

Existing National Projects and Initiations Which Can Reduce Emissions Including Renewable Energy Project, Energy Efficiency Initiatives, Waste Management Improvements and Transportation Initiatives

By

Tendayi Marowa

Energy Management and Climate Change Mitigation Consultant

Comprehensive Energy Solutions

Bulawayo Rainbow Hotel

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Presentation Outline

- Introduction
- Historical and projected global emissions and 1.5 C mitigation trends
- Zimbabwe's NDC Mitigation projects
- Other mitigation measures
- Conclusion

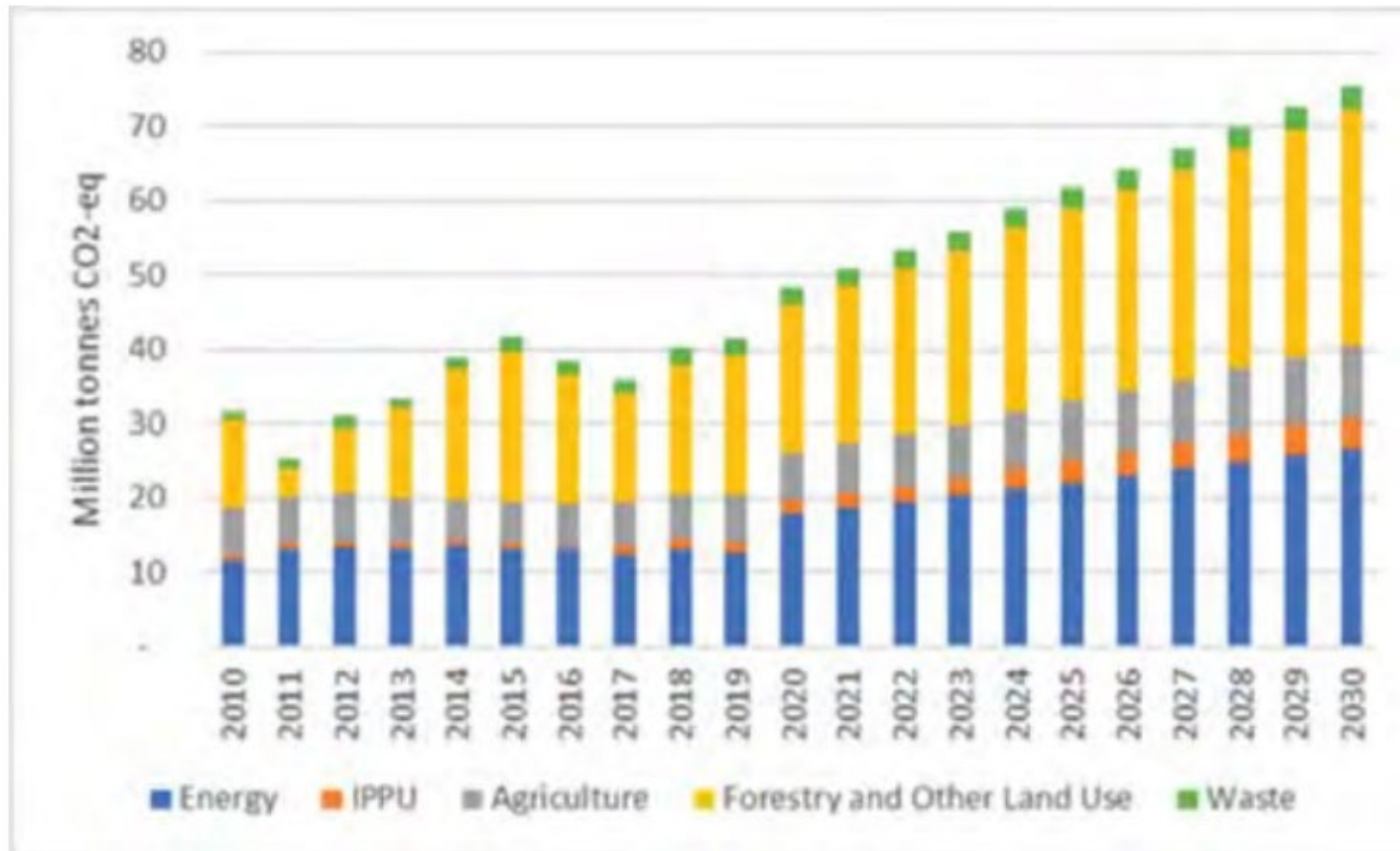
Introduction: Zimbabwe's Initial NDC (2015)

- In 2015 Zimbabwe submitted an all-energy INDC with an emission reduction target of 33% reduction in energy-related emissions per capita below the business-as-usual scenario by 2030
- The energy ministry provided 4 mitigation projects and the transport ministry provided the 5th mitigation project
- The AFOLU sector is currently the biggest contributor to GHG emissions in Zimbabwe, accounting for 54% of GHG emissions followed by the energy sector, including transport, accounting for 33% with the waste and IPPU sectors contributing the remaining 13%

NDC target and sectors covered

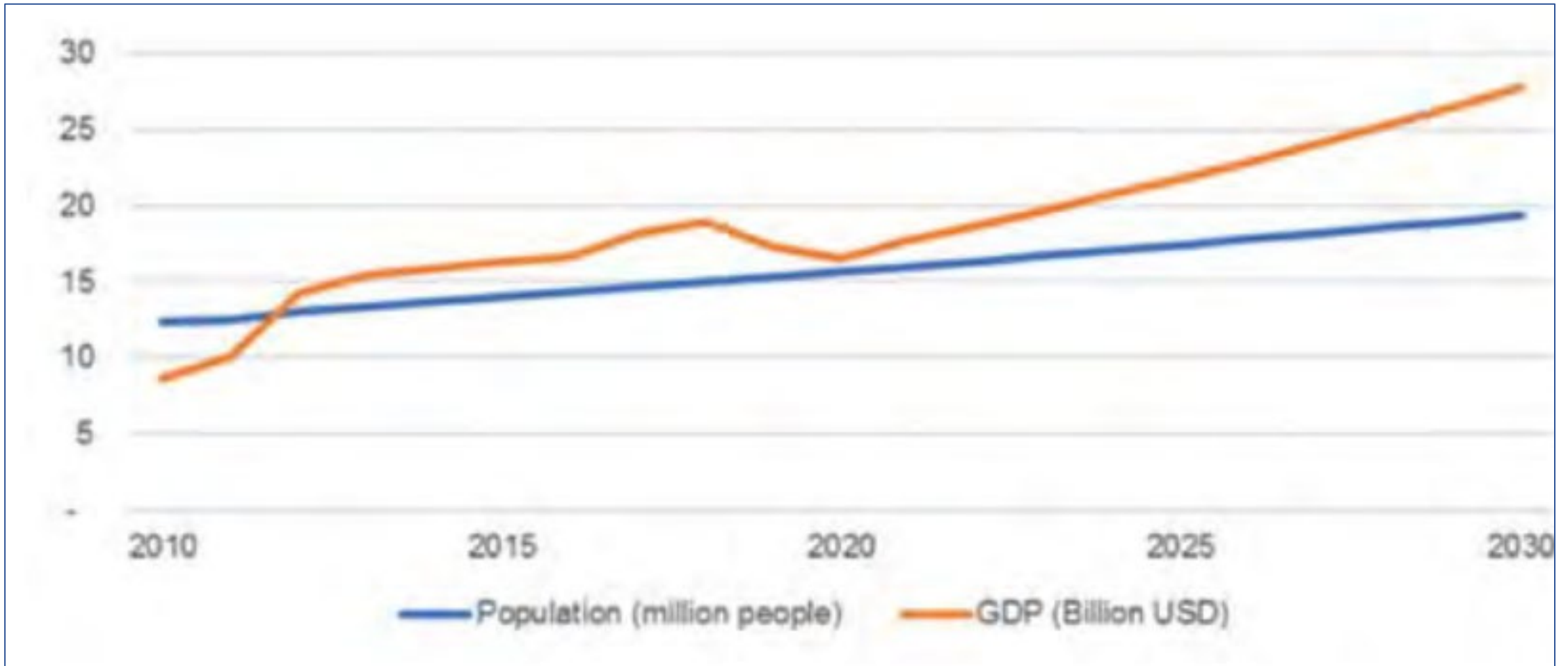
- In 2021 Zimbabwe revised its INDC and submitted its revised NDC
- Unlike the first NDC which covered only the Energy Sector, this NDC was an economy-wide NDC covering the following sectors:
 - Energy
 - Industrial Processes and Product Use
 - Agriculture, Forestry and Other Land-Use, and
 - Waste
- **Zimbabwe aims to reduce its per capita GHG emissions by 40% below the projected business as usual scenario**

Total GHG emission projections from 2010 to 2030 for the baseline scenario



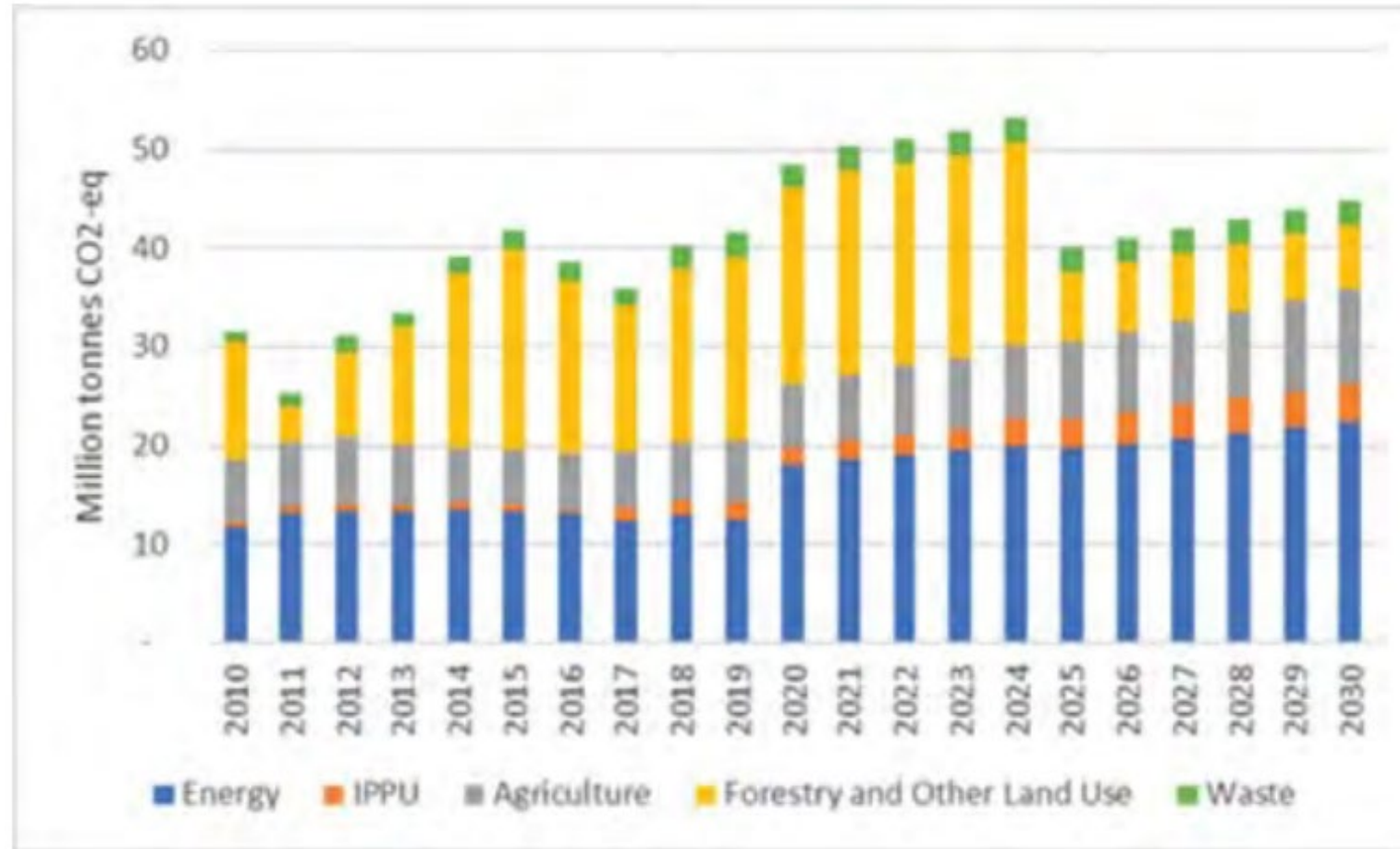
- Emissions are expected to increase but the emissions per capita are expected to decrease as the country implements some mitigation measures

Population and GDP projections

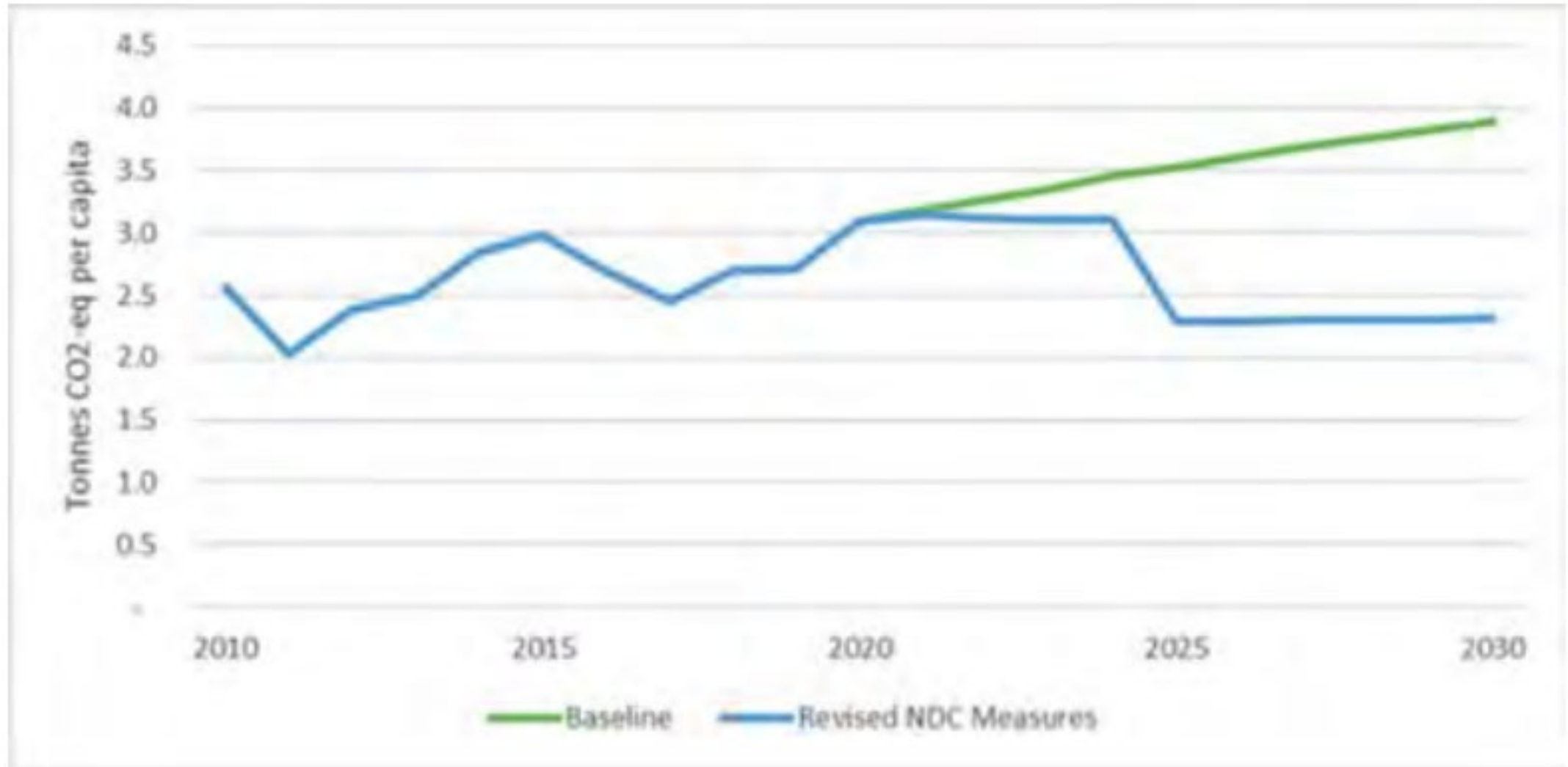


- Both population and GDP are drivers of emissions.
- The population is used to calculate per-capita emissions

Total GHG emission projections from 2010 to 2030 in the updated mitigation scenario



Zimbabwe's Revised NDC



Economy wide GHG emissions per capita are expected to be about 2.3 tCO₂ equivalent in 2030.

Sectoral reductions in GHGs in 2030 compared to a baseline scenario

Sector	2017 GHG emissions (million tonnes CO ₂ -equivalent)	2030 baseline GHG Emissions (million tonnes CO ₂ -equivalent)	2030 GHG emissions (million tonnes CO ₂ -equivalent)- with mitigation actions
Energy	12.41	26.62	22.42 (-15.8%)
IPPU	1.17	4.20	3.75 (-10.7%)
Agriculture, Forestry and Other Land Use	20.50	41.57	16.22 (-61.0%)
Waste	1.76	3.00	2.35 (-21.6%)
Total	35.841	75.39	44.74 (-40.7%)

Mitigation Projects

Zimbabwe's Revised NDC has 17 mitigation projects as follows:

- Energy sector - 8
- IPPU sector - 4
- AFOLU sector - 3
- Waste sector - 2
- **Total** - **17**
- In addition, the Zimbabwe NDC presents adaptation action in response to the country's high vulnerability to climate change impacts.
- Zimbabwe's NDC was informed by the National Development Strategy 1 (2021-2025) which seeks to transform Zimbabwe into an upper-middle income economy by 2030.

Mitigation measures from the energy sector

#	Mitigation Measure	Reference document	% GHG reduction vs 2030 baseline	Absolute reduction 2030 vs baseline (1000 tonnes)	Estimated cost (Million USD) ^{2B}
1	Reduced Transmission and Distribution losses from 18% in 2020 to 11% in 2025	National Development Strategy	1.01%	760	\$1,088.99
2	Expansion of Solar: 300 MW in 2025	System Development Plan 2017	0.61%	460	\$304.83
3	Expansion of microgrids: Additional of 2.098 MW of capacity added through microgrids by 2028	Rural Energy Masterplan 2021	0.004%	3.27	\$2.96
4	4.1 MW biogas capacity added in 2024	ZERA annual report	0.01%	9.31	\$13.33
5	Energy Efficiency Improvements: Agriculture: 12% savings (2030 compared to baseline scenario); Commercial: 16% savings; Domestic: 22.08% savings; Manufacturing: 18.63% savings; Mining: 8% savings	ZERA energy efficiency audit	2.72%	2048	\$633.91
6	2% biodiesel in fuel by 2030	Biofuels Policy, 2019	0.25%	189	\$74
7	Transport fuel economy policy / Fuel efficiency improvement 2025-2030: Motorcycles: 2.2% per year; LDVs: 2.9%/year; Buses: 2.6%/year; HDVs: 2.5%/year	LEDS	0.73%	554	\$81.39
8	Public transport. 5% shift from private car to public transport in 2030	LEDS	0.23%	176	\$878.86

Mitigation measures from the IPPU sector

#	Mitigation Measure	Plan/ Strategy/ Regulation	% GHG reduction vs 2030 baseline	Absolute reduction 2030 vs baseline (1000 tonnes)	Estimated cost (Million USD)
9	Increased clinker substitution with fly ash (up to 16% by 2030, 20% by 2050).	LEDS	0.04%	28.7	\$ 0.91
10	Increased clinker substitution with blast furnace slag (BFS) (up to 16% by 2030, 20% by 2050).	LEDS	0.04%	28.7	\$10.19
11	Decomposition of N ₂ O emissions through use of a secondary catalyst. Selective De-N ₂ O catalyst results in abatement of approximately 75% of all N ₂ O emissions produced during nitric acid production. Implementation by 2023	LEDS	0.11%	84.5	\$3.49
12	HFC Phasedown schedule Kigali Amendment (Freeze 2024, 2029, 10% reduction)	Regulation	0.44%	334	\$ 4.9

Mitigation measures from the AFOLU sector

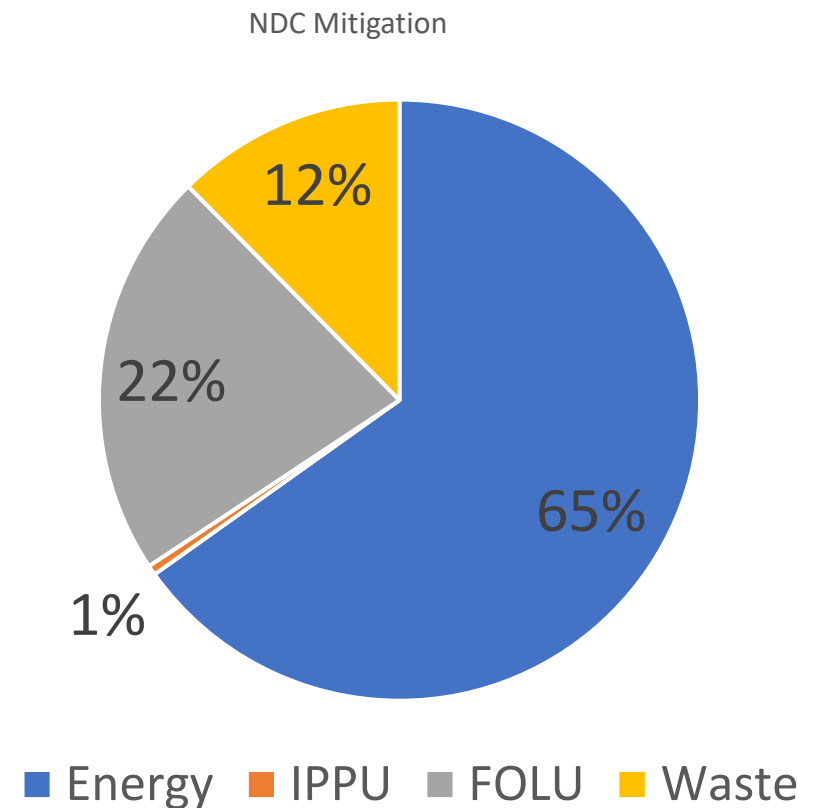
#	Mitigation Measure	Plan/ Strategy/ Regulation	% GHG reduction vs 2030 baseline	Absolute reduction 2030 vs baseline (1000 tonnes)	Estimated cost (Million USD)
13	Increase area of forest land from 9.9 million hectares to 10.4 million hectares by 2025: Add 100,000 hectares of natural forest land per year between 2021 and 2025 (Priority 1)	National Development Strategy	12.73%	9598.7	\$ 0.81
14	Increase area of forest plantation from 68848 hectares to 118848 hectares by 2025: Add 10,000 hectares of plantation forest land per year between 2021 and 2025 (Priority 3)	National Development Strategy	1.33%	1000.7	\$ 1,028.98
15	Reduce area burned by 500,000 hectares between 2020 and 2025 inclusive of agricultural production landscapes (Priority 2)	National Development Strategy	27.75%	20925.1	\$ 49

Mitigation measures from the Waste sector

#	Mitigation Measure	Plan/ Strategy/ Regulation	% GHG reduction vs 2030 baseline	Absolute reduction 2030 vs baseline (1000 tonnes)	Estimated cost (Million USD)
16	Waste to Energy: It was assumed that 42% of the methane generated would be collected in 2030 and used for energy production through waste to energy projects in the Bulawayo, Harare, Gweru and Mutare metropolitan areas	LEDS	1.26%	947	\$ 510.6
17	20% of organic matter composted in the long term	Zimbabwe's Integrated Solid Waste Management Plan, Low Emissions Development Strategy	0.45%	341	\$ 147.32

Implementation Cost of Mitigation Projects

- Energy sector - USD 3,584,133,146
IPPU - USD 29,050,000
- AFOLU - , USD 1,205,027,150
- Waste - USD \$682,318,036
- Total for 17 mitigation measures -
USD **5,500,528,332**
- (Source: NDC and LT-LEDS
Implementation Framework.pdf))



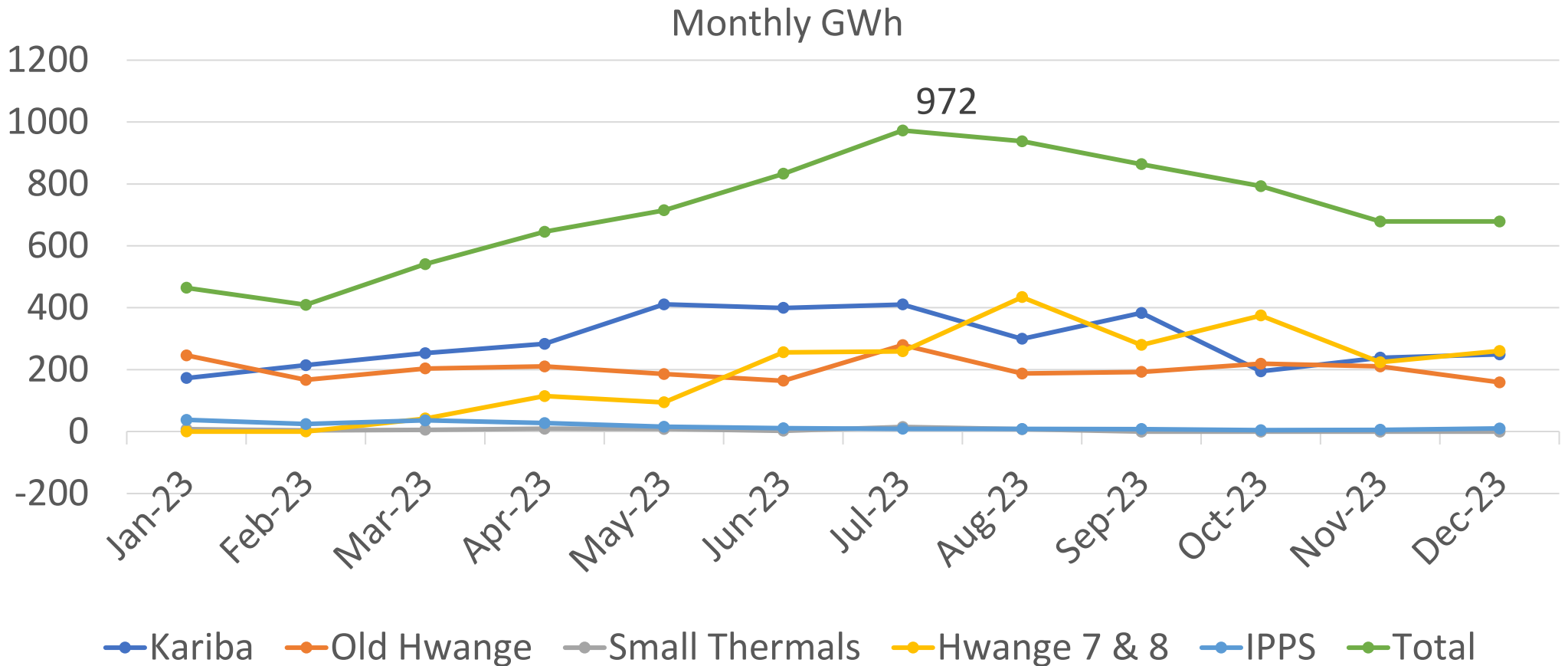
Mitigation Co-benefits of adaptation

- The Zimbabwe's Revised NDC presents adaptation action in response to the country's high vulnerability to climate change impacts. The adaptation NDC covers the following areas:
 - **Water** – potential for electricity generation from inland dams
 - **Agriculture** – Use of RE in CSA
 - **Infrastructure** – Construction of dams and roads can lower emissions
 - **Early warning systems** – Guidance on whether can help agriculture and transport players plan in a manner that reduces emissions

Total NDC Implementation Cost

- Total for 17 mitigation measures - **USD 5,5 billion**
- Zimbabwe's NAP estimates the cost for adaptation at USD 10.310 billion for the period 2023 to 2030. **The four adaptation measures included in the NDC require around USD 8.9 billion.**
- The cost of cross-cutting initiatives was estimated at USD 532,695,089.
- Zimbabwe requires **USD 15,030,835,101** to implement the projects covered in its revised NDC.

Electricity generation by PS in 2023



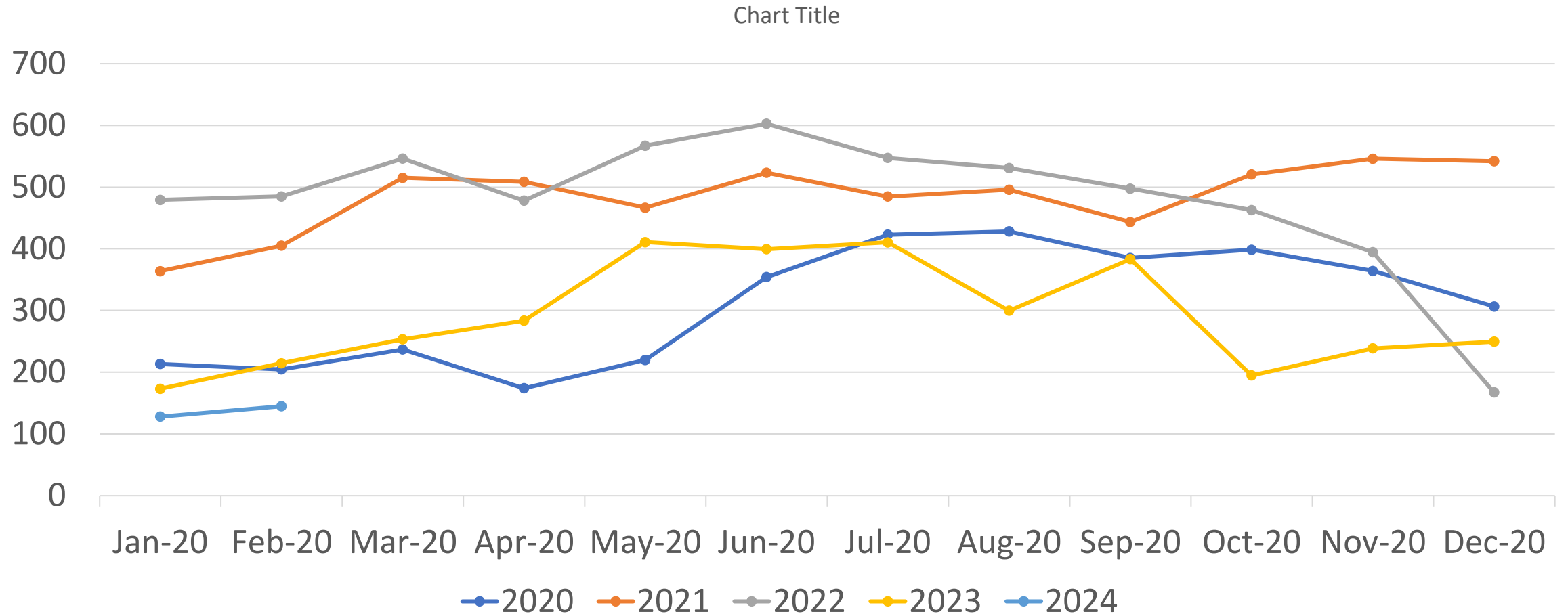
Electricity generation by power plant

Power Source	Kariba	Old Hwange	Small Thermals	Hwange 7 & 8	IPPS	Total
Jan-23	173	246	8	0	38	464
Feb-23	214	167	4	0	24	409
Mar-23	253	204	6	42	36	541
Apr-23	283	211	9	115	27	645
May-23	411	186	8	94	16	715
Jun-23	399	164	2	256	11	833
Jul-23	410	279	15	259	9	972
Aug-23	300	188	8	434	8	937
Sep-23	383	193	0	280	8	863
Oct-23	195	219	0	375	4	793
Nov-23	239	211	0	224	6	678
Dec-23	249	159	0	260	10	679
Total GWh	3510	2426	59	2339	197	8531

Breakdown of IPPs by Technology

	IPP-hydro	IPP-bagasse	IPP- Solar	Total
Jan-23	35	3	0.3	38
Feb-23	24	0	0.1	24
Mar-23	36	0	0.2	36
Apr-23	27	0	0.3	27
May-23	15	0	0.3	16
Jun-23	9	1	0.3	11
Jul-23	8	1	0.3	9
Aug-23	8	0	0.3	8
Sep-23	8	0	0.3	8
Oct-23	4	0	0.2	4
Nov-23	5	0	0.4	6
Dec-23	10	0	0.4	10

Situation on Renewable Energy- Kariba PS



Conclusion

- Areas that need improvement have been and are being identified and the resultant Improvement Plan will become handy during the updating of the NDC next year. The private sector is encouraged to submit mitigation projects for the NDC 3.0



Thank you.

For further information send your questions to:
tendayimarowa@yahoo.com

energy efficiency journey