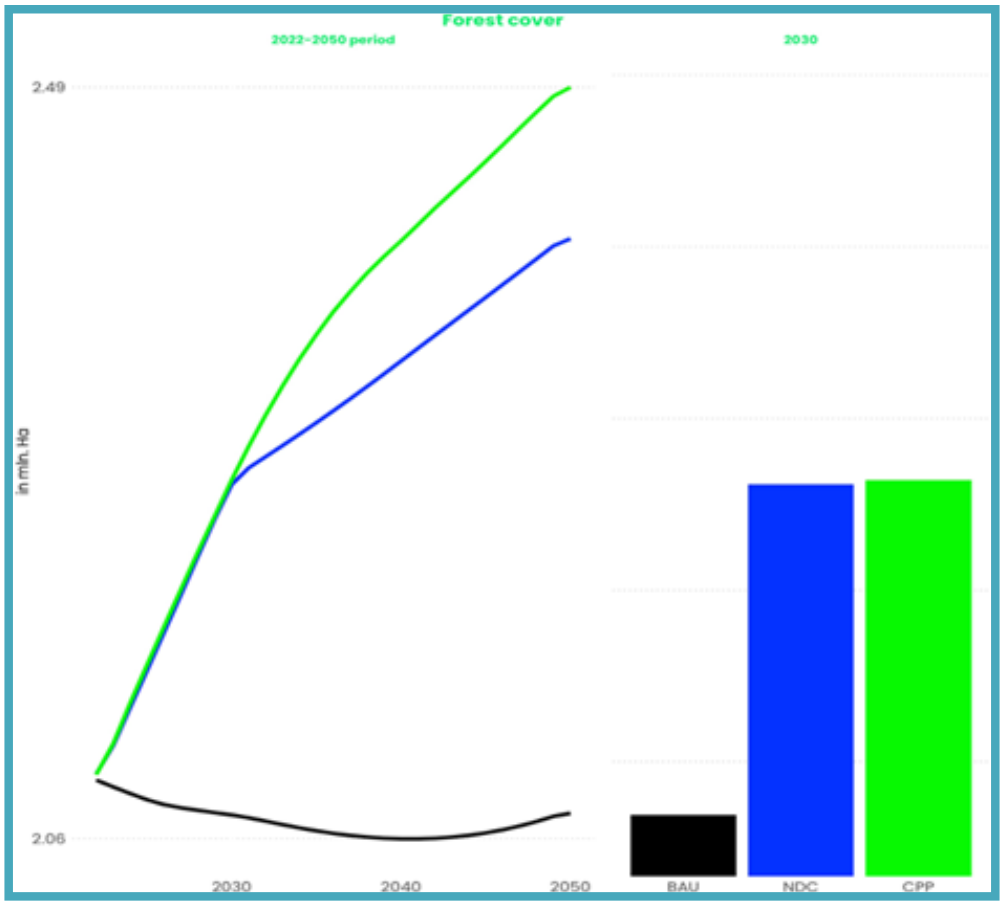


Figure 31: Forest cover

The variable share of land that is covered by forests provides an overview of the total land area that is covered by forests over time. It is estimated by comparing total forest land to the total land area.

In the BAU scenario, the forest cover (as share of total land) goes from 33.3 percent in 2022 to 33.0 percent in 2030, 32.8 percent in 2040 and 33.0 percent in 2050.

The forest share starts increasing as soon as reforestation sets. In the prosperity scenario the forest cover (as share of total land) amounts 33.4 percent (2022), 36.1 percent (2030), 38.3 percent (2040) and 39.8 percent (2050). The implementation of the prosperity measures then allows a dynamic of 9.4% (2030), +16.9% (2040), +20.4% (2050) compared to the baseline. This means an average of +4.9% change between 2022 and 2030 and +12.7% between 2022 and 2050 of the forest cover (as share of total land).

SCENARIO	2022-2030	2030-2040	2040-2050	2022-2050
BAU (percent)	33.1	32.9	32.8	32.9
CPP (percent)	34.7	37.4	39.0	37.1
CPP vs BAU	+4.9%	+13.7%	+18.8%	+12.7%

Table 3: Forest cover (as share of total land)

EMISSIONS

The annual CO2e is the sum of total greenhouse gas (GHG) emissions emitted at country level. It is derived by summing up the emissions generated across all IPCC categories (i.e., energy, industrial product use, land, managed soils, livestock, land use, and waste).

In the BAU scenario, the annual CO2e emissions goes from 36.1 million tons GHG in 2022 to 42.8 million tons GHG in 2030, 49.6 million tons GHG in 2040 and 58.5 million tons GHG in 2050.

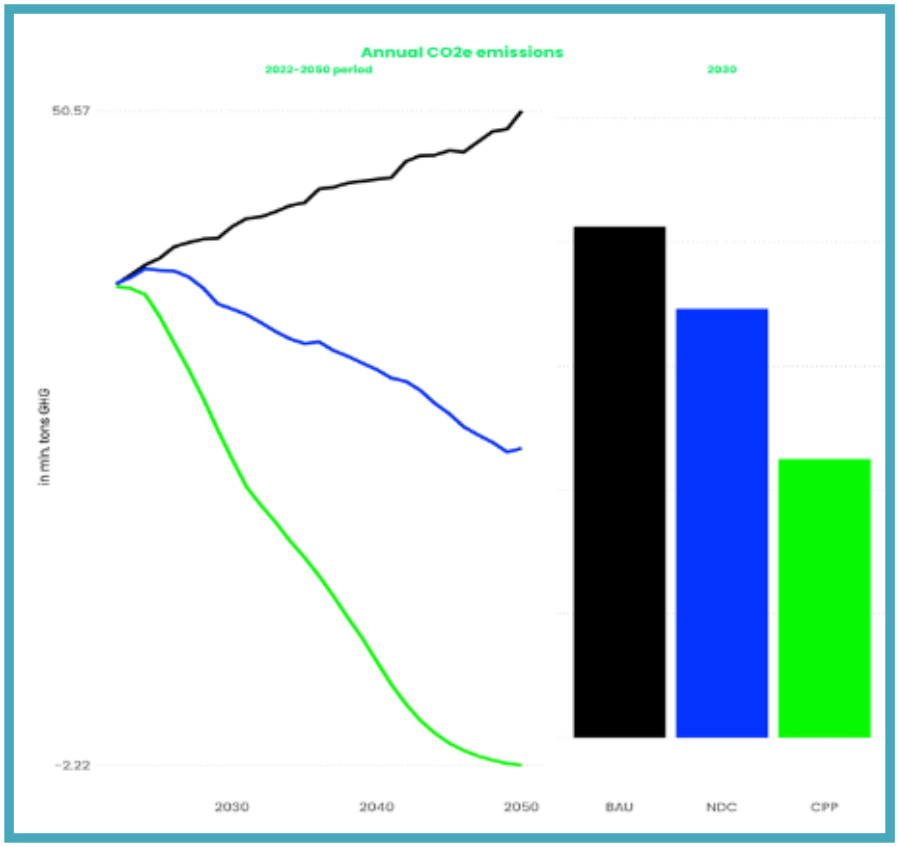


Figure 32: Annual CO2e emissions

In the prosperity scenario the annual CO2e emissions amounts 35.5 million tons GHG (2022), 21.9 million tons GHG (2030), 10.2 million tons GHG (2040) and -1.4 million tons GHG (2050). The implementation of the prosperity measures then allows a dynamic of -48.7% (2030), -79.4% (2040), -102.4% (2050) compared to the baseline. This means an average of -26.4% change between 2022 and 2030 and -65.5% between 2022 and 2050 of the annual co2e emissions.

The country's total emissions change because of changes across all IPCC sectors considered (energy, IPPU, livestock, managed soils, land and waste). A change in total emissions relative to the BAU scenario is hence the sum of all policy induced changes across all sectors.

AIR POLLUTANTS

GEM forecasts air pollutants based on total final energy use (by type of fuel) and the total fuel used for power generation. This indicates that the degree of electrification in conjunction with the decarbonization of the power generation sector drive the amount of air pollutants in the different scenarios. For this assessment, PM2.5 emissions, PM10 and black carbon emissions are of particular interest, as they are assumed to be key drivers for air pollution related mortality, both ambient as well as indoor.

In the baseline, the PM2.5 emissions from energy and power variates from 107.4 thousand tons in 2022 to 122.3 thousand tons in 2050, by gradually reaching 114.1 thousand tons in 2030 and 115.2 thousand tons in 2040. In the baseline, the PM10 emissions from energy and power variates from 128.3 thousand tons in 2022 to 141.7 thousand tons in 2050, by gradually reaching 135.2 thousand tons in 2030 and 135.0 thousand tons in 2040. In the baseline, the black carbon emissions from energy and power variates from 12.2 thousand tons in 2022 to 12.8 thousand tons in 2050, by gradually reaching 12.7 thousand tons in 2030 and 12.4 thousand tons in 2040.

In the prosperity scenario the PM2.5 emissions from energy and power amounts 106.4 thousand tons (2022), 66.3 thousand tons (2030), 15.5 thousand tons (2040) and 0.1 thousand tons (2050). The implementation of the prosperity measures then allows a dynamic of -41.9% (2030), -86.6% (2040), -99.9% (2050) compared to the baseline. This means an average of -20.9% change between 2022 and 2030 and -63.4% between 2022 and 2050 of the pm2.5 emissions from energy and power. In the Prosperity Plan, the PM10 emissions from energy and power amounts to 0.2 thousand tons in 2050. More specifically, it goes from 127.1 thousand tons in 2022 to 78.9 thousand tons (-41.7% vs BAU) in 2030, 17.9 thousand tons in 2040 (-86.7% vs BAU) and 0.2 thousand tons in 2050 (-99.9% vs BAU). In the prosperity scenario the black carbon emissions from energy and power amounts 12.1 thousand tons (2022), 7.5 thousand tons (2030), 1.6 thousand tons (2040) and 0.0 thousand tons (2050). The implementation of the prosperity measures then allows a dynamic of -40.8% (2030), -86.9% (2040), -100% (2050) compared to the baseline. This means an average of -20.2% change between 2022 and 2030 and -62.3% between 2022 and 2050 of the black carbon emissions from energy and power.

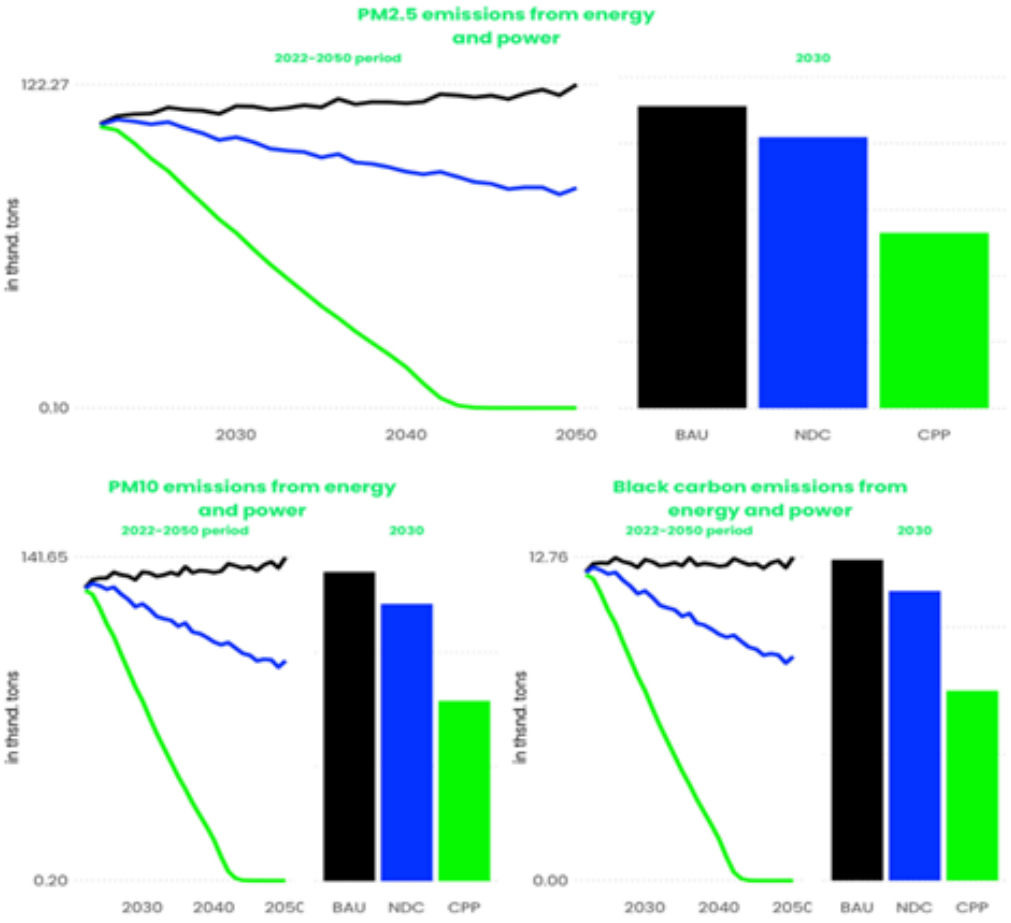


Figure 33: Emission from energy and power

The final energy consumption (by fuel) and fuel use for power generation explain the trend of the air pollutants. While energy consumption is driven by population, GDP, and energy efficiency (+34.3% in the CPP scenario), fuel use for power generation is driven by electrification ambitions and the share of electricity generated by renewables. In the CPP scenario, full electrification and the full transition of the power sector enable the eradication of all air pollutants in the year 2050. This significantly improves air quality and contributes to avoiding premature deaths from air pollution induced impact.

AIR POLLUTION

The following indicator corresponds to the mortality rate that is attributable to air pollution, both ambient as well as indoor. This variable is calculated as the sum of the death rate from ambient air pollution and the death rate from indoor air pollution. The variable below presents the total number of deaths per year related to ambient and indoor air pollution

In the prosperity scenario, the mortality rate related to air pollution amounts to 0.09 percent (2022), 0.05 percent (2030), 0.01 percent (2040), 0.00 percent (2050). The implementation of the prosperity measures then allows a dynamic of -40.6% (2030), -87.4% (2040), -100% (2050) compared to the baseline. This means an average of -19.9% between 2022 and 2030 and -61.6% between 2022 and 2050 related to air pollution. The total annual deaths from ambient air pollution amounts to 19.4 thousand people in 2022 and reaches 0.0 thousand people by 2050 by gradually reaching, 12.0 thousand people (2030) and 2.5 thousand people (2040) which represent a decline of -40.5% (2030), -87.4% (2040), -100% (2050) in comparison to BAU. This is an average of -61.8% over the period 2022-2050. The cumulative deaths from air pollution reaches 124.6 thousand people in 2022, 253.9 thousand people in 2030324.3 thousand people in 2040 and 327.4 thousand people in 2050. The CPP scenario then allow a dynamic of -11% (2030), -33% (2040), -51% (2050) compared to the baseline. This means an average of -5.4% change between 2022 and 2030 and -30.3% between 2022 and 2050 of the cumulative deaths from air pollution. This trend is a consequence of implementing the envisaged electrification and power generation ambitions. This implies that, once the economy is fully electrified and all power generated by renewable sources, there will be no mortality related to air pollution anymore.

The main factor that drives the mortality related to air pollution are PM2.5 emissions from final energy consumption and power generation (-63.4% in the CPP scenario), whereby (i) final energy consumption is driven by population, GDP and energy efficiency measures and (ii) emissions from power generation depend on the amount of fossil fuel-based capacity and generation.

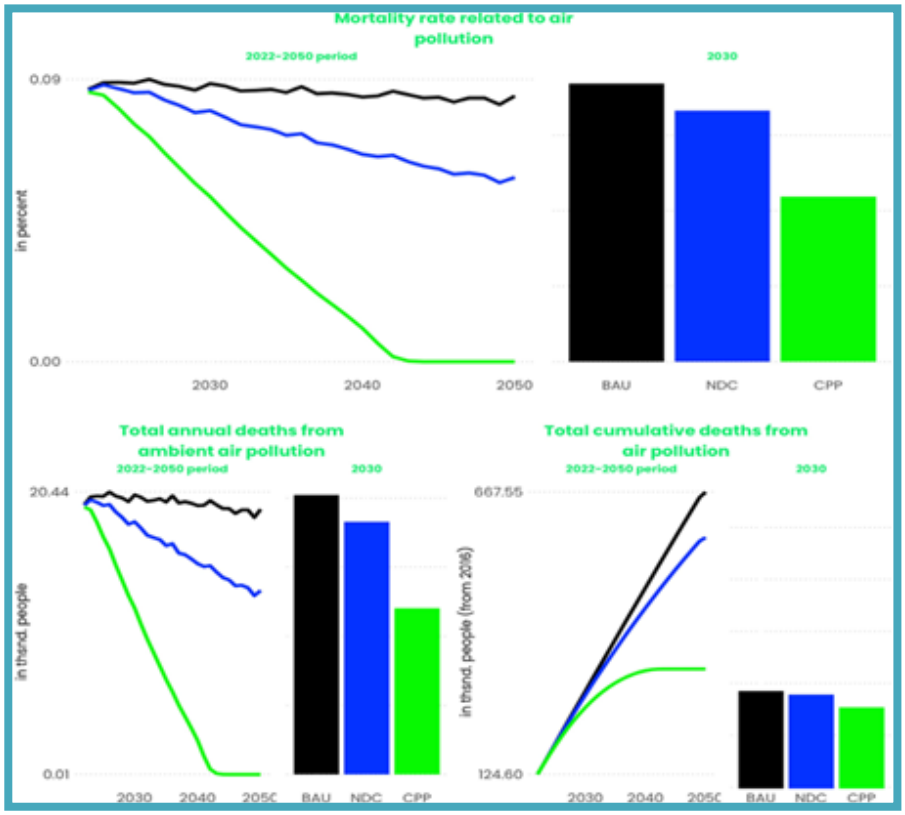


Figure 34: Mortality rate and total death related to air pollution

The relative cardiovascular disease, diabetes risk and cancer related mortality indicate respectively the change in overall cardiovascular diseases, diabetes risk and cancer related mortality.

In the BAU scenario, no shift in transport modes is assumed. In the CPP scenario, the installed kilometers of non-motorized transportation (NMT) infrastructure increase on average by 30.0 thousand km over te period 2022-2050 and is expected to reach at the end of the period 45.0 thousand km.

The shift in transport mode towards NMT modes such as walking and cycling leads to a reduction in the relative risk for various diseases. GEM projects the change in the relative risk for overall mortality, cardiovascular diseases, diabetes and cancer-related mortality based on the modal share that is moved to NMT. The results suggested that once the NMT infrastructure is fully implemented, the relative risk for diabetes declines by 0.6 (index), while the relative risk for cardiovascular diseases is impacted by 0.7 compared to the BAU scenario.

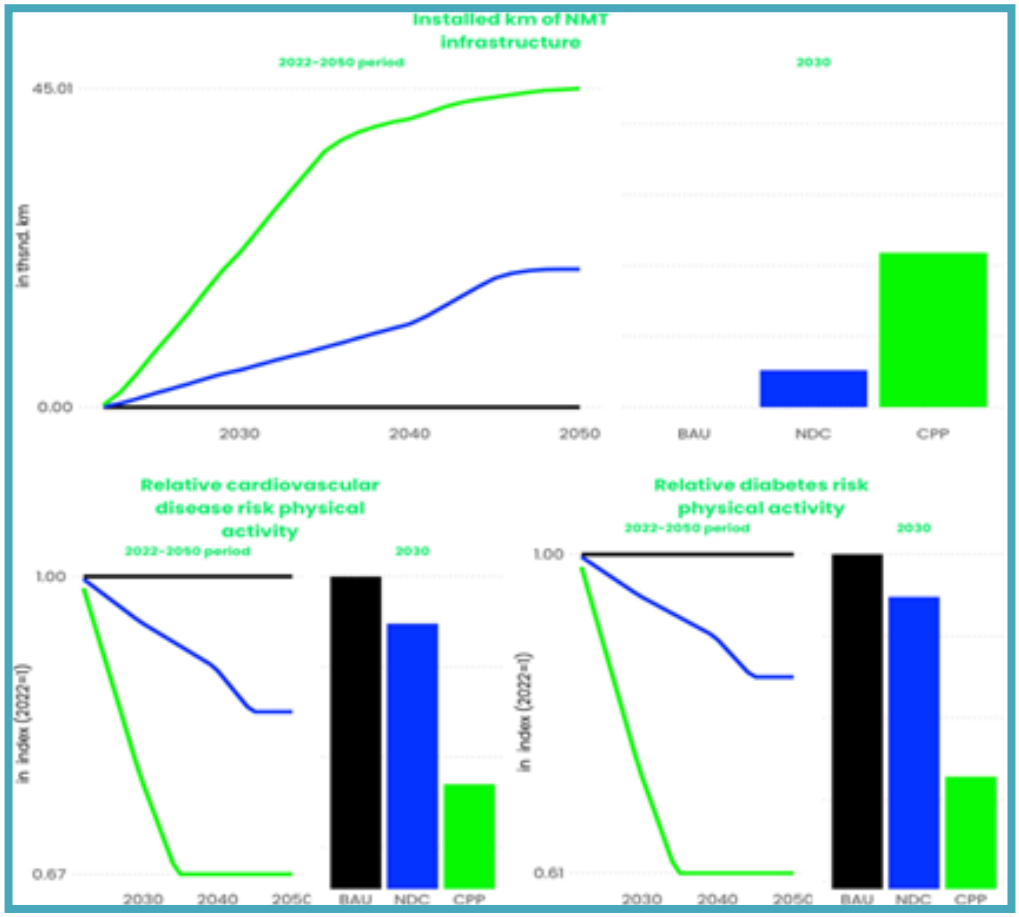


Figure 35: NMT infrastructure

IMPACT ON DIET

This subsection presents the macro-economic implications of a shift towards plant-based diets.

The shift in diets also has macroeconomic implications. On the one hand, the shift towards full domestic food production leads to reduction in total imports and on the other hand, it reduces the cost of obesity and implications for macroeconomic productivity. Import savings accrue gradually in alignment with the ambition for local production. The import saving goes gradually in the CPP scenario to 115.6 billion LKR in 2030, 262.6 billion LKR in 2040 and 292.8 billion LKR in 2050 with an average growth of 181.8 billion LKR over the period.

Another benefit of the implementation of the CPP scenario is its impact on the cost of obesity as share of GDP. In fact, this cost is projected to decline, and variate from 0.03 percent in 2022 and will reach 0.01 percent by 2050 driven by economic performance while these amount in the BAU are estimated at 0.03 percent in 2022 and 0.02 percent in 2050.

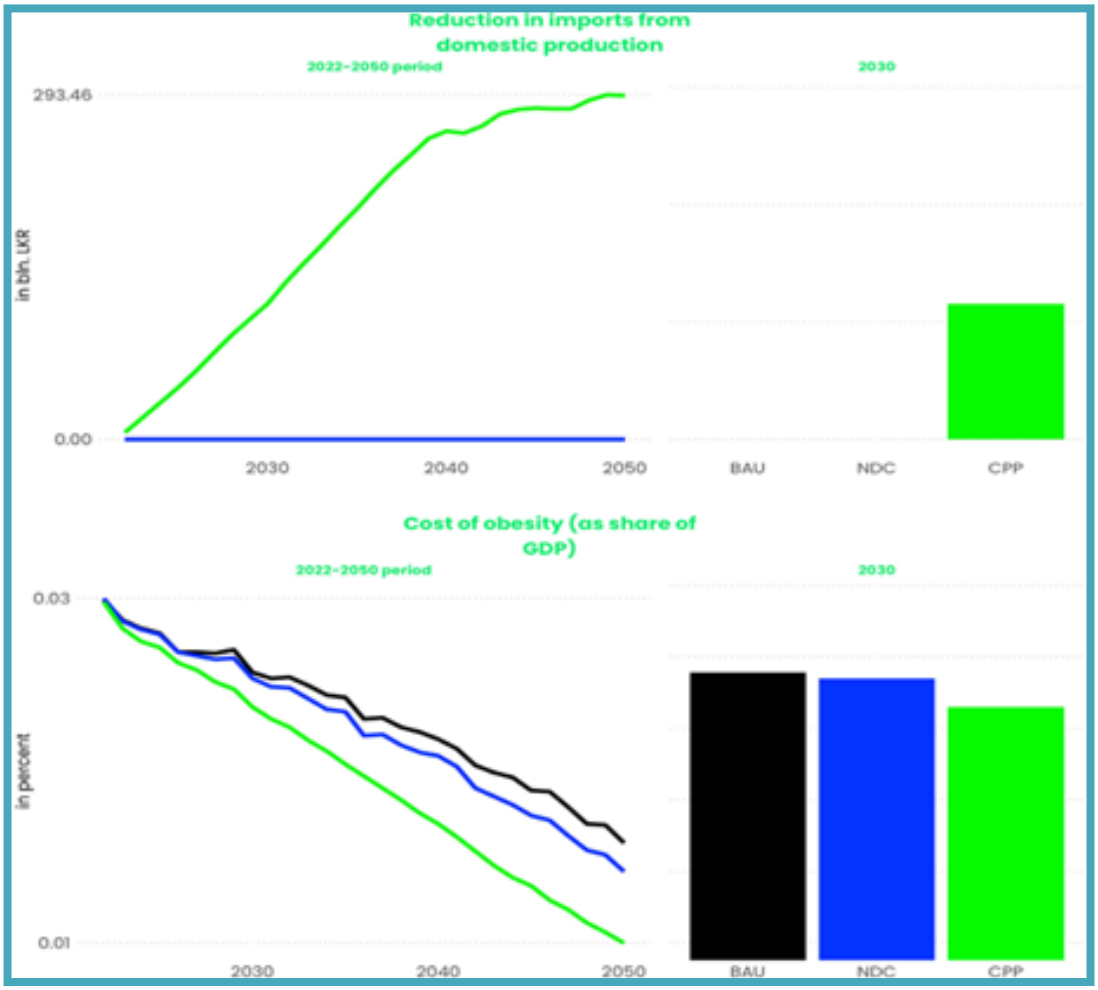


Figure 36: Cost of obesity

CLIMATE DAMAGE

Climate damage refers to the cumulative amount of damages resulting from climate change, regardless of whether reparation takes place. It provides an overview of the total damages that result from climate change impacts and hence allows for assessing the avoided damages from the implementation of interventions for adaptation.

In the BAU, the cumulative damages from climate change between 2022 and 2030 are projected to reach 5,101.8 billion LKR and damages between 2022 and 2050 are indicated around 7,666.6 billion LKR in 2050. This increasing amount is due to the reconstruction of assets and infrastructure, which can in turn be damaged again by future climate events.

In the CPP, between 2022 and 2050, 6,405.6 billion LKR are projected in climate change damages with an average value of 5,181.4 billion LKR per year which is in average -8.3% lower compared to the BAU because of the reduced damage in the CPP scenario.

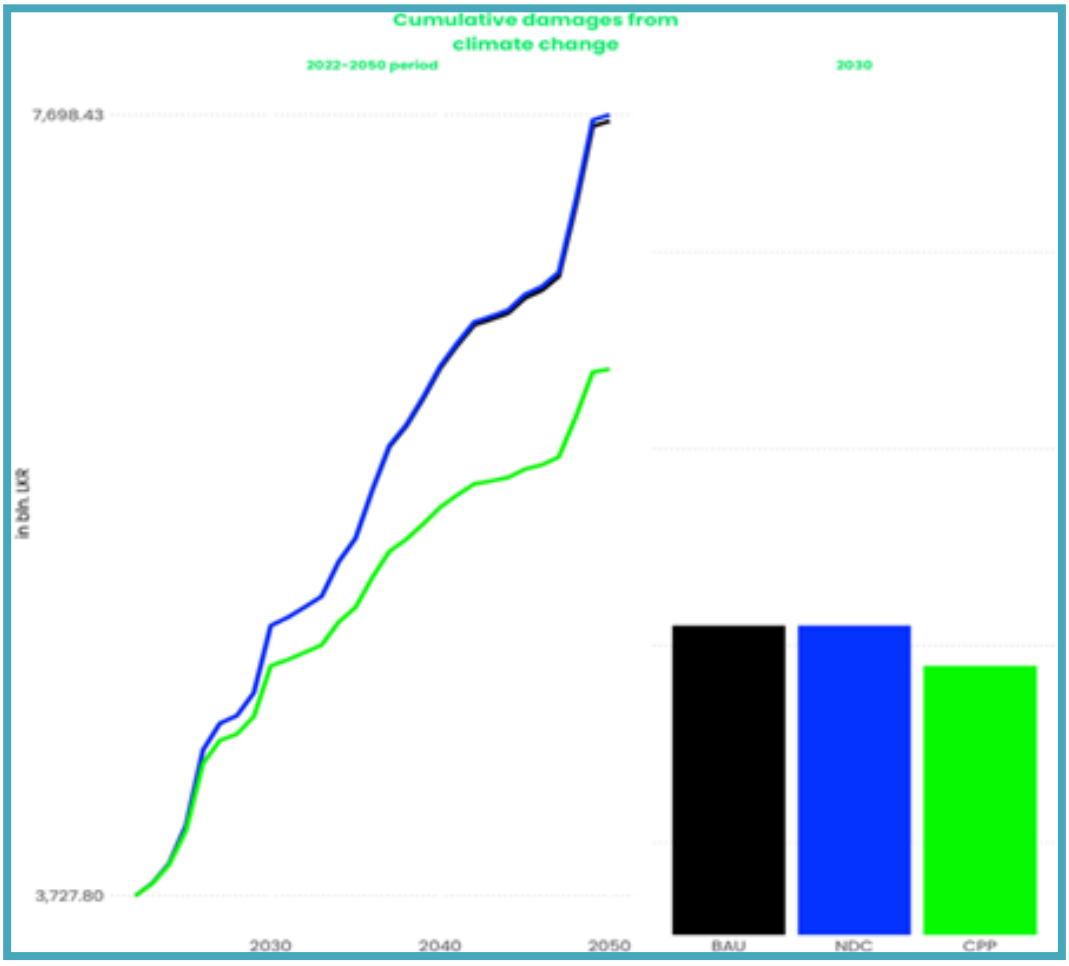


Figure 37: Cumulative damages from climate change

The cumulative climate change damages are driven by the size of the economy and the implementation of climate adaptation measures (CPP scenario). As the economy grows (+35.9% in the CPP scenario) because of prosperity measures, the potential for damages increases as well. The implementation of climate change adaptation measures reduces the risk of damages and hence reduces cumulative damages below the other two scenarios (CPP scenario).

The available funds for loss and damage represents the amount of money available for compensating losses and damages incurring from climate change.

In the baseline, the available investment for loss and damage culminate to 219.2 billion LKR in 2030, 543.7 billion LKR in 2040 and reaches 974.9 billion LKR in 2050.

In the case of CPP, the average value of this available investment over the same period is projected at 40.0 billion LKR with a cumulative value of 1,183.4 billion LKR by 2050. As a result of the reduced damage in the CPP scenario, the available funds for loss and damage may not be fully depleted in the medium and longer term. In this case, the funds would accumulate over time, as higher climate resilience is realized. Additional growth generated from the prosperity plan in the economy contributes to higher resource availability for loss and damage payments, enabling a more reliable recovery from damages. At the same time, there is a higher potential for damages through increased capital accumulation relative to the BAU scenario. However, the CPP scenario benefits from climate proofing the economy, which reduces damages and maintains productivity. This both increases growth relative to the BAU scenario and reduces the volatility of growth, leading to a more sustainable development trajectory.

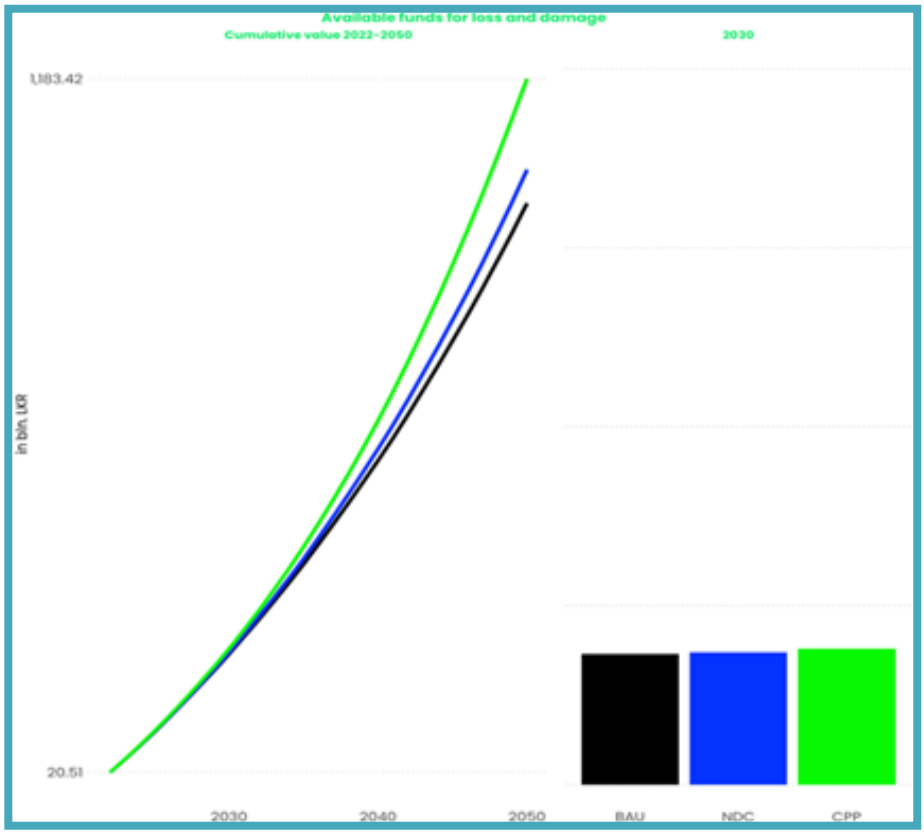


Figure 38: Available funds for loss and damage

The availability of money for loss and damage depends on the GDP and hence economic growth and the annual climate change damages that occur in each of the scenarios. A higher amount in the prosperity scenarios indicates a higher availability of funds for reparation payments, driven by increased economic growth.

The environmental variables are positively impacted by the CPP scenario thanks to the reduction of emissions, the decrease in the number of deaths, the increase in the forest cover but also the reduction of climate damages. As the economic, social, energy and environment variables have been evaluated in the previous section, it will be possible to assess the boost in the SGDs linked to the implementation of the Prosperity Plan.

SDG ASSESSMENT

Driven by the increase of growth, reduction of poverty, the new gain in the energy efficiency, etc, the section below evaluates the improvement of the SDGs.

SDGS BOOST

The figure below presents the boost in the achievement of the SDGs induced by the implementation of the CPP.

There is an overall improvement in the SDGs indicators through time in the CPP compared to BAU. The SDG 1, no poverty, increases from 4.88 % in 2030. This indicates that the CPP scenario significantly delivers improvements, both in terms of reducing poverty relative to the BAU as well as generating additional income per capita.

For the SDG 2, the analysis indicates that there are improvements in agriculture production per capita and the value added from the agriculture sector. Both trends show a growth in sectoral output and value added, contributing to development, and reducing hunger below the baseline scenario. The boost in the SDG 2, zero hunger, is indicated at 39.41 % in 2030.

The SDG 3, good health and well-being is measured by the total PM2.5 emissions at country level. The improvement of 40.17 % in 2030 in the CPP is attributable to significant reduction in air pollution which contributes to reducing air pollution related morbidity and mortality.

Improved energy productivity contributes to reducing the SDG 7, affordable and clean energy, and allows a boost of 29.57 % in the same target year.

Driven by the supplementary growth in the CPP and the better performance of the industry capital, the improvement in the SDG 8 (decent work and economic growth) and SDG 9 (industry, innovation and infrastructure) will respectively reach 5.4 % and 24.48 % by 2030.

The same is true for the SDG 13 (life on land) and SDG 15 (life on land) for which the improvement will be 45.55 % and 5.77 % in 2030 pushed by the CPP ambition in term of land management and climate resilience.

As the CPP positively boosted the SDGs, the subsequent section will provide the necessary investments for its implementation in the context of Sri Lanka.

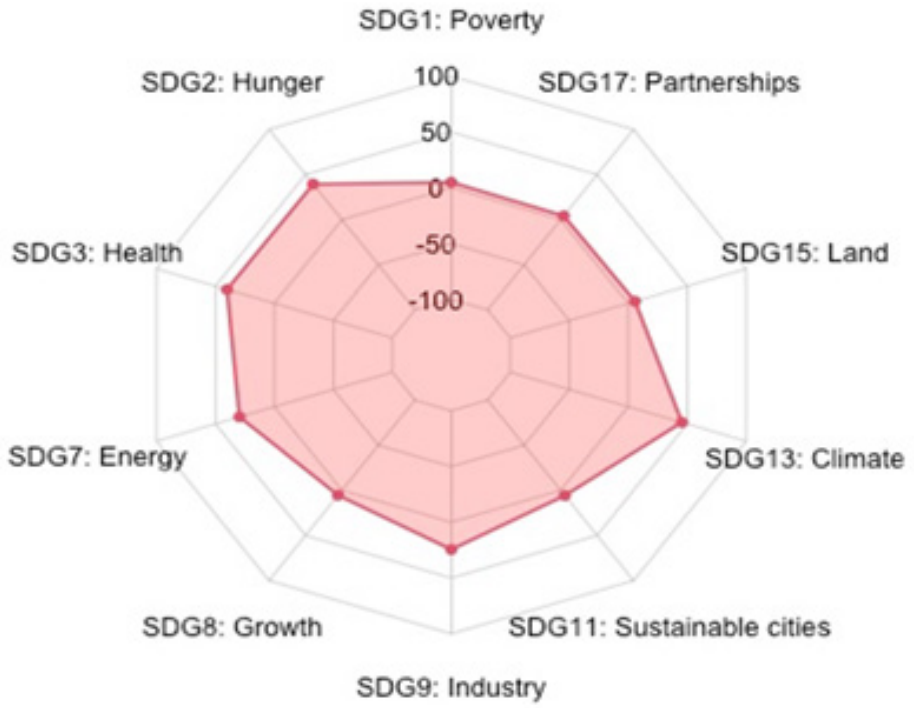


Figure 39: SDGs boost

INVESTMENT AND FINANCING

The subsequent section will present the investment requirements for the different scenarios and the cost benefit analysis performed.

FINANCING

The financing section gives an overview of the investment required for the implementation of transition and adaptation measures. These amounts are also presented compared to BAU to assess the additional necessary investment. The investments are also broken down between public and private, transition and adaptation to fully appreciate the share allocated to each component.

TOTAL INVESTMENT

The total investment in transition and adaptation is the total investment required for implementing the interventions for climate change transition and adaptation envisaged in the CPP scenario. It is calculated by multiplying the respective ambition (e.g., ha of land, buildings secured, etc) by a cost factor.

The total real investment in transition and adaptation averages 7.0 billion USD over the period 2022 to 2050 which represent as share of GDP, an average of 4.4 percent ; with a cumulative additional amount compared to BAU reaching 185.7 billion USD. As, in the CPP scenario, additional ambition is assumed both for transition and adaptation, by 2030, the cumulative additional investment required amounts to 60.9 billion USD.

To reach the net zero and full climate proofing of the economy, the additional investment (as share of GDP) required is 6.3 percent in 2030, 2.9 percent in 2040 and 1.5 percent in 2050. In Sri Lanka, 6.5 billion USD is required each year to achieve the CPP goals.

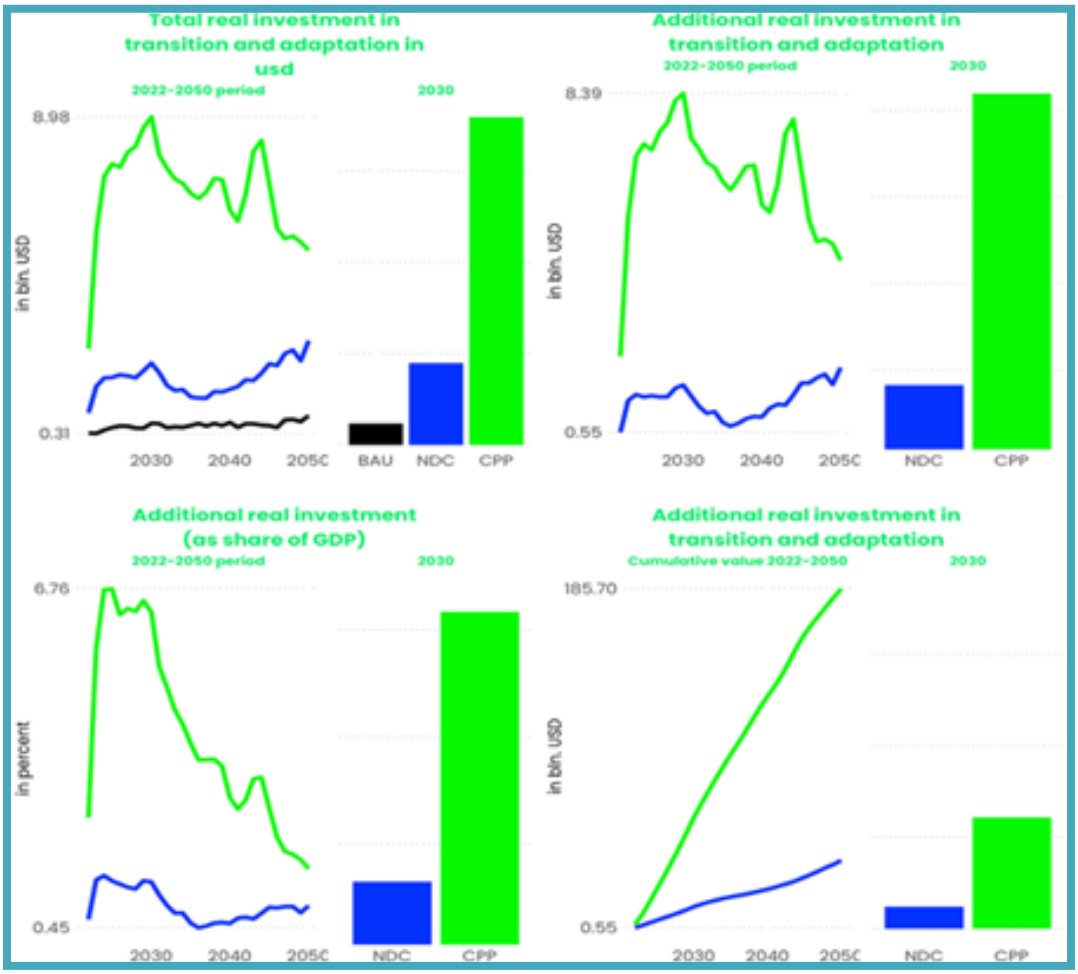


Figure 40: Investment in transition and adaptation

One of the main factors behind the change in this indicator, as illustrated in the graph, are total GDP (+20.8% in the CPP scenario) and the total annual cost of implementing prosperity and adaptation measures.

BREAKDOWN BETWEEN PUBLIC AND PRIVATE INVESTMENT

This annual public investment is the share of climate change transition and adaptation investments that is assumed to be borne by the public sector. The interventions include transition and adaptation investments for power generation and related infrastructure, investments in flood proofing buildings, the cost of waste management, the installation of charging networks for electric vehicles, greening urban areas, and the cost for electric buses. The private transition and adaptation investment represents the share of climate change transition and adaptation investments that is assumed to be borne by the private sector. The interventions include investments in electric vehicles, livestock emission reductions, cost of sustainable agriculture practices, investments in air conditioning and cost of carbon capture and storage in the industrial sector.

Several types of investments are considered in climate transition and adaptation. Some of these are typically public (e.g. power generation, public transport, waste management) while others are typically private (e.g. agriculture, energy efficiency, and purchase of private vehicles). In reality the government may provide incentives for the adoption of new, more efficient, and low carbon technologies by the private sector. Similarly, public-private partnerships can be established for the private sector to build and operate public infrastructure on behalf of the government. However, for the analysis of funding requirements, we assume that certain investments would be the responsibility of the government, while others of the private sector. This is required to inform the creation of a financing strategy for the implementation of the CPP strategy. In the prosperity scenario, the total cumulative public investment in transition and adaptation required between 2022 and 2030 is estimated at 32.8 billion USD and averages 3.6 billion USD per year over the next 28 years, whereby the majority of investments is required between 2030 and 2040 with respectively 4.9 billion USD and 2.8 billion USD.

The total private sector investment requirement additional to BAU is indicated at 32.0 billion USD for the period from 2022 to 2030 and at 94.5 billion USD from 2022 and 2050. The average annual investment over the course of the 28 years is 3.3 billion USD.

These values of the annual public and private investment are mainly driven by the intervention considered to be implemented by the respective sector, their ambition, and the respective cost of implementation.

Figure 41: Private vs public investment

BREAKDOWN BETWEEN TRANSITION AND ADAPTATION

The investment in transition is the total investment and O&M cost resulting from the implementation of climate change transition actions while the investment in adaptation presents the annual investment required for the implementation of the adaptation ambitions. It is calculated based on the units implemented and a respective unit cost.

The total additional investment compared to BAU is broken down here to appreciate the investment allocated to transition and to adaptation.. The adaptation investment is zero because there is no quantified adaptation ambition in the baseline scenario.

In the CPP scenario, the average growth of the investment in transition is indicated at 5.5 billion USD in 2030 and reaches 4.5 billion USD in 2050 which represents an additional investment of 4.9 billion USD in 2030 and 3.7 billion USD in 2050. However, when reported as share of GDP, this additional effort requirement represents 3.7 percent (2030) and 1.3 percent (2050) boosted by the additional growth induced by the implementation of CPP ambitions. The cumulative additional investment in transition required by 2050 reaches 118.1 billion USD and the cumulated value for adaptation (i.e., the adaptation portion of the CPP scenario) is projected to be 67,585.1 million USD at the same period. The annual average adaptation investment over the next 28 years is 2,379.8 million USD which allows the diversification of intervention and offers co-benefits. When looking at annual value as share of GDP, the additional investment represents 2.6 percent in 2030 and ended up being 0.3 percent by 2050.

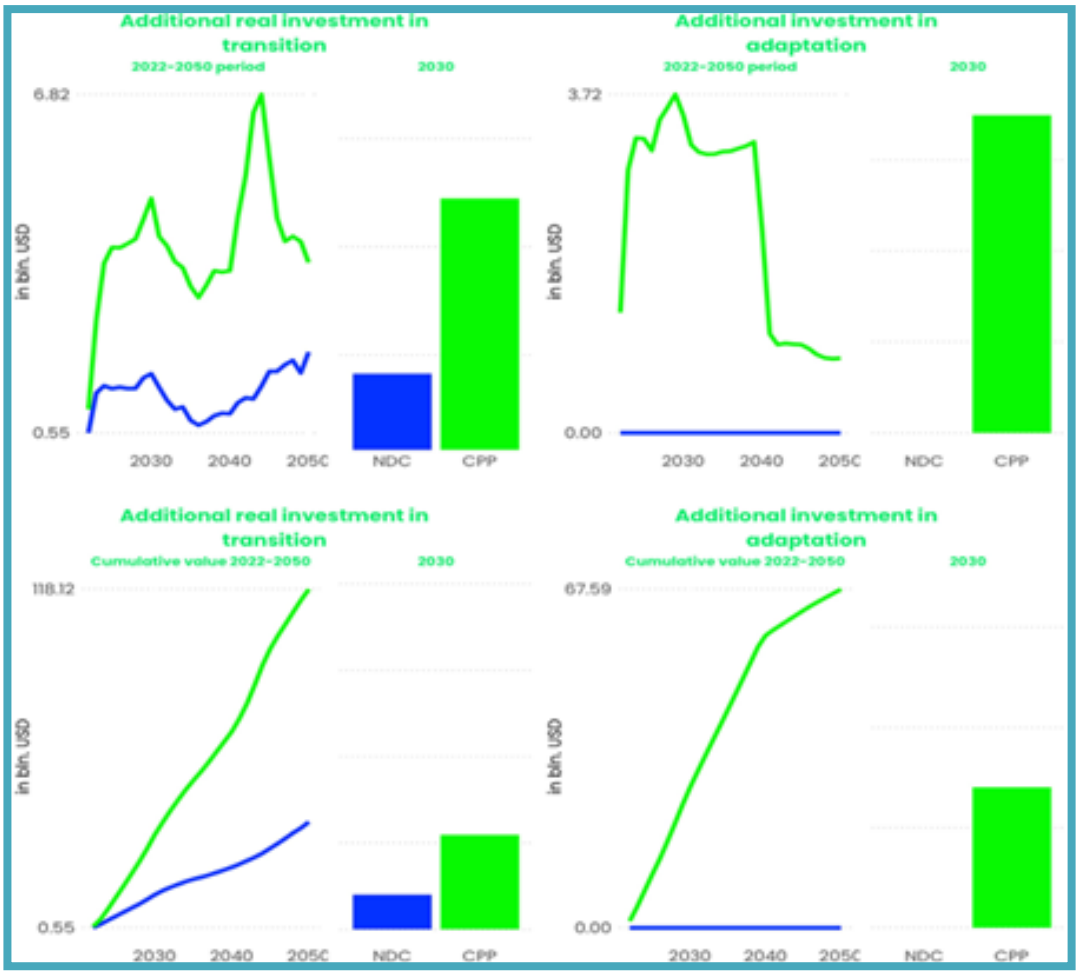


Figure 42: Investment in transition vs adaptation

The implementation of the CPP scenario would require additional efforts compared to BAU, but is beneficial for the country as these values decreases over the years. To fully capture the benefit of the implementation of the prosperity scenario, the next section will present the cost and benefit analysis performed.

COST-BENEFIT ANALYSIS

The CPP scenario requires, as stated before, some additional investments. This section will provide a full overview of this required investment evolution, but also the avoided cost as well as the added benefits and conclude with a benefit to cost assessment.

An integrated Cost Benefit Analysis (CBA) was created to assess the economic viability of the scenarios analyzed. In this assessment the following are considered:

- required capital investment and operation & maintenance cost (i),
- avoided costs resulting from the implementation of the investment (ii), and
- added benefits generated beyond the BAU scenario (iii).

Concerning **(i)** investments, for climate mitigation it is considered:

- energy efficiency,
- industrial carbon capture and sequestration,
- fuel switching,
- land-based interventions,
- livestock management,
- sustainable agriculture,
- waste management,
- transport electrification and
- power generation.

Climate adaptation also require investments in the following areas:

- flood protection for buildings,
- irrigation infrastructure,
- drainage systems,
- road network,
- shading and
- livestock adaptation.

Concerning **(ii)** avoided costs the followings are considered:

- reduced energy spending,
- reduced social cost of carbon,
- avoided costs for the purchase of internal combustion engine vehicles (replaced by EVs),
- reduced cost of air pollution from direct energy use and power generation.

Concerning **(iii)** added benefits it is considered:

- additional GDP,
- government revenues and
- household savings.

With this information the Benefit to Cost Ratio (BCR) is estimated to assess the economic viability of the investments simulated, considering both tangible and intangible avoided costs and benefits, to perform a societal assessment of the outcomes of the NDC and CPP scenarios. The two tables below present the full CBA, for the periods 2022 – 2030 (to better reflect the timeline of the NDC) and 2022 – 2050 (to better reflect the timeline of the CPP). Considering the lifetime of the investments

simulated, the CBA of the second table should generally be used. In fact, given that some of the investments implemented after 2030 have a lifetime that will stretch beyond 2050, it can confidently be said that the results presented in the CBA for the benefit-cost ratio are an underestimation of the benefits that will be accrued at the country level over time.

TOTAL INVESTMENT REQUIRED

The total investment required is the total cumulative investment and O&M cost related to the implementation of transition and adaptation interventions. Furthermore, this category also includes the total loss and damages payments required (i.e. the payments required for repairing climate change related damages). The values are presented for the period 2022 to 2050, discounted at a specific country discount rate.

The total investment required in CPP goes from 2.7 billion USD in 2022 to 10.4 billion USD in 2030, and 9.9 billion USD in 2040.

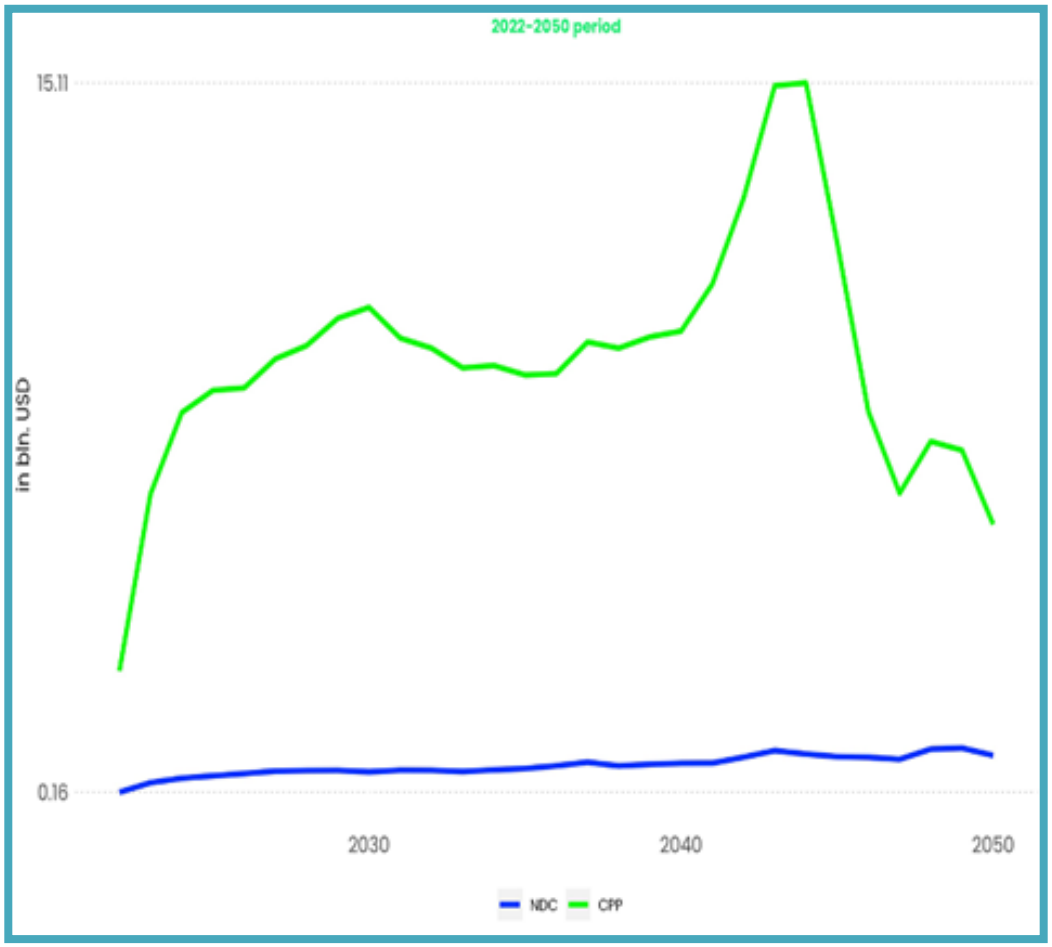


Figure 43: Total investment required

TOTAL AVOIDED COST

The avoided cost corresponds to both tangible as well as intangible costs that are avoided as a result of implementing climate change adaptation and transition interventions. Examples are energy expenditure savings, reductions in climate change damages relative to the baseline or avoided investment in conventional vehicles resulting from the electrification of the fleet. The values presented are cumulative for the period 2022 to 2050 and discounted at a specific country discount rate.

The total avoided cost in CPP goes from 0.6 billion USD in 2022 to 8.2 billion USD in 2030, and 18.4 billion USD in 2040.

This amount reaches 20.8 billion USD in 2050.

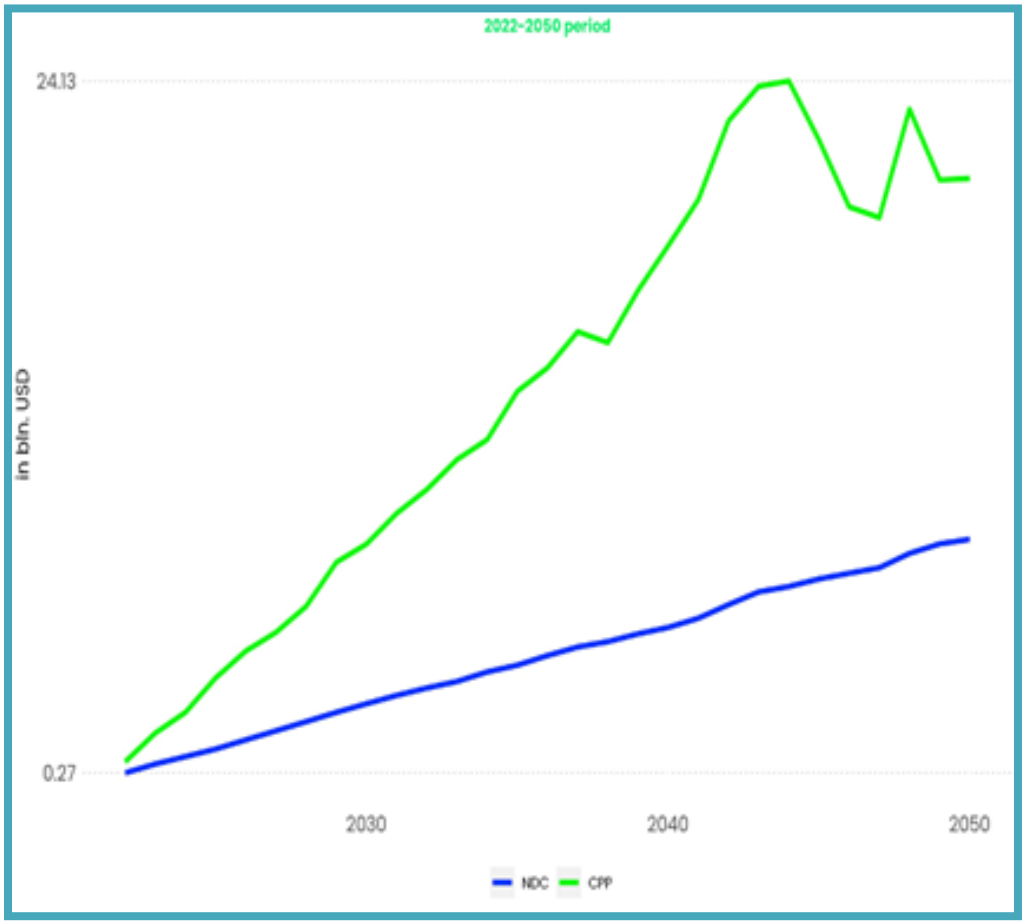


Figure 44: Total avoided cost

TOTAL ADDED BENEFITS

The added benefits correspond to the additional real GDP and labor income materializing because of implementing climate change adaptation and mitigation interventions. The values presented are cumulative for the period 2022 to 2050 and discounted at a specific country discount rate.

The total added benefits in CPP goes from 0.3 billion USD in 2022 to 9.4 billion USD in 2030, and 42.8 billion USD in 2040.

This amount reaches 75.1 billion USD in 2050.

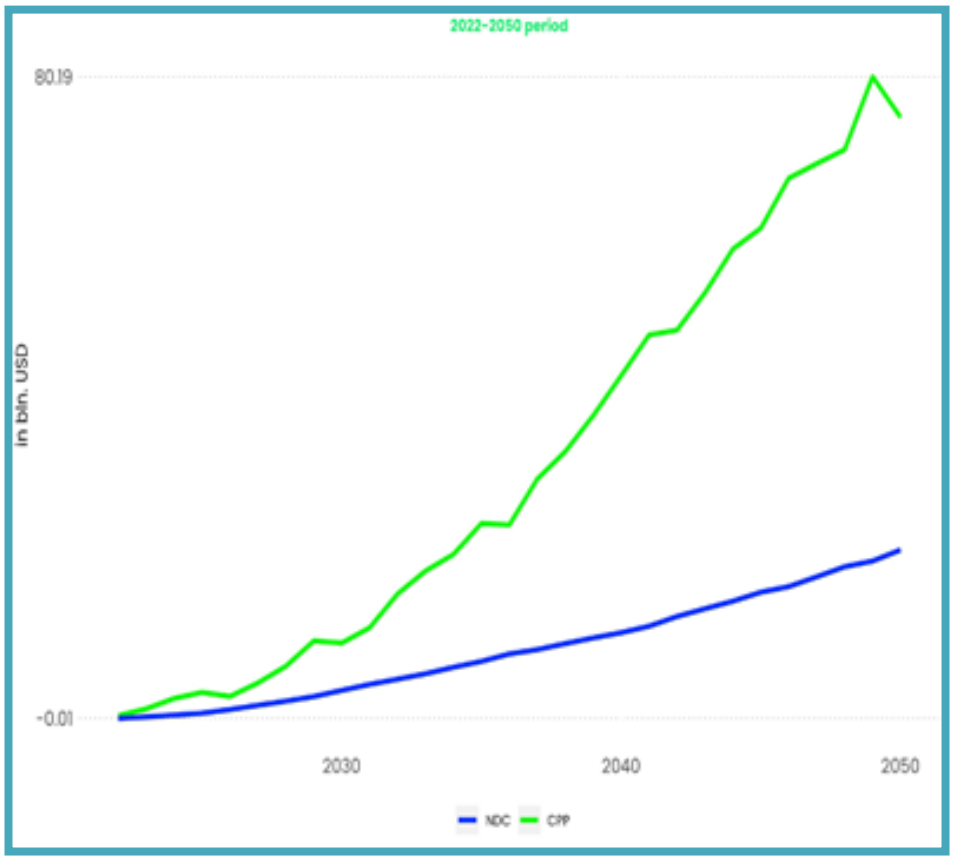


Figure 45: Total added benefits

COST BENEFIT

The net benefits are calculated based on cumulative total investment and O&M cost, avoided cost and added benefits; being cumulative, the result is indicative for total system wide net benefits (or additional net costs) for the period 2022 to 2050. The difference between the sum of avoided costs and added benefits and total investment and loss and damages cost are considered net benefits. In other words, if the sum of avoided costs and added benefits is larger than the total investment and loss and damage payments, a net benefit emerges.

The implementation of CPP will generate for Sri Lanka a net benefit of -2.4 billion USD by 2030 and 94.3 billion USD by 2050.

The net investment for the country is 36.5 billion USD by 2030 and 54.2 billion USD by 2050.

CBA INDICATORS (IN BILLIONS USD)	2030	2050
Investments in transition	**27.0**	**46.2**
Investments in adaptation	**17.1**	**24.0**
Loss and damage payments	**0.0**	**0.0**
Total investment required	**44.1**	**70.2**
Total avoided cost	**21.2**	**60.6**
Total added benefits	**20.6**	**104.0**
Net integrated benefits	**-2.4**	**94.3**
Net investment	**36.5**	**54.2**

Table 4: Cost Benefit

BENEFIT TO COST RATIO

The Benefit to Cost Ratio (BCR) is calculated by dividing the sum of avoided costs, and added benefits by the sum of total investment, O&M and loss and damage payments. A value larger than 1 indicates that per USD invested, more than one dollar results in system wide benefits as result of intervening.

In 2030, the cost-benefit ratio of the CPP is 0.9 and it reaches 2.3 in 2050. Practically, this means that for every dollar invested, the investor generates a present value benefit of 2.3 dollars by 2050. The net benefit of the CPP increases with time and amounts to 54.16 billion USD by 2050. This is because there is more time for the benefits of the investments to accumulate (e.g., energy efficiency investments result in energy and related cost savings every year, once new and more efficient equipment is adopted). The CPP scenario, despite being more ambitious than the NDC and considering more, and higher cost investments, is also economically viable.

Further, it is noted that the avoided costs are larger than the investment required by 2030 (ratio of 0.9), indicating that avoided costs alone would be sufficient to repay the investment.

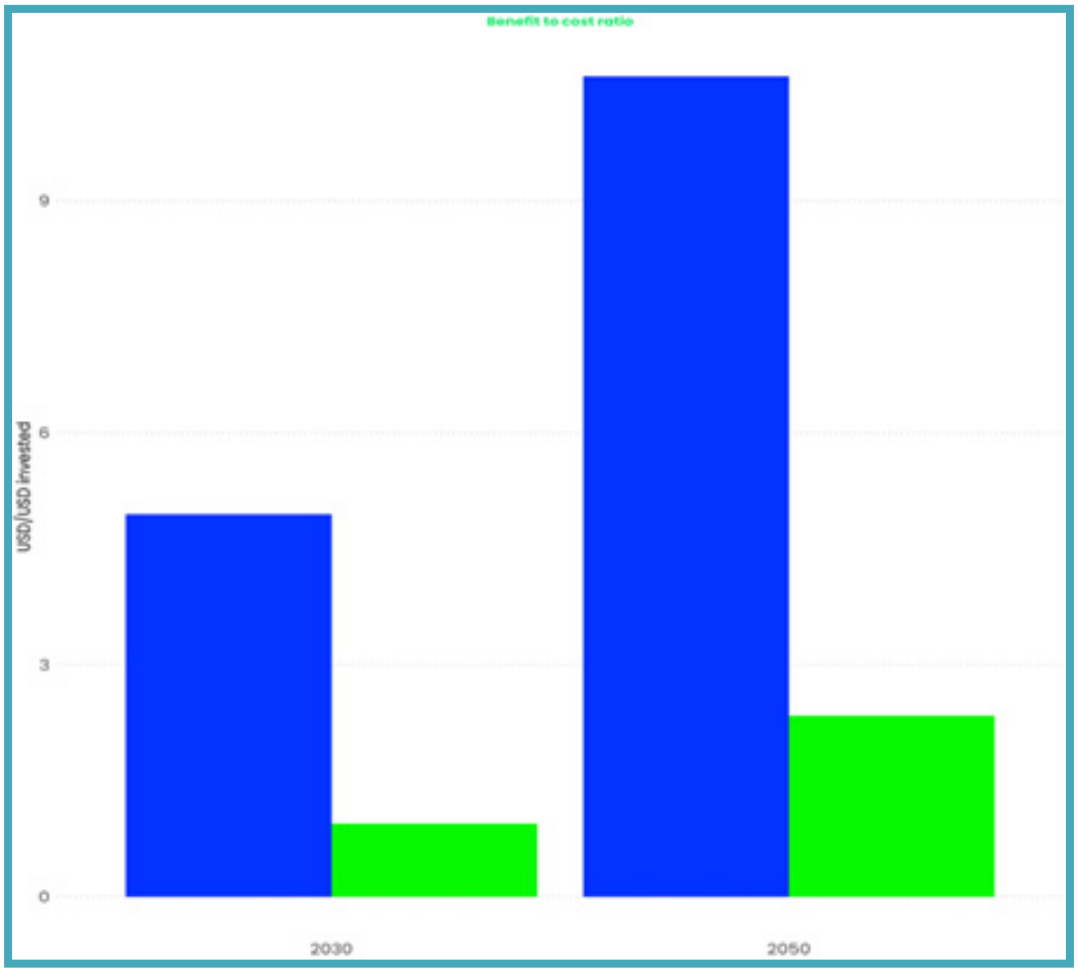


Figure 46: Benefit to cost ratio

The positive cost to benefit ratio demonstrates the overall interest of implementing the CPP ambitions. The CPP scenario is therefore profitable and provides positive outcomes for Sri Lanka but also generates an interesting net benefit.

Table 5: Glossary

GLOSSARY

TERM	DEFINITION
ADDITIONAL INVESTMENT IN ADAPTATION	The annual investment required for the implementation of the adaptation ambitions.
ADDITIONAL REAL INVESTMENT IN TRANSITION	The additional real investment in transition presents the additional annual amount required for implementing transition ambitions compared to the baseline.
ANNUAL CO2E EMISSIONS	The sum of total greenhouse gas (GHG) emissions emitted. This indicator is calculated by summing up the emissions generated across all IPCC categories.
ANNUAL PUBLIC TRANSITION AND ADAPTATION INVESTMENT	The share of transition and adaptation investments by the public sector. Interventions include investments for power generation and related infrastructure, flood proofing buildings, waste management, charging networks for electric vehicles, greening urban areas and electric buses.
BENEFIT TO COST RATIO	The Benefit to Cost Ratio (BCR) is calculated by dividing the sum of avoided costs and added benefits by the sum of total investment, O&M and loss and damage payments. A value above 1 indicates that one USD invested generates more than one USD.
CARBON CREDIT REVENUES FROM ENERGY EXPORTS	The number of tons avoided multiplied by the value per ton yields the value of credits generated from energy exports
CARBON CREDIT REVENUES FROM MANGROVE RESTORATION	Carbon credits from mangrove restoration are estimated based on the change in carbon stock resulting from converting one hectare of land to mangroves.
CARBON CREDIT REVENUES FROM REFORESTATION	Carbon credits from reforestation are estimated based on the change in carbon stock resulting from reforesting one hectare of barren land.
CROPLAND	Cropland is the total agriculture land that is used for crop production.
CUMULATIVE DAMAGES FROM CLIMATE CHANGE	The cumulative amount of damages resulting from climate change impacts.
CUMULATIVE NET SAVINGS FROM ENERGY EFFICIENCY	The cumulative net amount of final energy use avoided as a result of implementing energy efficiency measures.
DISPOSABLE INCOME INDEX RELATIVE TO 2022	Index of real disposable income with respect to base year
ENERGY AFFORDABILITY INDEX	The energy affordability index is calculated by dividing the disposable income index by the energy bill index. It indicates how the total disposable income develops in relation to total energy cost. An increase signifies that energy becomes more affordable.

TERM	DEFINITION
ENERGY BILL	Energy bill indicates the total energy cost resulting from final energy consumption, it is the sum of costs for petroleum products, natural gas, coal and electricity.
ENERGY BILL (AS SHARE OF GDP)	Energy bill (as share of GDP) presents the total energy cost resulting from final energy consumption in relation to total GDP.
ENERGY BILL INDEX	Index of total country energy cost with respect to base year.
ENERGY DEMAND	Total final energy consumption is calculated as the sum of demand across all fuels (petroleum, coal, electricity, natural gas and biomass) and sectors (residential, commercial, industrial and transport).
ENERGY EFFICIENCY CHANGE	The rate of change that is applied to the stock of energy efficiency.
ENERGY TAX INCOME	Energy tax income is the sum of taxes from the sales and production of petroleum products and electricity.
FOREST COVER	The total amount of hectares covered by forests.
FOREST COVER (AS SHARE OF TOTAL LAND)	This indicator provides information about the total share of land that is covered by forests. Estimated by dividing total forest by total land.
FOREST INDEX	The forest index indicates the change in total forest land relative to the base year.
FOSSIL FUEL EXPENDITURE (AS SHARE IN TOTAL IMPORTS)	This indicator shows how the share of fossil fuel costs in total imports develops over time.
GREEN JOBS	Green jobs are jobs that result from the implementation of interventions in the CPP scenario.
INDUSTRY CAPITAL INDEX	The industry capital index indicates the change in total industrial capital relative to the base year.
INSTALLED KM OF NMT INFRASTRUCTURE	This indicator products insight into the total kilometers of Non Motorized Transport (NMT) infrastructure installed.
INVESTMENT IN LOSS AND DAMAGE	The investment in loss and damage represents the amount of money available for compensating losses and damages incurring from climate change.
INVESTMENT IN TRANSITION	Total investment and O&M cost resulting from the implementation of mitigation actions.
MORTALITY RATE RELATED TO AIR POLLUTION	Mortality rate attributable to air pollution, both ambient and indoor.
TRADE BALANCE ADJUSTED FOR ENERGY TRADE	This indicator is calculated by deducting non-energy imports from non-energy exports.
TRADE BALANCE ADJUSTED FOR ENERGY TRADE (AS SHARE OF GDP)	This indicator provides an overview of the trade balance adjusted for energy trade and its evolution in comparison to GDP.

TERM	DEFINITION
PM2.5 EMISSIONS INDEX	Index of death rate related to ambient air pollution.
PM2.5 EMISSIONS FROM ENERGY AND POWER	The sum of PM2.5 emissions from final energy consumption and power generation fuel use.
PERCENTAGE OF POPULATION BELOW POVERTY LINE	The percentage of population below poverty line indicate the share of the total population that lives in poverty.
POPULATION BELOW POVERTY LINE	Total number of people living below the poverty line.
POWER GENERATION CAPACITY	The total MegaWatts (MW) of power generation capacity installed at country level.
PRIVATE SAVINGS INDEX	The index of private savings at country level with respect to the base year.
PRIVATE TRANSITION AND ADAPTATION INVESTMENT	The share of transition and adaptation investments borne by the private sector. Interventions include electric vehicles, livestock emission reductions, cost of sustainable agriculture practices, investments in air conditioning and cost of carbon capture and storage in the industrial sector.
REAL GDP	Total real GDP is the Gross Domestic Product in constant terms.
REAL GDP GROWTH RATE	The real GDP growth rate is the annual percent change in real GDP.
REAL DISPOSABLE INCOME PER CAPITA	The real disposable income per capita is the disposable income divided by total population.
RELATIVE CARDIOVASCULAR DISEASE RISK PHYSICAL ACTIVITY	Indicates the change in risk of cardiovascular diseases resulting from the model shift towards non-motorized transport.
RELATIVE DIABETES RISK PHYSICAL ACTIVITY	Indicates the change in overall diabetes risk resulting from the model shift towards non-motorized transport.
RELATIVE ENERGY EFFICIENCY	Relative energy efficiency is an index relative to base year that indicates how energy efficiency develops over time.
SERVICES CAPITAL INDEX	The services capital index indicates the change in total services capital relative to the base year.
TAXES ON INCOME AND PROFITS	Taxes on income and profits is the sum of income taxes paid by private individuals and profit taxes paid by corporations.
TOTAL ANNUAL DEATHS FROM AMBIENT AIR POLLUTION	The total number of deaths per year related to ambient and indoor air pollution.
TOTAL AVOIDED COST	Avoided cost are avoided tangible and intangible costs from implementing resulting from adaptation and mitigation (ex: energy expenditure savings, reductions in damages). The values are cumulative for the 2022-2050 period and discounted.

TERM	DEFINITION
TOTAL CUMULATIVE DEATHS FROM AIR POLLUTION	Total cumulative number of people that died from ambient and indoor air pollution since 2016.
TOTAL EMPLOYMENT	The total number of jobs across all sectors, including green jobs.
TOTAL EMPLOYMENT INDEX	The total employment index indicates the change in total employment relative to the base year.
TOTAL GOVERNMENT REVENUE	Total government revenues represent the total annual revenues for the government from taxes, grants and other sources.
TOTAL INVESTMENT REQUIRED	The total cumulative investment and O&M cost related to the implementation of transition and adaptation interventions, including total loss and damages payments required. The values are cumulative for the 2022-2050 period and discounted.
TOTAL REAL INVESTMENT IN TRANSITION AND ADAPTATION	Total investment required for implementing the interventions for transition and adaptation.
TOTAL TAX FROM GOODS AND SERVICES	The tax from goods and services constitutes the VAT category of government revenues. It is estimated as the sum of energy tax income and the residual VAT.
TOTAL VALUE OF CARBON CREDITS	The total value of carbon credits is calculated as the sum of carbon credits from energy exports, mangrove restoration and reforestation
TRADE BALANCE	This indicator is calculated by deducting total imports from total exports.
TRADE BALANCE (AS SHARE OF GDP)	This indicator is calculated by deducting total imports from total exports and dividing it by GDP.
UNEMPLOYMENT RATE	The ratio of total unemployed person to total population across all sectors, including green jobs.
UNIT COST OF ENERGY CONSUMED	The average cost per TJ of final energy consumed is calculated by dividing the total energy bill by total final energy consumption.

COMPLEMENTARY INFORMATION

SCENARIO OVERVIEW

The table below presents the modelling assumptions that were used to simulate the NDC and CPP scenarios. For the NDC scenario, the model assumptions were calibrated in alignment with the ambitions described in the official NDC documents. The emission reductions in the NDC scenario are hence aligned with official conditional contributions. In the CPP scenario, additional ambition for climate change mitigation was simulated on top of the NDC ambitions, ensuring that net zero emissions are reached in the year 2050. Furthermore, the CPP scenario also assumes the implementation of prosperity measures to achieve targets and objectives outlined in the official target document, such as for example adaptation measures for agriculture production and infrastructure (e.g. roads, buildings, power generation).

Climate change mitigation							
licator	Unit	NDC scenario			CPP scenario		
		2030	2040	2050	2030	2040	2050
ulture							
	%	60%	90%	90%	60%	90%	90%
l requiring sust. Practices	%	100%	100%	100%	100%	100%	100%
ctivity per hectare	%	10%			10%		
yment per hectare	%	10%			10%		
added per ton	%	10%			10%		
ilizer use per ha	%	50%			50%		
sequestration	ton/ha/year	1 Ton/Ha/Year			1 Ton/Ha/Year		
	%	20%	40%	60%	20%	40%	60%
on from feeding	%	20%			20%		
diet	days/year	250			250		
ments							
on in CH4 emissions from genetic	%	10%	17,5%	25%	10%	17,5%	25%
ventions							
mulative)	Ha	0	0	0	0	0	89 500
n (cumulative)	Ha	0	0	0	0	0	0
tion (cumulative)	Ha	0	0	0	0	0	0
erventions							
wth	%/Year	0,5%	0,5%	0,5%	2%	2%	2%
sport demand from NMT	%	0,0%	0,0%	0,0%	0%	0%	0%
petroleum demand							
	%	5%	10%	15%	25%	60%	100%
	%	5%	10%	15%	25%	60%	100%
	%	5%	10%	15%	25%	60%	100%
	%	5%	10%	15%	25%	60%	100%
coal demand							
	%	14%	32%	50%	25%	60%	100%
	%	14%	32%	50%	25%	60%	100%
	%	7%	16%	25%	25%	60%	100%
	%	14%	32%	50%	25%	60%	100%
biomass demand							
	%	5%	10%	15%	25%	60%	100%
	%	0%	0%	0%	25%	60%	100%
	%	0%	0%	0%	25%	60%	100%
	%	0%	0%	0%	25%	60%	100%
natural gas demand							
	%	5%	10%	15%	5%	10%	15%
	%	5%	10%	15%	5%	10%	15%
	%	5%	10%	15%	5%	10%	15%
	%	5%	10%	15%	5%	10%	15%
n							
y generated from renewables	%	75%	85%	100%	80%	100%	100%
smission losses	%	25%	50%	50%	25%	50%	50%
ent							
rate	%	70%	70%	70%	70%	70%	70%
recycled	%	10%	10%	10%	15%	20%	25%
tewater related GHG	%	25%	50%	75%	25%	50%	75%
mproved processes	%	10%	25%	40%	10%	30%	60%
eduction from CCS	%	10%	25%	40%	25%	50%	75%

Figure 47: Scenarios transition assumptions

Climate change adaptation						
Intervention/indicator	Unit	NDC scenario			CPP scenar	
		2030	2040	2050	2030	2040
Agriculture land						
Temperature and drought protection						
Share of cropland requiring net shading	%	13%	13%	13%	13%	13%
Share of land protected by net shading	%	0%	0%	0%	66%	100%
Share of cropland requiring adaptation	%	100%	100%	100%	100%	100%
Share of land using resilient practices	%	0%	0%	0%	60%	90%
Share of land covered by drip irrigation	%	0%	0%	0%	6%	10%
Flood protection						
Share of cropland requiring adaptation	%	100%	100%	100%	100%	100%
Share of cropland equiped with drainage	%	0%	0%	0%	66%	100%
Livestock						
Cattle						
Technology-based heat protection	%	0%	0%	0%	30%	50%
Nature-based heat protection	%	0%	0%	0%	30%	50%
Pigs						
Technology-based heat protection	%	0%	0%	0%	30%	50%
Nature-based heat protection	%	0%	0%	0%	30%	50%
Poultry						
Technology-based heat protection	%	0%	0%	0%	30%	50%
Nature-based heat protection	%	0%	0%	0%	30%	50%
Labor productivity						
Share of buildings requiring temperature adaptation	%	100%	100%	100%	100%	100%
Additional buildings with airco	%	0%	0%	0%	20%	30%
Buildings with retrofit insulation	%	0%	0%	0%	31%	70%
Livable cities (green spaces)	%	25%	35%	50%	25%	35%
Decrease in WBGT from greening cities		2 °C at 100% adaptation			2 °C at 100% ada	
Flood protection for infrastructure						
Share of buildings requiring flood protection	%	19%	19%	19%	19%	19%
Share of buildings with flood protection	%	0%	0%	0%	50%	100%
Share of buildings with high cost flood protection	%	64%	64%	64%	64%	64%
Industry capital with flood protection	%	0%	0%	0%	50%	100%
Services capital with flood protection	%	0%	0%	0%	50%	100%
Power generation						
Wind protection						
Share of power generation capacity requiring adaptation		100%	100%	100%	100%	100%
Thermal generators	%	0%	0%	0%	66%	100%
Wind generators	%	0%	0%	0%	66%	100%
Solar generators	%	0%	0%	0%	66%	100%
Share of transmission network requiring adaptation	%	100%	100%	100%	100%	100%
Electrical substations/transmission lines	%	0%	0%	0%	0%	0%
Flood protection						
Share of power generation capacity requiring adaptat	%	100%	100%	100%	100%	100%
Thermal generators	%	0%	0%	0%	66%	100%
Hydropower	%	0%	0%	0%	66%	100%
Wind generators	%	0%	0%	0%	0%	0%
Solar generators	%	0%	0%	0%	0%	0%
Share of transmission network requiring adaptation	%	100%	100%	100%	100%	100%
Electrical substations/transmission lines	%	0%	0%	0%	66%	100%

Figure 48: Scenarios adaptation assumptions

DISAGGREGATED CBA TABLES

The cost benefit table here is disaggregated to present all the components between 2022 and 2030 as well as 2022 and 2050.

		NDC scenario		CPP scenario	
CBA indicator	**Unit**	**2022-2030**	**2022-2050**	**2022-2030**	**2022-2050**
Investments in mitigation	**USD million**	**2 280,72**	**3 819,40**	**17 014,77**	**31 436,95**
Power generation	USD million	2 889	4 721	4 250	7 494
Transmission lines	USD million	190	339	1 042	2 384
Energy efficiency	USD million	38	61	308	453
Industrial CCS	USD million	17	31	45	70
Fuel switching	USD million	128	331	581	1 479
Land-based interventions	USD million	0	0	0	7
Livestock related emission reductions	USD million	43	114	34	62
Sustainable agriculture	USD million	0	0	1 755	3 323
Waste management	USD million	97	204	167	386
Investment in NMT infrastructure	USD million	90	123	376	467
Total cost of transport electrification and power generation	USD million	1 678	2 616	8 457	15 313
Investment in fast chargers	*USD million*	101	158	512	940
Chargers investment	*USD million*	*62*	*88*	*311*	*505*
Chargers O&M	*USD million*	*12*	*37*	*61*	*214*
Electric buses	*USD million*	*22*	*34*	*112*	*196*
Electric vehicles	*USD million*	*1 452*	*2 216*	*7 319*	*12 979*
O&M electric buses	*USD million*	*2*	*6*	*10*	*37*
O&M Evs	*USD million*	*26*	*76*	*133*	*442*
Investments in adaptation	**USD million**	**0**	**0**	**15 570**	**21 585**
Flood protection (buildings)	USD million	0	0	1 350	1 785
Drip irrigation	USD million	0	0	227	383
Drainage systems	USD million	0	0	3 120	5 039
Road network	USD million	0	0	44	60
Net shading	USD million	0	0	3 190	3 825
Retrofitting	USD million	0	0	6 475	8 948
Livestock adaptation	USD million	0	0	18	20
Power generation	USD million	0	0	285	483
Contingency payments	**USD million**	**0,03**	**-0,05**	**-0,14**	**0,31**
Total investment required	**USD million**	**2 281**	**3 819**	**32 585**	**53 022**
Avoided cost					
Energy bill	USD million	1 775	5 275	2 731	9 679
Social Cost of carbon	USD million	340	1 073	783	2 582
Cost of ICE vehicles	USD million	1 295	2 128	6 535	12 637
Cost of gasoline infrastructure	USD million	39	60	195	358
Cost of air pollution	USD million	6 725	20 033	18 494	57 078
Cost of air pollution (power)	*USD million*	*1 782*	*4 805*	*1 401*	*4 724*
Cost of air pollution (final consumption)	*USD million*	*4 943*	*15 229*	*17 093*	*52 353*
Avoided CC damages	USD million	-6	-47	1 023	2 092
Total avoided cost	**USD million**	**16 894**	**48 556**	**48 255**	**141 504**
Added benefits					
Additional real GDP	USD million	5 789	35 166	22 144	137 728
Agriculture	*USD million*	*0*	*0*	*3 871*	*8 927*
Industry	*USD million*	*1 777*	*10 722*	*5 665*	*39 521*
Services	*USD million*	*4 012*	*24 444*	*12 607*	*89 280*
Government revenues	USD million	1 352	15 603	4 273	62 723
Household savings	USD million	13 213	128 986	47 310	510 089
Carbon credits	USD million	0	0	0	66
Total added benefits	**USD million**	**5 789**	**35 166**	**22 144**	**137 794**
Net integrated benefits	**USD million**	**20 402**	**79 903**	**37 815**	**226 275**
Ratio avoided cost to investment	USD/USDinvested	7,41	12,71	1,48	2,67
Ratio added benefits to investment	USD/USDinvested	2,54	9,21	0,68	2,60
Ratio avoided cost and added benefits to investment	USD/USDinvested	9,95	21,92	2,16	5,27
Net investment	**USD million**	**947**	**3 819**	**25 854**	**40 027**

Figure 49: Cost benefit table

MAPPING OF EXISTING AND PROPOSED PROJECTS

TRANSITION PROJECTS

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
1.1		Implementation Support to the Rooftop Solar Power Generation Project	ADB Sri Lanka: Country Operations Business Plan (2021-2023)	0.25	USD	
1.1		Wind – Hambantota	New CPP project	67.5	USD	2
1.1		Solar Power Plant - Trincomalee	New CPP project	52.8	USD	2
1.1		Moragolla Hydro Power Project	Long Term Generation Expansion Plan 2018-2037			
1.1		Moragolla Hydro Power Project	Long Term Generation Expansion Plan 2018-2037			
1.1		Moragahakanda Hydro Development Project	Long Term Generation Expansion Plan 2018-2037			
1.1		Development of grid connected large scale windand solar power based on the renewable energydevelopment plan of CEB	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025			
1.1		Rehabilitation/repowering old hydro power plants	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025			
1.1		Solar home system for off grid customers	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	2000	LKR	
1.1		Solar roof-top power generation system for off-gridhouseholds	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	300	LKR	10
1.1		Expansion of Victoria Hydro Power Plant	Long Term Generation Expansion Plan 2018-2037	222	USD	
1.1		Promoting Increased Renewable Energy Deployment, Energy Efficiency, and Power System Resilience	Democratic Socialist Republic of Sri Lanka: Promoting Increased Renewable Energy Deployment, Energy Efficiency, and Power System Resilience (ADB)	1.1	USD	

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
1.1		Ceylon Electricity Board Supporting Electricity Supply Reliability Improvement Project	Sri Lanka, 2018–2022, Transition to Upper Middle-Income Country Status	3500	USD	
1.1		Sri Lanka Offshore Wind Array	New CPP project	16000	USD	8
1.2		Indo-Sri Lanka power marine cable line	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	100	USD	6
1.2		Madurai (IND)-Anuradhapura (LKA) HDVC submarine cable link through the Palk Strait	Integrating South Asia's Grid for a Sustainable and Low Carbon Future, p v			
1.3		Augmentation of Aniyakanda grid sub-station (GSS)	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	327	LKR	4
1.3		Construction of Akkaraipattu grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	1771	LKR	4
1.3		Construction of Colombo P grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	1240	LKR	4
1.3		Augmentation of Pannala grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	327	LKR	4
1.3		Augmentation of Colombo B grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	481	LKR	4
1.3		Augmentation of Pallekele grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	324	LKR	4
1.3		Capacity enhancement of Badulla - Inginiyagala-Ampara single circuit transmission line to Zebra	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	3267	LKR	4
1.3		Augmentation of Cunnakan grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	324	LKR	4
1.3		Augmentation of Athurugiriya grid sub-station	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	327	LKR	4
1.3		Capacity enhancement of Badulla - Inginiyagala-Ampara double circuit transmission line to Zebra	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	1328	LKR	4

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
1.3		Construction of Hambantota 220/132kV Grid Substation & Augmentation of 132/33 kV Hambantota Grid Substation	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	15.5	USD	
1.3		"Lot B - Construction of New Polpitiya - Hambantota 220kV Transmission Line – 150km"	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	57.3	USD	
1.3		Lot B1 Construction of Mannar – Nadukuda 220kV Transmission Line	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	13.8	USD	
1.3		Lot A Construction of Nadukuda 220/33 kV Grid Substation & Augmentation at Mannar 220/33kV Grid Substation	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	23.1	USD	
1.3		"Lot B2 Horana - Padukka 132kV, 25km Transmission Line and 2nd Circuit Stringing of Habarana - Valachchenai 132 kV Transmission Line"	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	7.6	USD	
1.3		"Lot A1 Construction of Colombo B GSS, Single In & Out connection from Colombo C-Kolonnawa 132kV 800sqmm Cable & Augmentation of Colombo C & Kolonnawa GSS"	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	8.16	USD	
1.3		"Lot A2 Augmentation of Kotugoda,Kolonnawa ,Padukka,Horana,Dehiwala & Madampe GSS"	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	14.25	USD	
1.3		Lot B Construction of Biyagama 220/33kV GSS & Augmentation of Biyagama GSS	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	9.28	USD	
1.3		33kV Lines & Gantries	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	14.8	USD	
1.3		Design, Supply and Augmentation of Primary Substations	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	10.4	USD	
1.3		220kV Switching Station at Kerawalapitiya	Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program (ADB)	2910.4	LKR	
1.3		Biomass fired Thermal Power Plant	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	1200	USD	

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
1.3		"Establishment of a credit line for promotion of off-grid renewable energy applications for small and medium scale industries and net metering"	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025			
1.3		"Introduction of concept of smart grids for effective utilization of distribution and variable generation from renewable energy sources"	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025			
1.3		"Community-Led Plastic Waste Management Program in Dehiwala; PHINLA Project; EU SWITCH Asia Project for Prevention of Marine Litter in the Lakshadweep Sea"	National Action Plan on Plastic Waste Management 2021–2030, p 29.			
1.3		As part of the NAP on Plastic Waste Management: Phasing out single use plastics and decreasing production and consumption by 80%	National Action Plan on Plastic Waste Management 2021–2030, p 17			
1.3		Kerawalapitiya – Port 2nd Transmission Line Project	Asian Infrastructure Investment Bank	52	USD	
1.3		Electricity transmission infrastructure development	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	1723	USD	
1.3		"Solar Powered Water Pumps "	New CPP project	25.246	LKR	
1.4		Improved provision of electricity services through sustainable development and the efficient use of energy resources	ADB Sri Lanka: Country Operations Business Plan (2021-2023)	275	USD	3
1.4		"Expansion and improvement of electricity transmission and distribution network to improve the supply reliability and to minimize system losses"	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	TBD		
1.4		"Standardization / Automation of street lighting in Colombo and other major cities"	Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015–2025	TBD		
1.4		Programme for Energy Efficiency in Buildings (PEEB) Cool	Green Climate Fund (FP194)	118.18	USD	
1.4		USAID Energy Program	United States Agency for International Development	18.9	USD	
2.2	2.1, 2.3, 2.4	Moving Green: Shifting the Transportation Landscape of Sri Lanka	New CPP project	2000	USD	13

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
2.3		More efficient, sustainable, and integrated transport infrastructure and better connectivity	ADB Sri Lanka: Country Operations Business Plan (2021-2023)	543	USD	3
2.3	7.3	Inclusive Connectivity and Development Project for Sri Lanka	World Bank	558	USD	4
3.1		"Support students and teachers with teaching-learning materials and items to assist continuous learning and prevention of school dropouts in resource poor schools island-wide"	UNDP Humanitarian Needs and Priorities Food Security Crisis 2022	660	USD	
3.1		Improved equitable access to relevant and high-quality secondary education, skills development programs, and employment-oriented higher education	ADB Sri Lanka: Country Operations Business Plan (2021-2023)	450	USD	3
3.1		Accelerating Higher Education Expansion and Development Operation Project for Sri Lanka	World Bank	100	USD	6
3.2		Sri Lanka SME and Green Energy GL	European Investment Bank	90	EUR	
3.2		DFCC Global Loan II	European Investment Bank	Up to 50	EUR	
3.2		Sri Lanka@100	United States Agency for International Development	5	USD	
4.1		"Husma Dena Thuru" - National Tree Planting Program	New CPP project	96	LKR	
5.1		Preparedness project - appraisal of all elephant conservation areas to quantify CO2 emissions and evaluate potential for carbon finance	New CPP project	0.5	USD	
6.1		Social Safety Nets Project	World Bank	75	USD	6
7.3		Sri Lanka: Anuradhapura Wastewater Management	Asian Infrastructure Investment Bank	50	USD	
7.3		Greater Colombo Wastewater Project	European Investment Bank	50	EUR	
7.3		Sri Lanka: Reduction of Landslide Vulnerability by Mitigation Measures (RLVMM) Project	Asian Infrastructure Investment Bank	80	USD	5
8.2	3.4	Strengthening Green Economy through Sustainable Consumption and Production (SCP) related Green Initiatives	New CPP project	85	LKR	
9.2	9.3	The Cooling Facility	Green Climate Fund (FP177)	97.75	USD	

RESILIENCE PROJECTS

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	DOCUMENT	INVESTMENT AMOUNT (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
3.1		Conduct training programs for government officers, CSO members, and private sector employees on climate change adaptation which includes integrating climate change components to existing training programmes	National Adaptation Plan of Sri Lanka	30	LKR	10
3.1		Skilling for the Future: Sri Lanka Workforce Training Program	New CPP project	1	USD	8
3.1		Sri Lanka Climate University	New CPP project	20	USD	13
3.2		Climate Change Adaptation (CCA) project	United States Agency for International Development	8	USD	
4.2		Subsidy Account Project	New CPP project	2000	USD	8
4.2		Debt for Climate Swaps	New CPP project	10	USD	3
5.2		Promote Eco tourism practices while conserving biodiversity in the country	New CPP project			
6.2		Sustainable Insurance Facility: Sri Lanka MSME Digital Bank Insurance	New CPP project			
7.1		Improved urban water supply and sanitation services with greater availability and reliability	ADB Sri Lanka: Country Operations Business Plan (2021-2023)	200	USD	3
7.1		Develop salinity/alkalinity tolerant varieties (paddy) (germaplasm improvement)	National Adaptation Plan of Sri Lanka	20	LKR	10
7.1		Promote participation of coastal communities in monitoring sea level rise	National Adaptation Plan of Sri Lanka			10
7.1		Climate Resilience Multi-Phase Programmatic Approach Project against flood risk in priority river basins	"World Bank Climate Resilience Improvement Project (CRIP) "	92	USD	7
7.2		Launch participatory cascade management programmes in selected village tank catchments	National Adaptation Plan of Sri Lanka	20	LKR	10
7.2		Promote use of rainwater harvesting systems to collect water in surplus periods to be used in the dry periods	National Adaptation Plan of Sri Lanka	10	LKR	10

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
7.3	3.1	Secured access to water resources for agricultural and drinking purposes in project areas	ADB Sri Lanka: Country Operations Business Plan (2021-2023)	93	USD	3
7.3		Development of tolerant varieties (paddy, OFC, horticulture) (germaplasm improvement)	National Adaptation Plan of Sri Lanka	20	LKR	10
7.3		Development of heat tolerant breeds (livestock) (Germaplasm improvement)	National Adaptation Plan of Sri Lanka	20	LKR	10
7.3		Introduction of flower induce techniques in fruits (Promotion of resource efficient farming system)	National Adaptation Plan of Sri Lanka	10	LKR	10
7.3		Development of pest resistant varieties (paddy, OFC, horticulture) (Germaplasm improvement)	National Adaptation Plan of Sri Lanka	20	LKR	10
7.3		Development of disease resistant breeds (livestock and poultry) (germaplasm improvement)	National Adaptation Plan of Sri Lanka	20	LKR	10
7.3		"Develop and implement watershed management plans for critical upper watersheds"	National Adaptation Plan of Sri Lanka	100	LKR	10
7.3		"Improve the management of shade trees as a climate change adaptation measure"	National Adaptation Plan of Sri Lanka	60	LKR	10
7.3		"Develop grafted/budded plants with drought resistance properties"	National Adaptation Plan of Sri Lanka	50	LKR	10
7.3		"Promote sustainable cropping system practices for increasing the resilience of plantations and trees"	National Adaptation Plan of Sri Lanka	15	LKR	10
7.3		Provide water purification supplies and support to improve water treatment systems	UNDP Humanitarian Needs and Priorities Food Security Crisis 2022	212.5	USD	
7.3		Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management	Green Climate Fund (FP016)	52.1	USD	8
7.3		Building Capacity for Climate Resilience and Organic Farming among Vegetable and Fruit Growers	John Keells Holdings PLC: Building Capacity for Climate Resilience and Organic Farming among Vegetable and Fruit Growers (Sri Lanka) (ADB)	0.5	USD	

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
7.3	7.1	Strengthening Climate Resilience of Subsistence Farmers and Agricultural Plantation Communities residing in the vulnerable river basins, watershed areas and downstream of the Knuckles Mountain Range Catchment of Sri Lanka	Green Climate Fund (FP124)	49	USD	7
7.3		Safe, disaster-resilient drinking water to flood and drought prone areas	United States Agency for International Development	1.4	USD	
7.3		Integrated Watershed and Water Resources Management Project for Sri Lanka	World Bank	69.53	USD	5
7.3		Sri Lanka Agriculture Sector Modernization Project	World Bank	58.63	USD	
7.3		Water Supply and Sanitation Improvement Project	World Bank	42.74	USD	
7.3	3.2	"System for timely issuing of seasonal and medium -term weather forecasts (establishment of an efficient climate information management and communication system)"	National Adaptation Plan of Sri Lanka	30	LKR	7
7.3	3.2	Develop a system for timely issuing of short-term weather forecasts	National Adaptation Plan of Sri Lanka	30	LKR	10
7.3		"Prepare hazard preparedness plans for urban, rural and estate settlements"	National Adaptation Plan of Sri Lanka	8	LKR	10
7.3	3.2	"Establish a comprehensive programme (GIS mapping) to monitor climate change impacts on key natural ecosystems and biodiversity"	National Adaptation Plan of Sri Lanka	50	LKR	10
7.3		Develop a small grant facility to provide seed funding for community-level programs helpful for achieving NAP objectives to be supported by the National Climate Adaptation Fund and jointly coordinated by CSO Forum and the National Focal Point	National Adaptation Plan of Sri Lanka	100	LKR	10
7.3		Launch a program for gathering, compiling and documentation of traditional local knowledge on climate adaptation and indigenous forecasting as a partnership program of academics, CSO members and researchers.	National Adaptation Plan of Sri Lanka	50	LKR	10
7.3		Clean Cities, Blue Ocean	United States Agency for International Development	48	USD	

TARGET NUMBER	SECONDARY TARGET NUMBER (IF APPLICABLE)	NAME	REFERENCE	INVESTMENT AMOUNT WHEN KNOWN (MILLIONS)	CURRENCY	TIMESPAN (YEARS)
7.3	7.4	Climate Smart Irrigated Agriculture Project	World Bank	125	USD	5
7.3		Climate Resilient Villages (CRVs) Programme	New CPP project	788	LKR	
7.4		Green and Resilient Rural Recovery through Agri-Food System Transformation in the Asia and Pacific Region	Green and Resilient Rural Recovery through Agri-Food System Transformation in the Asia and Pacific Region (ADB)	4.1	USD	
8.1		Global Fund for Coral Reefs Investment Window	Green Climate Fund (FP180)	29.4	USD	
8.2	9.2, 9.3	Incubator for domestic production of food, beverages, and insulation materials	New CPP project	7	USD	3
9.2		Revise building approval systems to ensure climate resilience	National Adaptation Plan of Sri Lanka	5	LKR	10
9.4		Development of pest forecasting system (Strengthening pest forecasting system)	National Adaptation Plan of Sri Lanka	20	LKR	7
9.4		Quashing the Bug – Prevention Program Against Mosquito Proliferation	New CPP project	14	USD	7

END MATTER

CPP PARTNERS

The CPP Program is led by Aroha, the Financial Futures Center and the Secretariat of the CVF and V20 hosted at the Global Center on Adaptation. It is however supported by a range of technical partners who provide their valuable expertise to priority areas identified in the CPP. They develop models, make policy recommendations, project suggestions, provide technical advice or review the report to ensure it reflects the best practices of their area of expertise.

In 2022, the following organizations contribute to the CPP Program:

- Climate Advisers
- finres
- Global Center on Adaptation
- Global Environment Facility
- Global Renewables Congress
- Infrastructure Development Company Limited
- Insurance Development Forum/KFW
- Institute for Energy Economics and Financial Analysis
- International Labor Organization

- International Organization for Migration
- International Renewable Energy Agency
- KnowlEdge
- Platform on Disaster Displacement
- TransitionZero
- United Nations Conference on Trade and Development
- UN Environment Program / UN University
- UN Industrial Development Organization

ABOUT THE GREEN ECONOMY MODEL

The macro-economic model used for the CPPs is based on the Green Economy Model (GEM). The GEM offers an integrated representation of socio-economic and environmental dynamics, and the natural capital that supports them, at country-level. It is built using Systems Dynamics methodology (Bassi, 2014; Bassi, 2015; Bassi et al., 2022).

GEM has been used by more than 40 countries to develop various types of low-carbon development plans, including Indonesia, Ethiopia, Burkina Faso, India, Vietnam and Colombia. GEM has also been deployed by a range of international institutions, including UNEP, Globala Green Growth Institute, World Resources Institute, and the World Wide Fund for Nature.

For the purpose of the Climate Prosperity Plan development, the GEM-CPP version of the model has been augmented with 11 additional climate impacts as well as 19 additional climate intervention options. This allows to create a complete integrated, as well as economic and financial assessment of climate action for both climate change adaptation and mitigation.

SCAN HERE TO FIND THE LATEST GEM-CPP METHODOLOGICAL NOTE:

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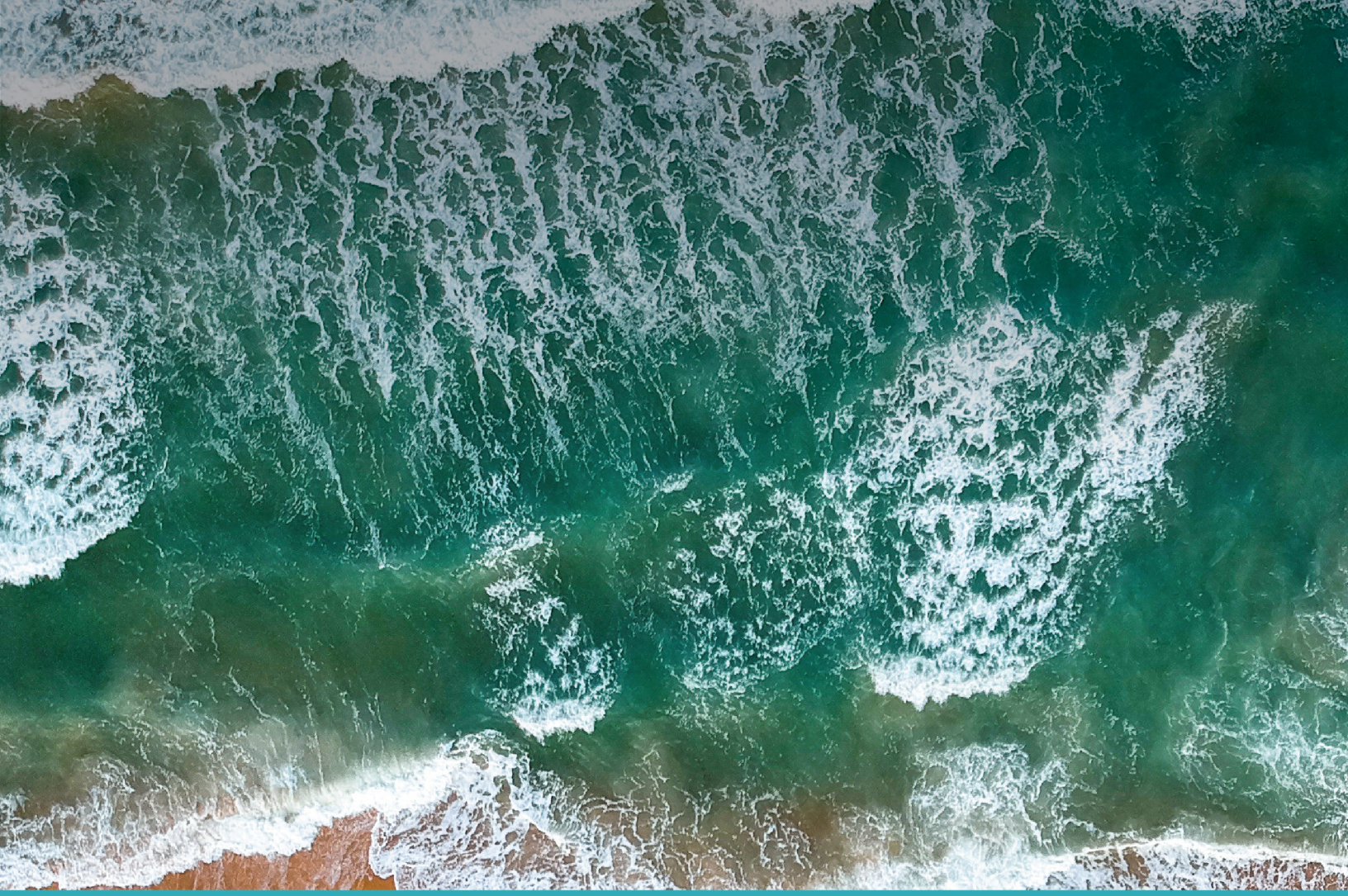

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aroha.ngo
financialfutures.ngo
gca.org
thecvf.org

Geneva

Maison de la Paix
2E Chemin Eugène-Rigot
Geneva 1202 Switzerland
+41 22 740 44 00