NDC Methodology & Organisation of Work

Insights to the preparation of the revised NDC for Montenegro

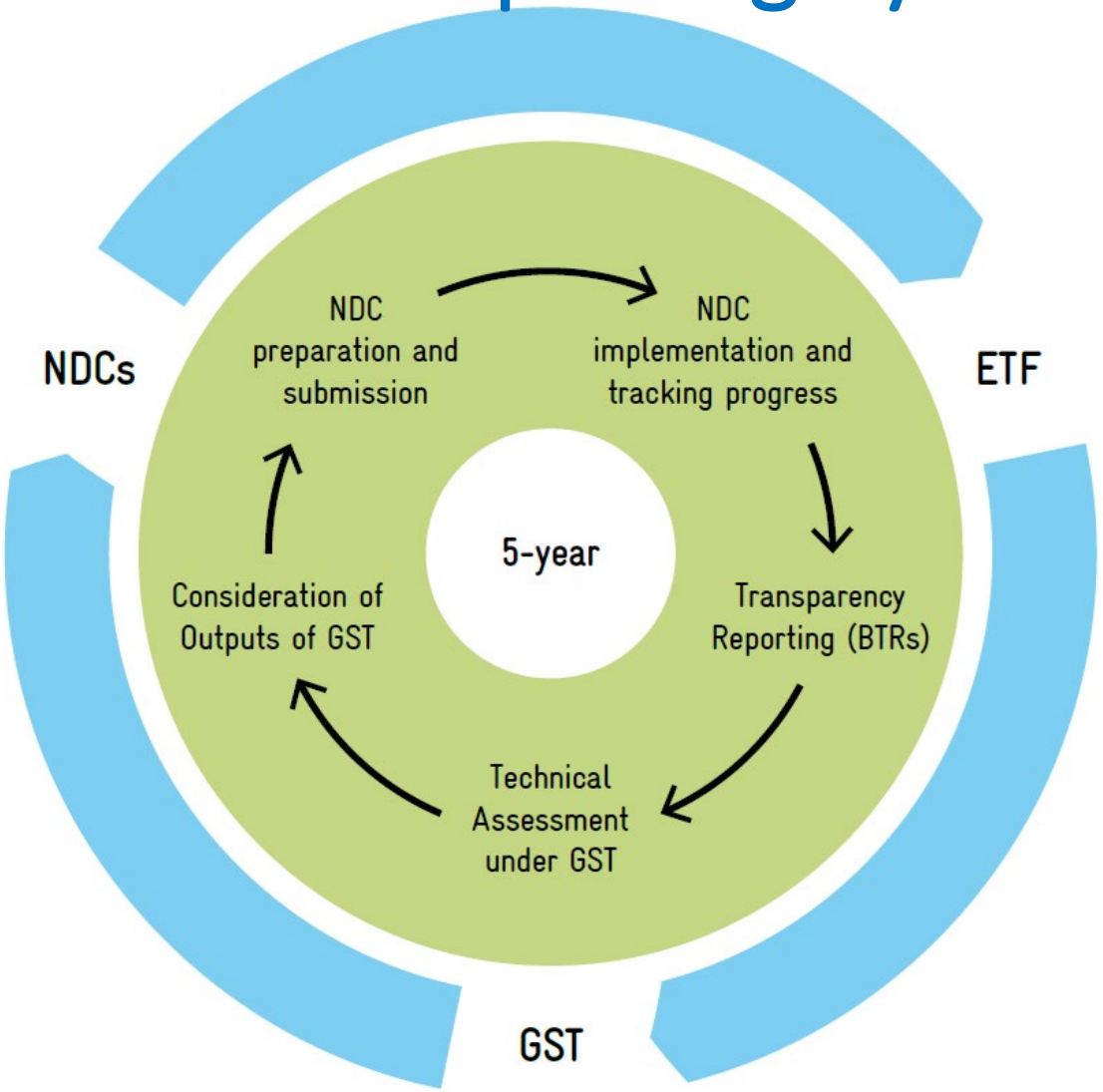
CBIT-GSP workshop, Almaty 25-27 July 2023

By Nebojša Jablan

Nationally Determined Contribution (NDC)

- Core element of the Paris Agreement
- Economy wide emission reduction targets
- NDCs are set by Parties and updated every 5 years → progression over time
- Highest possible ambition in the light of different national circumstances

The NDC Reporting Cycle



Source: Next steps under the Paris Agreement and the Katowice Climate Package, GIZ, 2019 (Figure 1, page 6)

2020: New/updated NDCs
2023: Global Stocktake
2024: Enhanced Transparency Framework to track progress (**Biennial Transparency Reports**)
2025: next round of NDCs

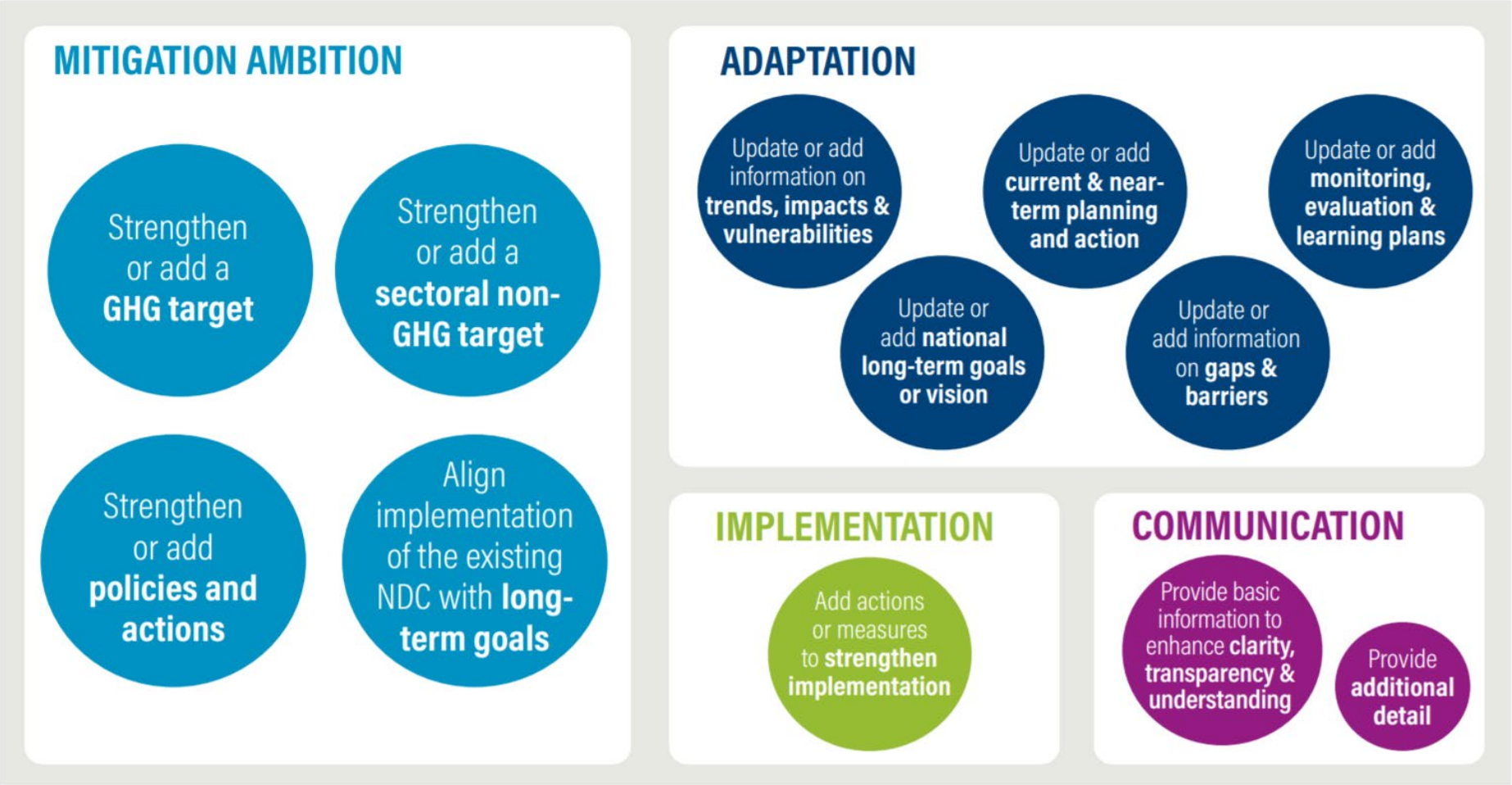
Benefits:

- Set a long-term pathway with short term goals
- Avoid lock-effects and stranded assets
- Reduce transition costs
- Build trust in a low carbon economy and society
- Opportunities for economic growth and development
- Attract climate finance and investment
- Synergies with SDGs
- Receive cross-sectoral political support

NDC Reporting Elements (4/CMA.1)

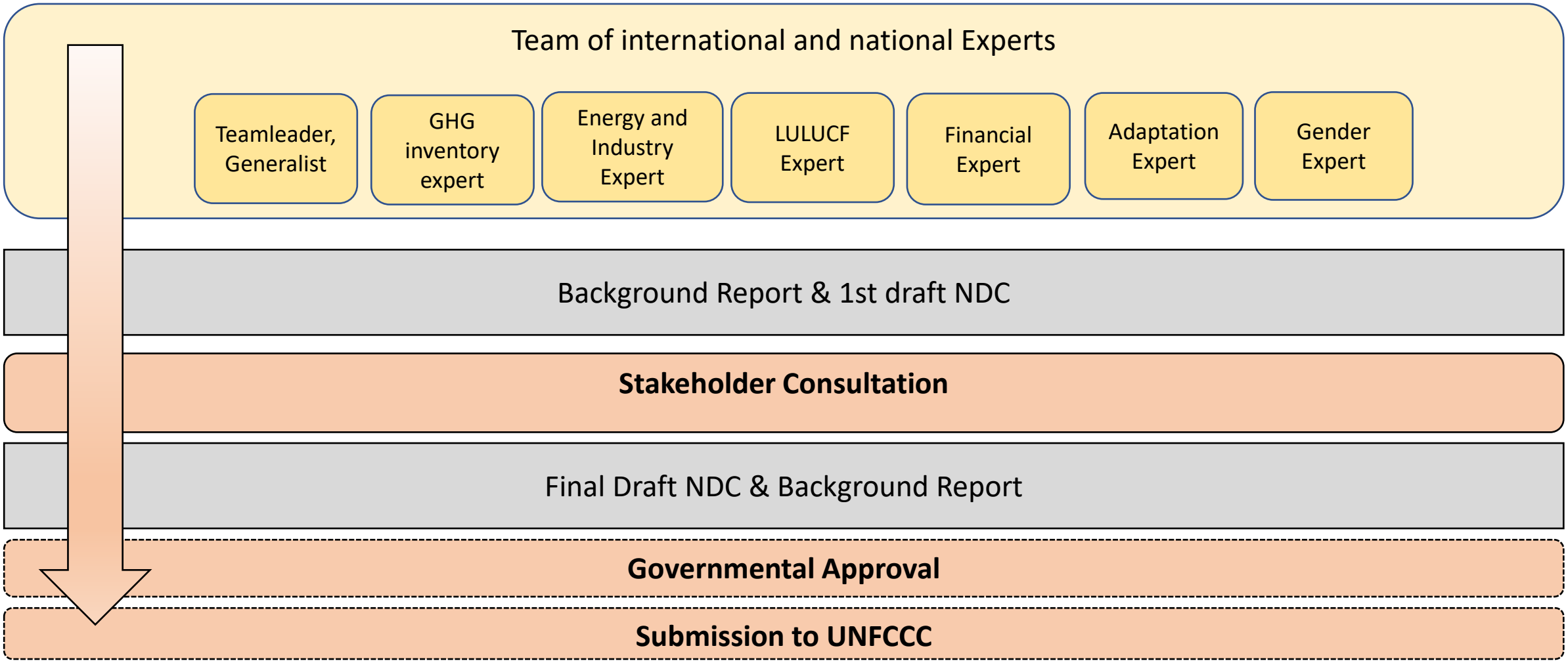
- Mitigation Targets
- Enhancement options: mitigation (ambition and/or implementation), adaptation, and/or communication
- Quantifiable information on the reference point: reference year, indicator, target, data source, national circumstances for updates
- Time frame and/or periodes for implementation
- Scope and coverage: sectors, gases, geographic coverage
- Mitigation co-benefits
- Description of planning process
- Assumptions and methodological approaches
- Fair and ambitious:
    - comparison with various indicators related to fairness (e.g. past emissions, economic development, costs, mitigation potential, national circumstances, …
    - Comparison with various indicators related to ambition (annual emission reduction, BAU emissions, historic emission trend, …
- Contribution towards Art. 2. of Convention: e.g. peak year, LEDS, ..
- Adaptation: vulnerability, risk assessments, adaptation goals and actions, …

Options for Enhancement

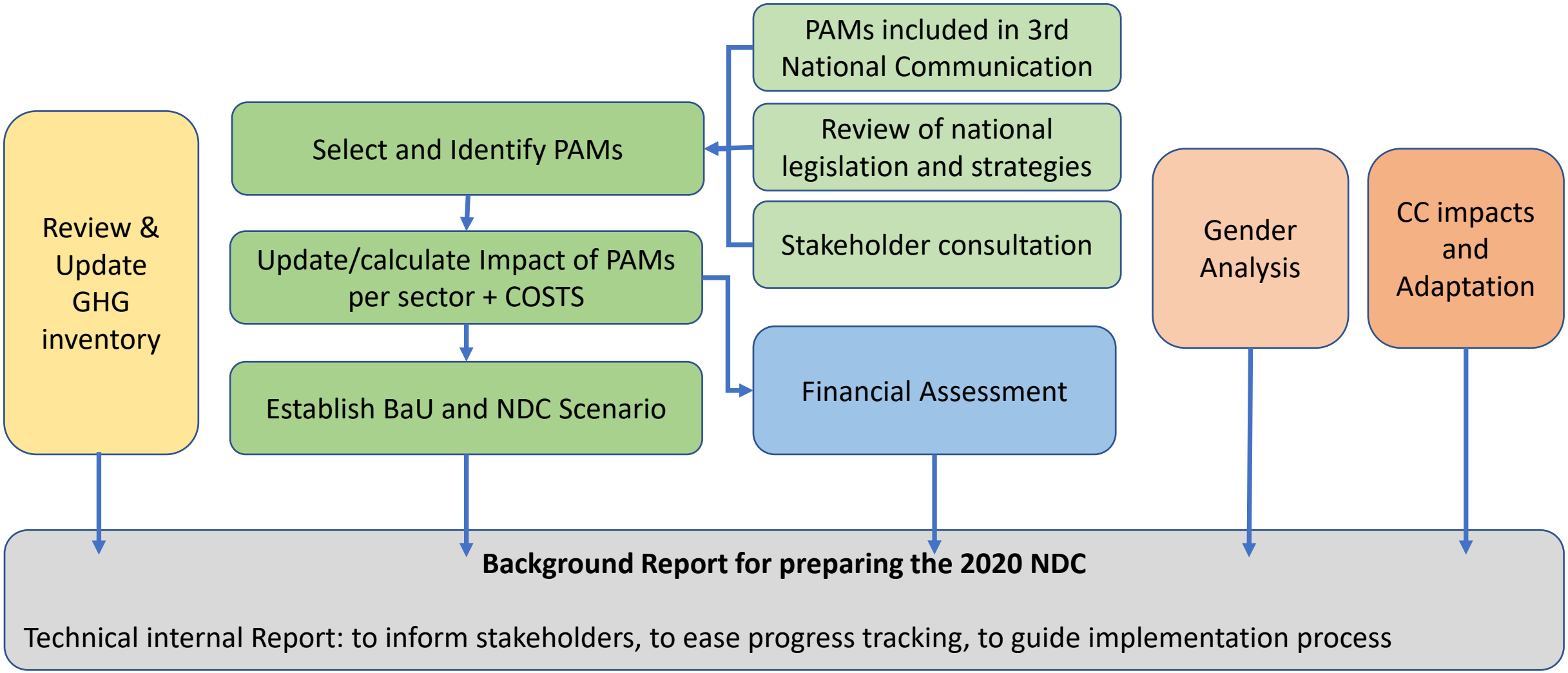


Source: Fransen T., et.al. 2017

Process


Team of international and national Experts
Teamleader, Generalist
GHG inventory expert
Energy and Industry Expert
LULUCF Expert
Financial Expert
Adaptation Expert
Gender Expert
Background Report & 1st draft NDC
Stakeholder Consultation
Final Draft NDC & Background Report
Governmental Approval
Submission to UNFCCC

Organisation of Work



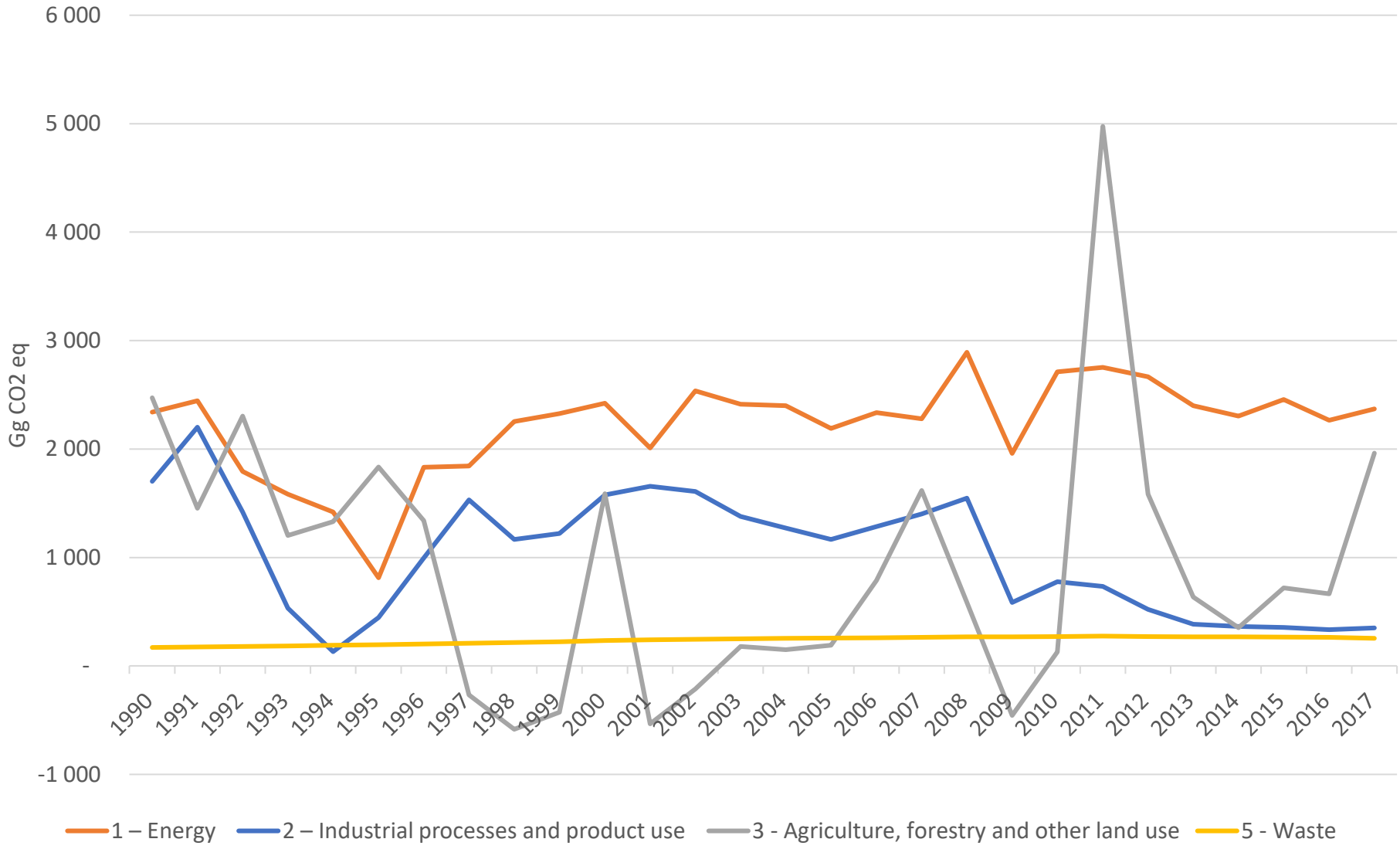
Basis for updated NDC

- INDC
- 3rd National Communication (2020)
- 2nd Biennial Report (2019)
- GHG inventory (1990-2017)
- Adaptation ?
- Gender study: „Women and Climate Change in Montenegro”

What is important?

- ➢ Consistency across time-series
- ➢ Transparent documentation
- ➢ Consistent assumptions across sectors
- ➢ Consultation with stakeholders

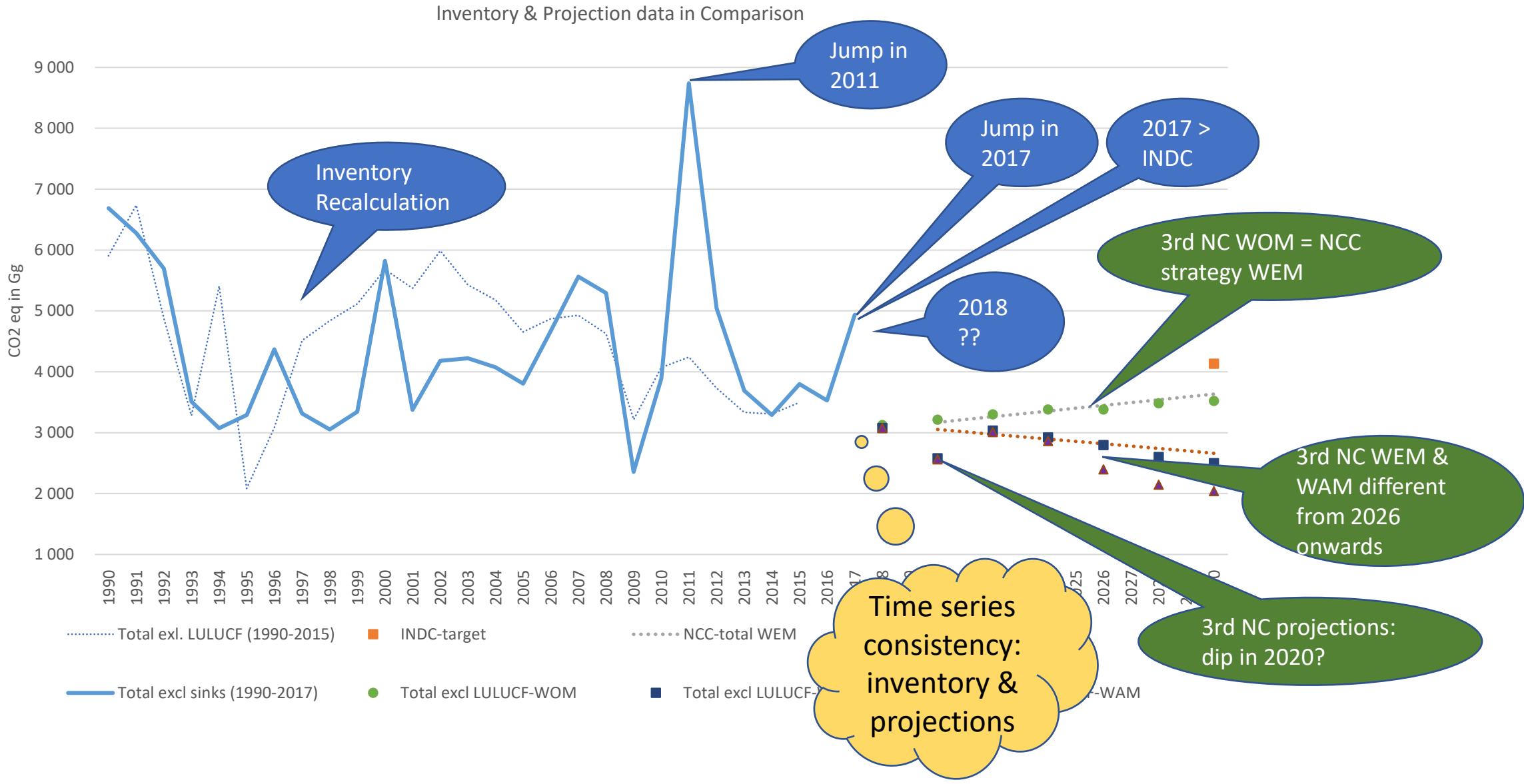
Analysis of existing material



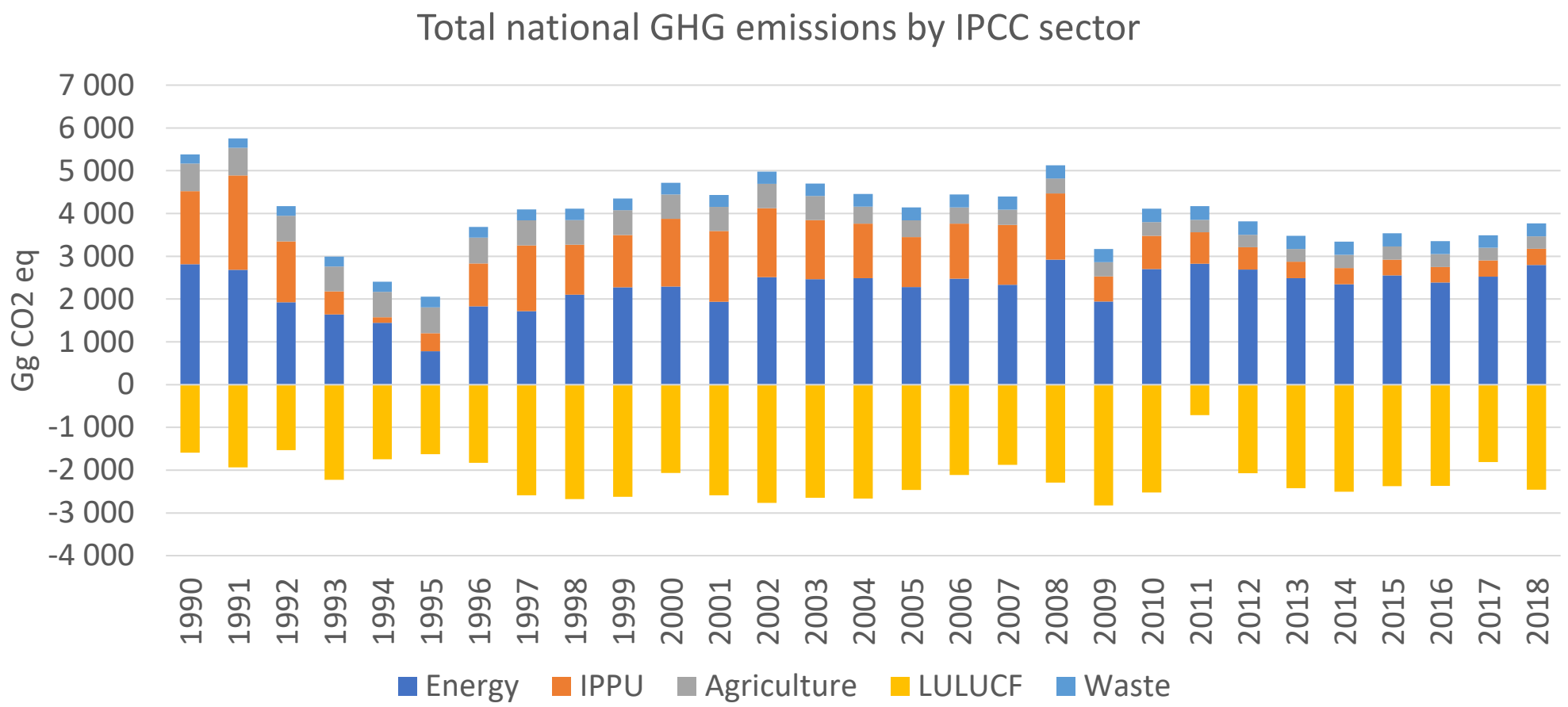
GHG inventory 1990-2017

Understand dips and jumps:

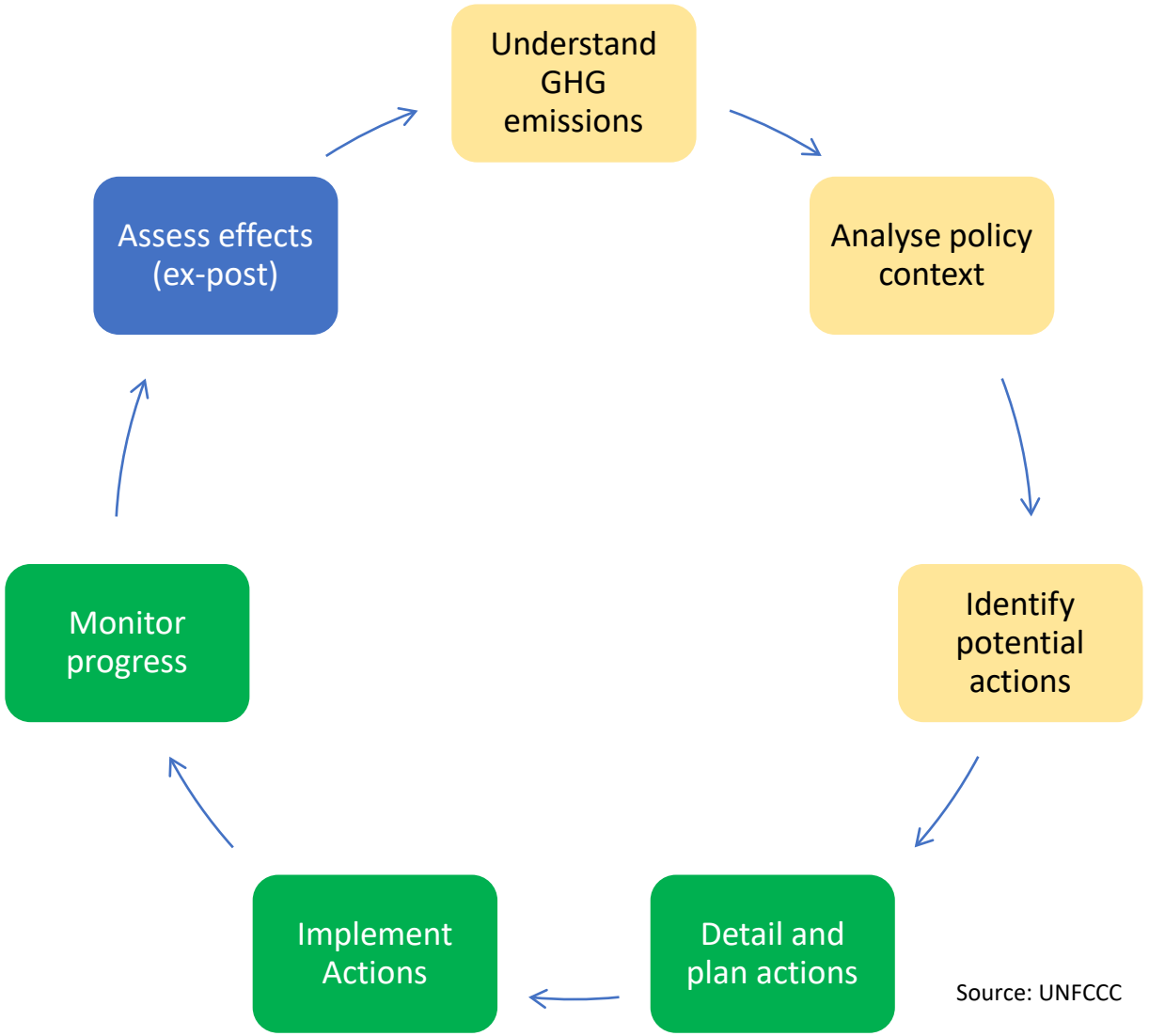
Analysis of existing material



Past GHG emission trend



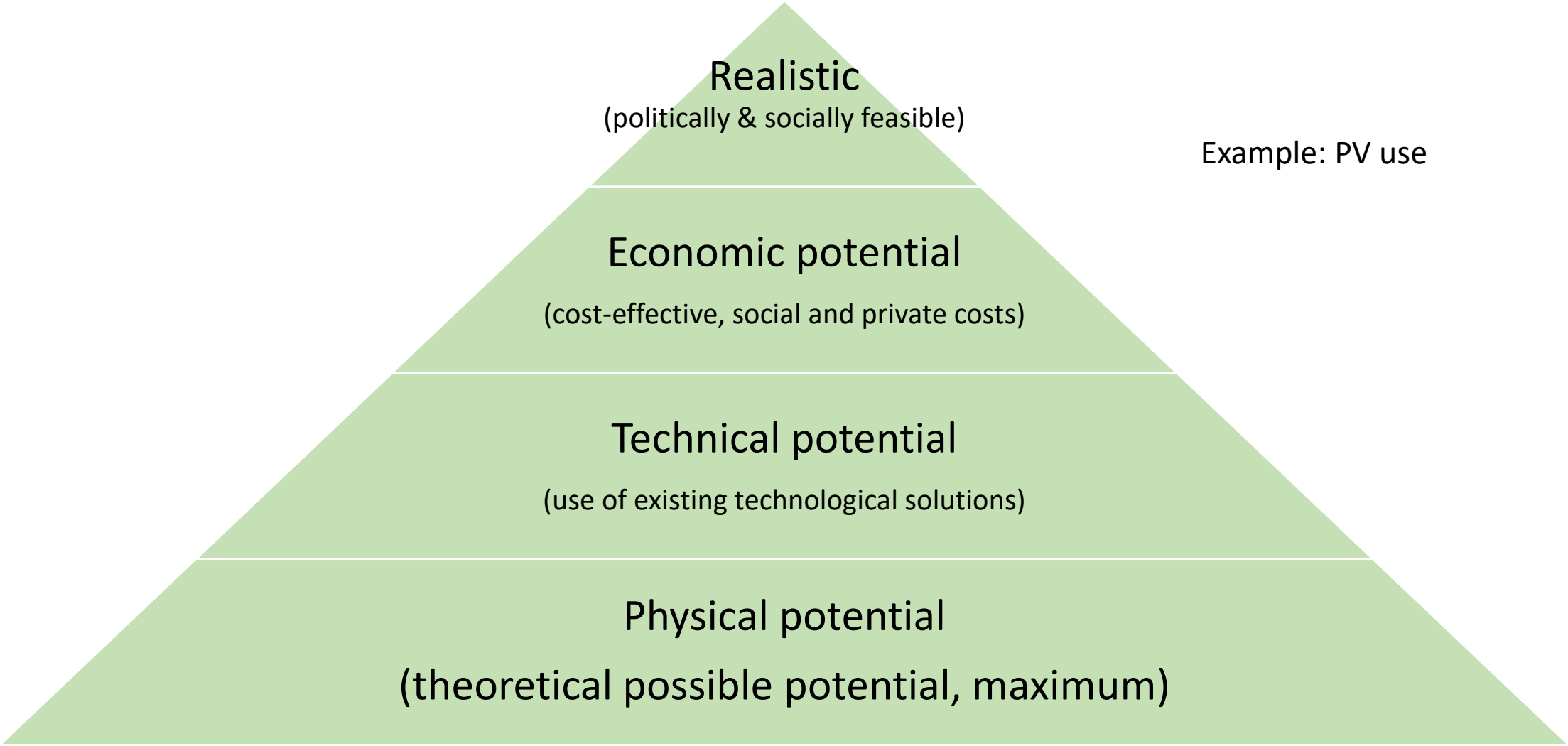
Mitigating GHG Emissions



Source: UNFCCC

Consider various scenarios:
With existing measures
With additional measures

Mitigation Potentials



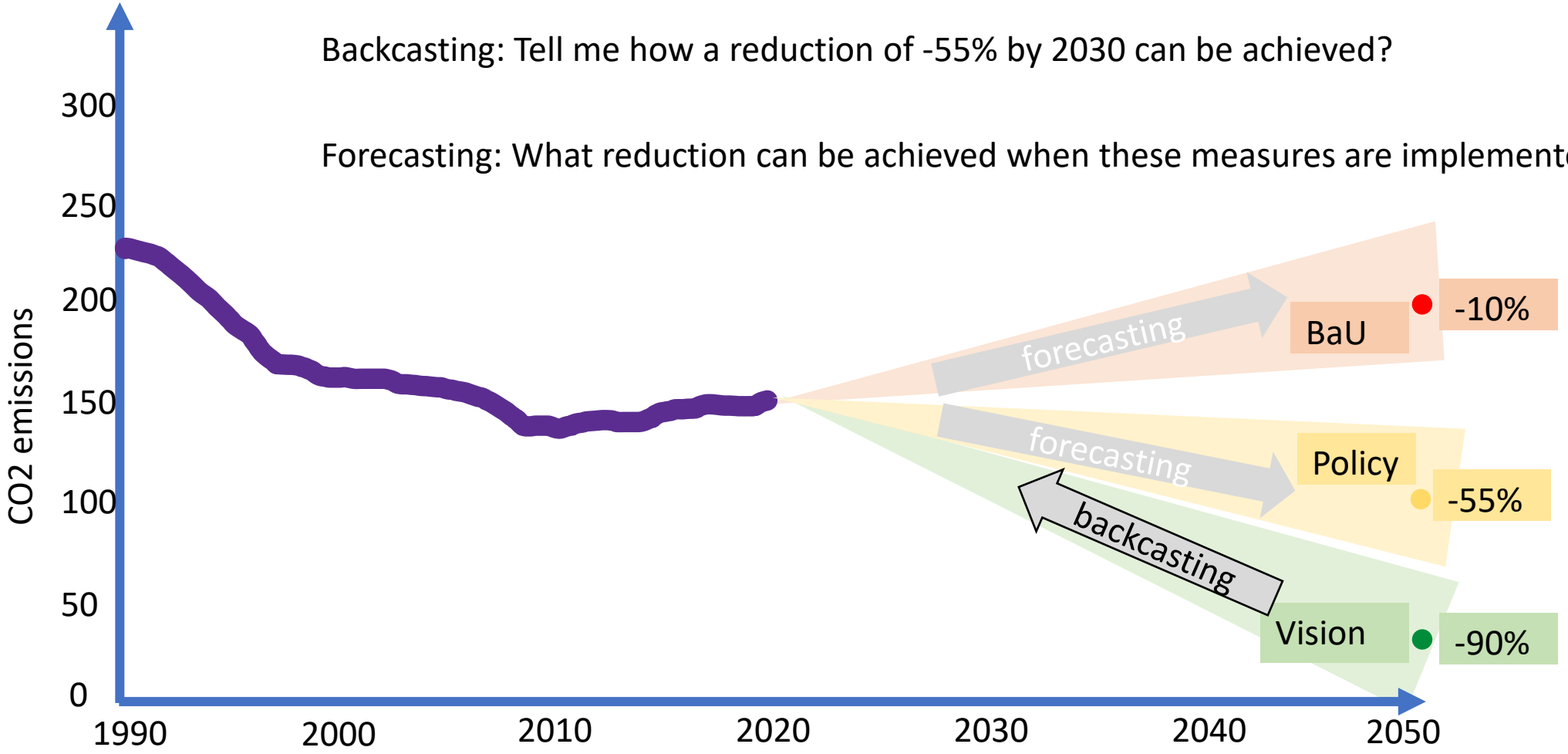
Example: PV use

Source: UNFCCC

Approach for Projections

Backcasting: Tell me how a reduction of -55% by 2030 can be achieved?

Forecasting: What reduction can be achieved when these measures are implemented?



GHG Emissions and Projections Energy, IPPU & Waste Sectors

Relevant national energy and industry strategies and legislation

- Law on Protection from the Negative Effects of Climate Change;
- National strategy of sustainable development until 2030;
- National plan for the use of energy from renewable sources of Montenegro;
- National strategy in the field of climate change;
- Industrial policy 2019-2023;
- Law on Energy;
- Action plan for the Energy Development Strategy 2016–2020;
- Energy efficiency action plan 2019–2021;
- National Energy and Climate Plan (NECP) - under preparation.

Energy sector

- Largest source of emissions in the country;
- Only domestic source of fossil fuel is lignite, which is used in energy production and heating;
- Carbon taxation in stationary plants - regulation;
- Wind power plants, small hydropower and solar rooftop plants have been built. Planned investments in big solar power plants;
- Two long-term investment programs to increase energy efficiency in public facilities (healthcare, education, social care, administration,);
- EE home - subsidizing energy efficiency measures in households;
- Regulation on minimum requirements for the energy efficiency of buildings, energy certification of buildings, energy efficiency labels and requirements for eco-design of energy-consuming products.

IPPU sector

- 2 industrial plants Aluminum Smelter and Steel Mill - bankruptcy;
- PFC emissions from the technological process of electrolysis at the Aluminum Plant are already decreasing, and a further decrease in production is expected, thus also GHG;
- Modernization and new plants in KAP (transfer to TPG) & technological improvements in KAP (electrolysis plant);
- A drastic increase in emissions in the product use sector. The emissions of mobile air conditioners, as well as fire distuingisher, were not calculated;
- An important source of emissions is the increase in the use of HFCs in stationary air conditioners (share in total IPPU emissions > 60%).;
- Reduction of HFCs in accordance with the new Law on Confirmation of Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer.

Waste Sector

- Macroeconomic data: population
- W1: gradual reduction of biodegradable waste being landfilled
  - Calculated with IPCC FOD model, extended to 2040
  - BAU scenario: extrapolation of disposed waste based on population growth
  - NDC scenario: pathway set in EU negotiation chapter 27
    - 75% of 2010 value in 2025 and 50% in 2029 and 35% in 2019

- W2: Increase in connection rate to sewerage system
    - BAU scenario: assumed 70% by 2035
    - NDC scenario: target 97% in 2035
    - Less CH4 from septic tanks
    - Indirect N2O emissions not impacted as depending on population
    - Calculated with GHG inventory methodology, WW treatment pathways

Source: Eionet report ETC/ACM 2018/17

Main Policies

Sector	Measures	Cumulated savings
Energy	Refurbishment of TPP Pljevlja	1178 Gg CO2eq
	Carbon Pricing	2282 Gg CO2eq
	New renewable power plants	557 Gg CO2 eq
	Energy efficiency in buildings	267 Gg CO2eq
	District heating	61 Gg CO2eq
Transport	E- and hybrid vehicles	66 Gg CO2eq
Industry	Uniprom KAP: overhauling and ETS	537 Gg CO2eq
	HFC reduction	158 Gg CO2eq
Waste	Reduction in landfilled biowaste	225 Gg CO2eq
	Improvement to sewage system	96 Gg CO2eq

- 18 policies in total
- No policies for agriculture and forestry

Projections Methodology used in Montenegro

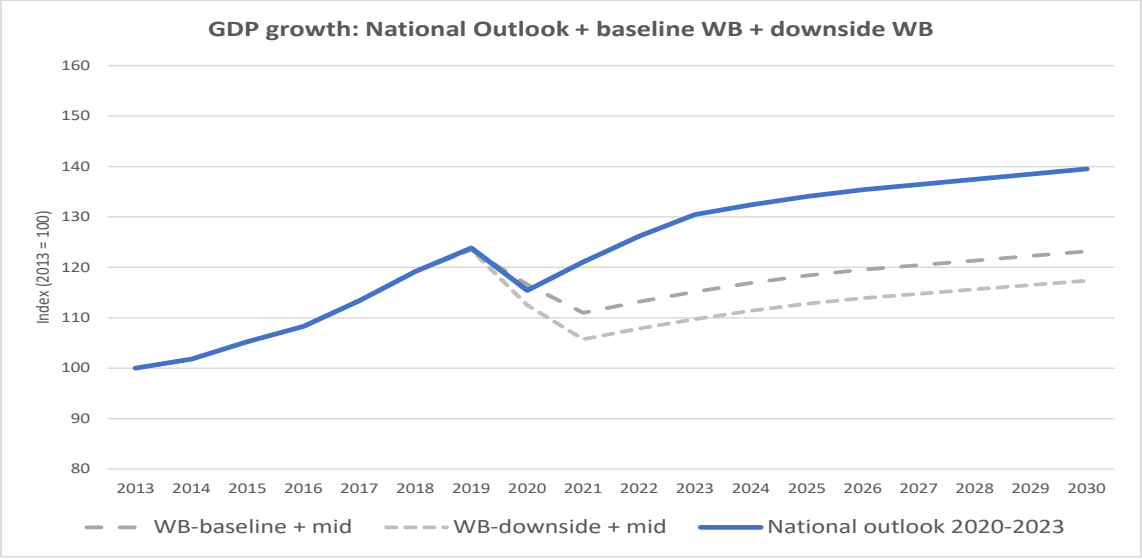
- Forecasting Approach
- Macroeconomic development: GDP and population
- Sector by sector approach:
- Definition of Driver and input parameters
- Mitigation tool developed by Aether Ltd.
  - Used for Energy and Industry

- GHG inventory methods for waste sector
- Only BAU for agriculture and forestry (lack of policies and data)

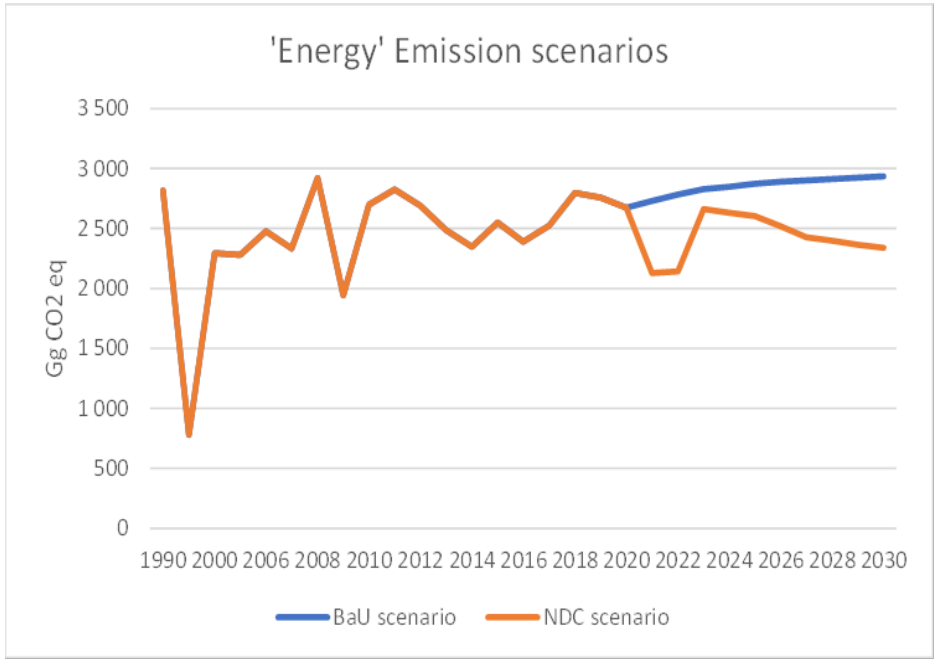
- NDC scenario & BaU scenario

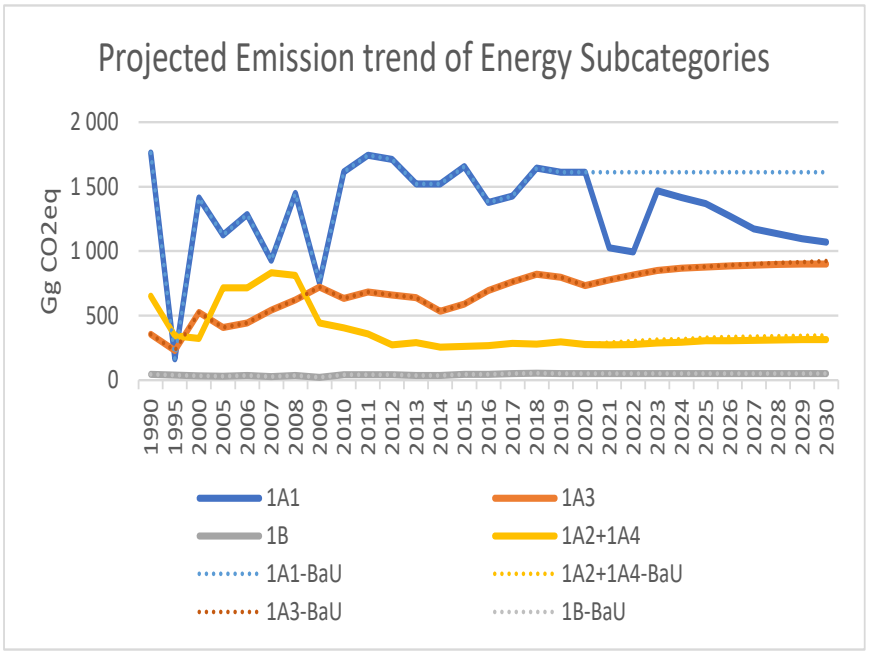
Scenarios

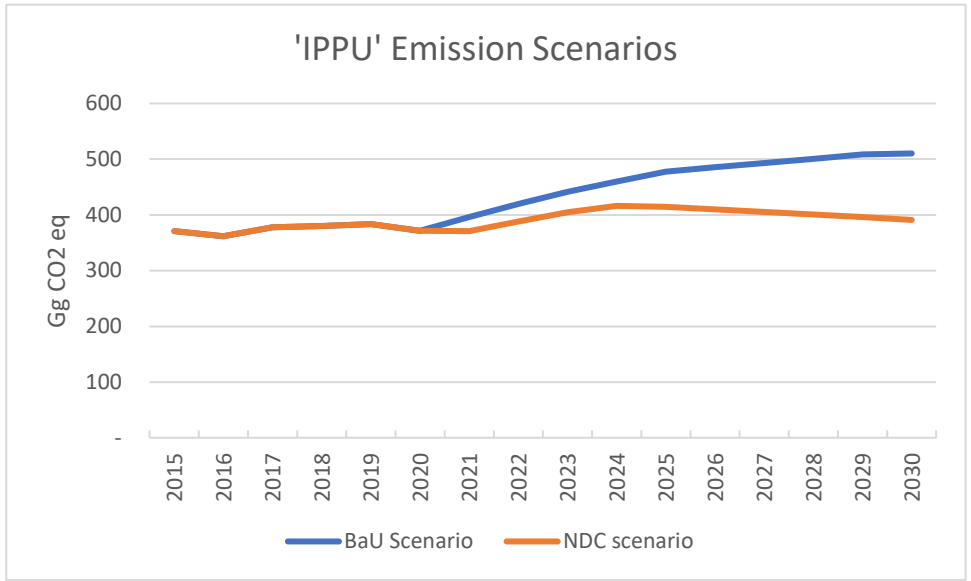
- 2 projection scenarios: "business as usual" scenario (BaU) and NDC scenario where measures are taken into account;
- Calculation of emissions in the energy and industry sectors until 2030, for both scenarios using the mitigation software LEAP - Low Emissions Analysis Platform, i.e. a special tool prepared for the needs of the 3NC;
- Macroeconomic projections – population, energy consumption and GDP;

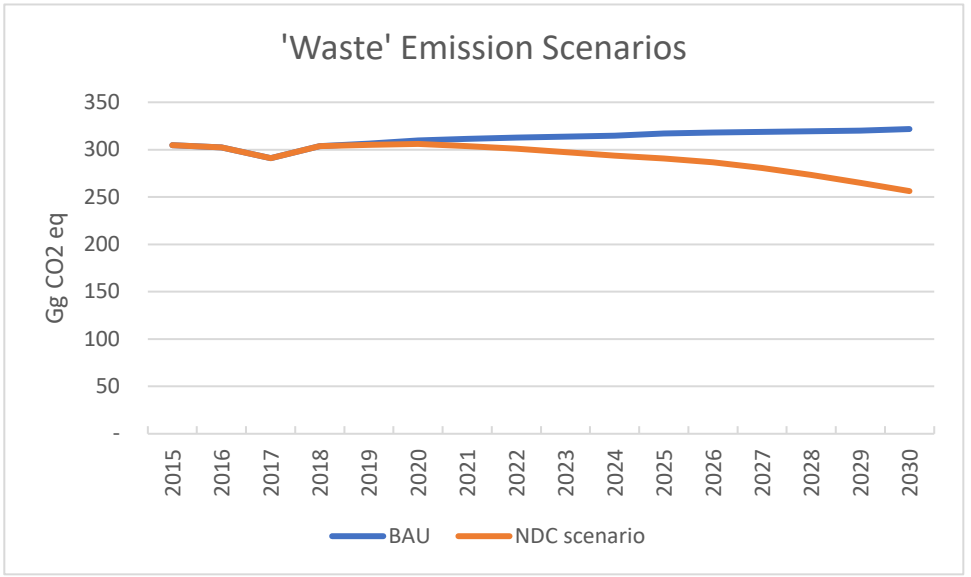


Projections of energy, IPPU and waste sector









Mitigation Tool by Aether

Aether

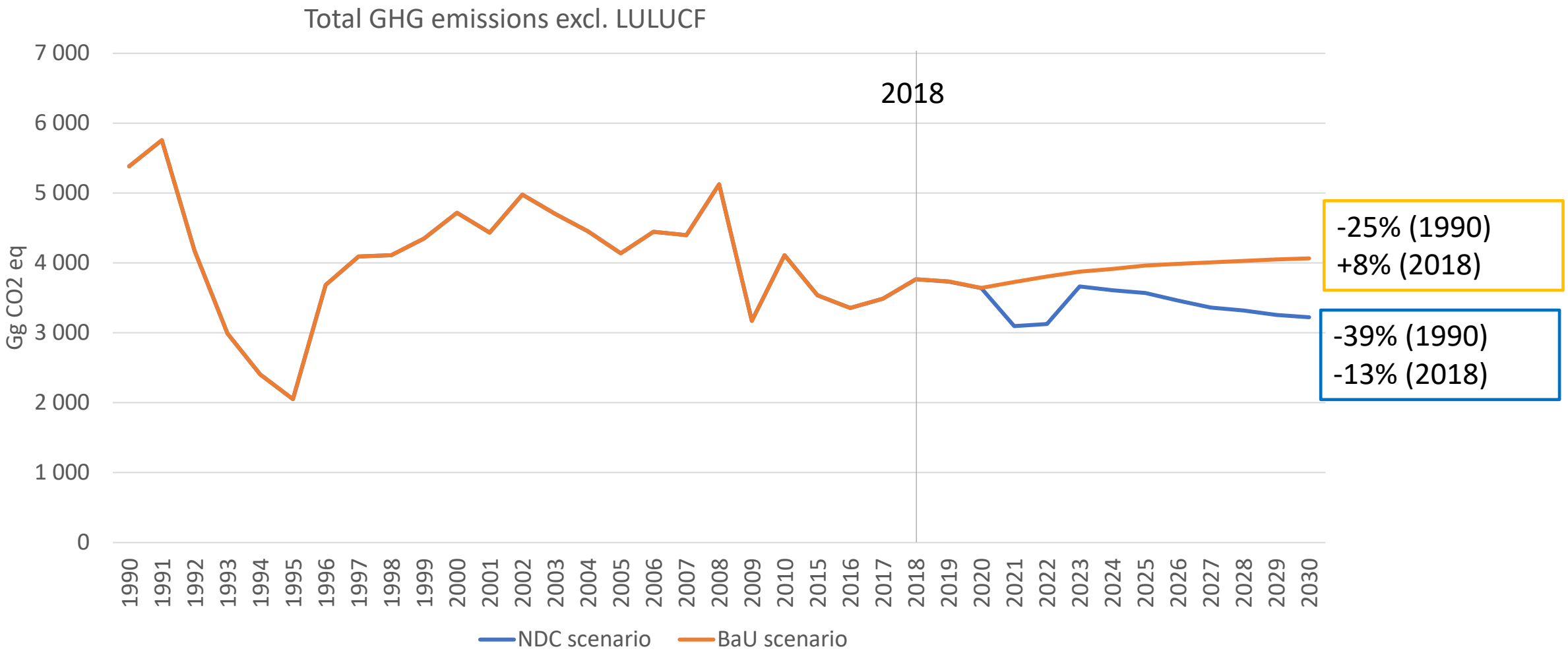
Summary of GHG emissions under different mitigation options and economic growth scenarios

Purpose of this sheet: This sheet compiles data from within the tool to provide a summary of the projection and scenarios. It allows the user to choose an economic growth forecast and which meaures to include and exclude fro

Instructions for use: (1) Choose Economic projection scenario in cell B9. (2) Choose Measures in WEM scenario and (3) choose measures in WAM scenario in column D. Projections calculated in rows in bold. Costs and benefits c

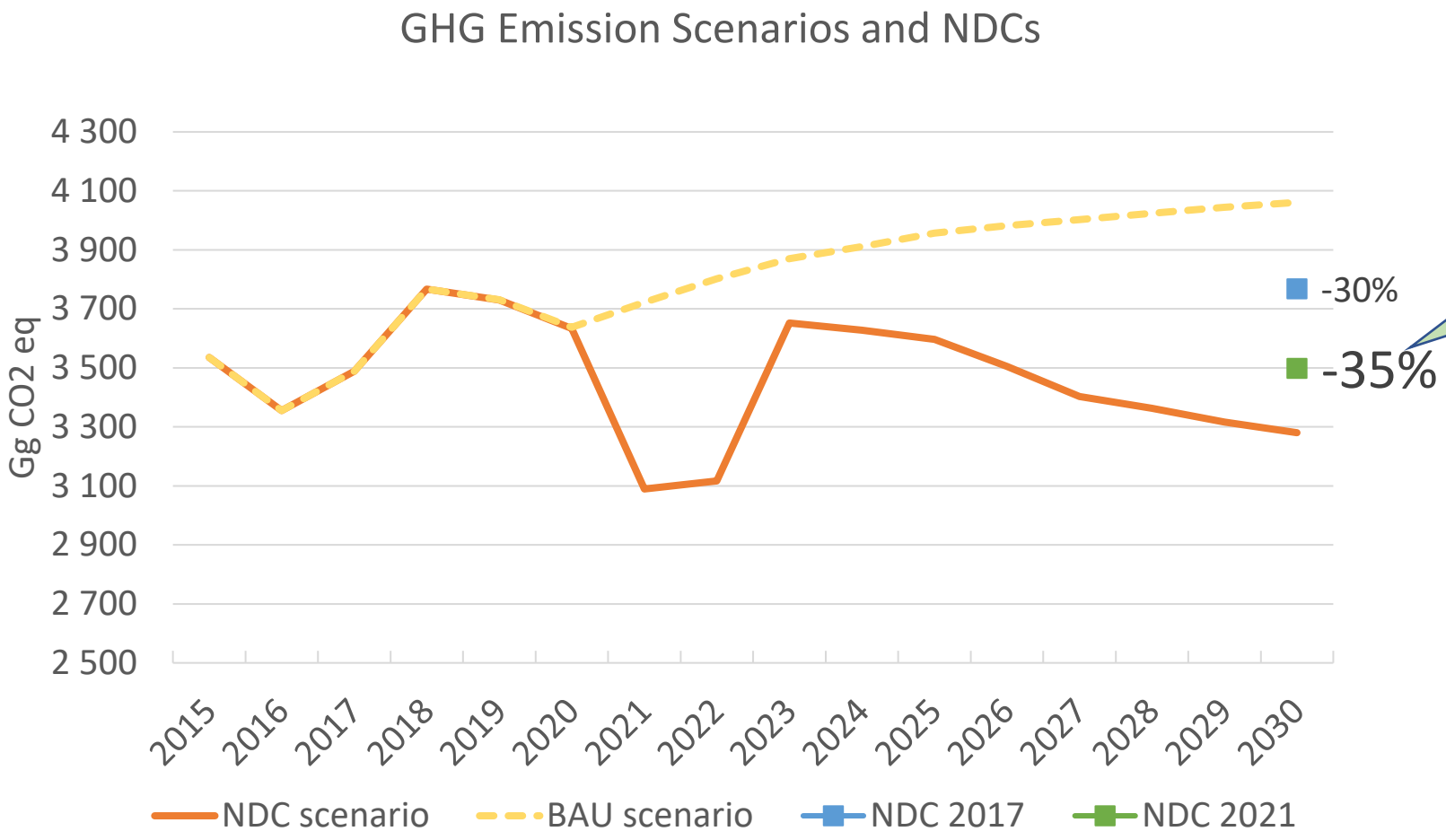
Section	Scenari	PortalID	Include	Sector	Name	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Economic Growth Scenarios (GDP)	High					3.4	2.9	4.7	4.9	2.9	2.5	2.5	2.5	2.5	2.5	2.5	2	2	2	2	2
	Low					3.4	2.9	4.7	4.9	2.9	2.4	2	1	1	0.5	0	0	-0.5	-0.5	-0.5	-0.5
	Mid					**3.4**	**2.9**	**4.7**	**4.9**	**2.9**	**2.4**	**2.3**	**2**	**1.75**	**1.5**	**1.25**	**1**	**0.75**	**0.75**	**0.75**	**0.75**
	Mid case		<-- (1) Choose Economic projection			3.4	2.9	4.7	4.9	2.9	2.4	2.3	2	1.75	1.5	1.25	1	0.75	0.75	0.75	0.75
GHG Projections Gg CO2 eq	BAU				1. Energy combustion (BAU)	2 528	2 123	2 215	2 581	2 616	2 645	2 673	2 699	2 721	2 741	2 758	2 772	2 783	2 794	2 805	2 815
	BAU				2. Industrial Processes (BAU)	411	213	207	203	197	215	229	243	256	270	284	290	295	301	307	308
	BAU				3.a. Agriculture (BAU)	122	122	123	123	124	124	125	125	126	126	127	127	128	128	129	129
	BAU				3.c LULUCF (BAU)	-606	222	-484	-760	-826	-345	-951	-600	-254	-185	-679	-341	-45	-41	-264	-198
	BAU				4. Waste (BAU)	203	210	214	218	222	226	230	234	238	242	246	250	254	258	262	266
	BAU				**Total BAU projection incl. LULUCF**	**2 658**	**2 891**	**2 274**	**2 365**	**2 333**	**2 866**	**2 307**	**2 701**	**3 088**	**3 195**	**2 736**	**3 099**	**3 416**	**3 440**	**3 239**	**3 321**
					check	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
					2030 target	3667	####	###	3667	3667	3667	3667	3667	3667	3667	3667	3667	3667	3667	3667	3667
					Without LULUCF	3264	####	###	3125	3160	3211	3258	3301	3342	3380	3415	3440	3460	3481	3503	3519
			(2) Choose Measures to include (Yes) and Exclude (No)			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
With Existing Measures (WEM) including measures included in BAU. Gg CO2eq saved/year	WEM	1E_WEM	Yes	1. Energy combustio	Eco upgrade of TPP Block 1				0	0	511	511	0	33	66	99	132.6	166	199	221	221
	WEM	2E_WEM	Yes	1. Energy combustio	New renewable power plants (WEM)				0	0	0	0	0	0	0	3	0.0	46	37	29	21
	WEM	3E_WEM	Yes	1. Energy combustio	District heating in Pljevlja				0	0	0	0	0	2	3	5	6.0	8	9	11	12
	WEM	4E_WEM	Yes	1. Energy combustio	Development and implementation of energy efficiency regulatory fra				0	0	26	39	52	65	78	91	103.5	116	129	142	155
	WEM	5E_WEM	Yes	1. Energy combustio	Increased energy efficiency in public buildings				0	0	3	4	5	6	8	9	11.3	14	16	19	23
	WEM	6E_WEM	Yes	1. Energy combustio	Financial incentives for citizens (for EE investments)				0	0	3	4	4	4	4	4	4.3	4	4	4	4
	WEM	7E_WEM	Yes	1. Energy combustio	Energy labeling and eco-design requirements for energy related prod				33	67	29	55	81	107	133	158	184.4	210	236	262	288
	WEM	1T_WEM	Yes	1. Energy combustio	Electric cars (WEM)				0	0	0	1	1	2	2	3	4	7	11	16	23
	WEM	8E_WEM	Yes	1. Energy combustio	Establishment and implementation of EE criteria in public tendering				0	0	1	2	3	4	4	5	5.7	6	7	8	9
	WEM	9E_WEM	Yes	1. Energy combustio	Implementation of EE measures in public municipal companies				0	0	4	7	10	12	12	12	12.4	12	12	12	12
	WEM	10E_WEM	Yes	1. Energy combustio	Development of transmission and distribution power grid (decrease				0	0	20	27	41	47	48	49	49.6	51	52	53	54
	WEM	11E_WEM	Yes	1. Energy combustio	Refurbishment of hydro power plants (increased EE)				0	0	2	5	10	10	10	10	10.1	10	10	10	10
	WEM	1IP_WEM	Yes	2. Industrial Proces	Uniprom KAP: electrolysis cells replacement and overhauling (2020 –				0	0	3	7	11	15	19	24	29	34	38	43	43
	WEM	1W_WEM	Yes	4. Waste	Reduce the share of bio-waste in municipal waste				17	24	32	41	51	60	71	80	92	106	119	134	144
	WEM				Total Net WEM				**51**	**91**	**634**	**702**	**268**	**366**	**457**	**552**	**645**	**790**	**881**	**965**	**1019**
	WEM				WEM Projection incl. LULUCF sector				**2 315**	**2 243**	**2 232**	**1 605**	**2 434**	**2 722**	**2 737**	**2 184**	**2 454**	**2 625**	**2 559**	**2 274**	**2 301**
	WEM				WEM Projection excl. LULUCF sector				**3 075**	**3 069**	**2 577**	**2 556**	**3 033**	**2 976**	**2 923**	**2 863**	**2 795**	**2 670**	**2 601**	**2 538**	**2 499**
			(3) Choose Measures to include (Yes) and Exclude (No)			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
With Additional Measures (WAM) including measures included in BAU. Gg CO2eq saved/year	WAM	1E_WAM	Yes	1. Energy combustio	New renewable power plants (WAM)						0	0	0	12	13	341	332	385	376	367	360
	WAM	1T_WAM	Yes	1. Energy combustio	Electric cars (WAM)						0	0	0	1	1	1	3	4	7	11	15
	WAM	1IP_WAM	Yes	2. Industrial Proces	Uniprom KAP: Cell hibernation						0	0	2	10	18	25	30	35	40	45	50
	WAM	1L_WAM	Yes	3.c LULUCF	Harvest limitation (part of sustainable forestry programme)						1	-27	-31	-6	-33	-45	-51	-22	-24	-47	-37
	WAM	2L_WAM	Yes	3.c LULUCF	Reduction of area subject to wildfire						38	76	284	720	631	505	479	638	729	463	717
	WAM	3L_WAM	Yes	3.c LULUCF	Increase the share of industrial roundwood used for long term products (HWP)						0	0	0	0	0	0	0	0	0	0	0
	WAM	1W_WAM	Yes	4. Waste	Reduce the share of bio-waste in municipal waste + additional diversion to recycling						15	18	20	22	24	25	26	26	26	25	26
	WAM	1A_WAM	Yes	3.a. Agriculture	Support for organic agricultural production						0	0	0	0	0	0	0	0	0	0	1
	WAM	2A_WAM	Yes	3.a. Agriculture	Support to manure management						1	2	3	3	4	5	6	7	8	8	9
	WAM				Total Net WAM savings incl. LULUCF sector						55.0	69	278	762	658	859	825	1074	1162	874	1140
	WAM				Total Net WAM savings excl. LULUCF sector						16.6	20.0	25.2	48.7	59.6	398.5	397.4	457.5	457.1	457.6	461
	WAM				Total WEM + WAM Savings incl. LULUCF sector						688.9	771	546	1 128	1 116	1 411	1 470	1 864	2 043	1 838	2 160
					Total WEM + WAM Savings excl. LULUCF sector						650.5	721.9	292.9	414.3	516.9	950.5	1 042	1 248	1 338	1 422	1 480
	WAM				WAM Projection incl. LULUCF sector				**2 315**	**2 243**	2 177	1 535	2 155	1 960	2 079	1 325	1 629	1 551	1 397	1 400	1 161
	WAM				WAM Projection excl. LULUCF sector				**3 075**	**3 069**	2 561	2 536	3 008	2 927	2 863	2 465	2 397	2 212	2 143	2 080	2 038

Past and Projected GHG emission



Targets referring to 1990 profit from the reductions experienced in the early 1990ies!

NDC Target Setting



Updated NDC target for 2030

	BAU Scenario	NDC scenario
% change 1990-2030	-25%	-39%
% change 2018-2030	+8%	-13%

Recommendations

- Have a robust and complete GHG inventory
- Seek for political engagement
- Define long-term development path & emission peak
- Develop sectoral strategies with quantified targets
- Mainstream mitigation and adaptation
- Develop implementation roadmap & monitoring mechanism
- Engage also private businesses, NGOs, civil society, academia
- Have a technical background report

Thank you!

For further information, please contact:

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