Workshop on promoting Renewable Energy and Sustainable Development

Overview on Initiatives of Myanmar's INDC (NDC) implementation

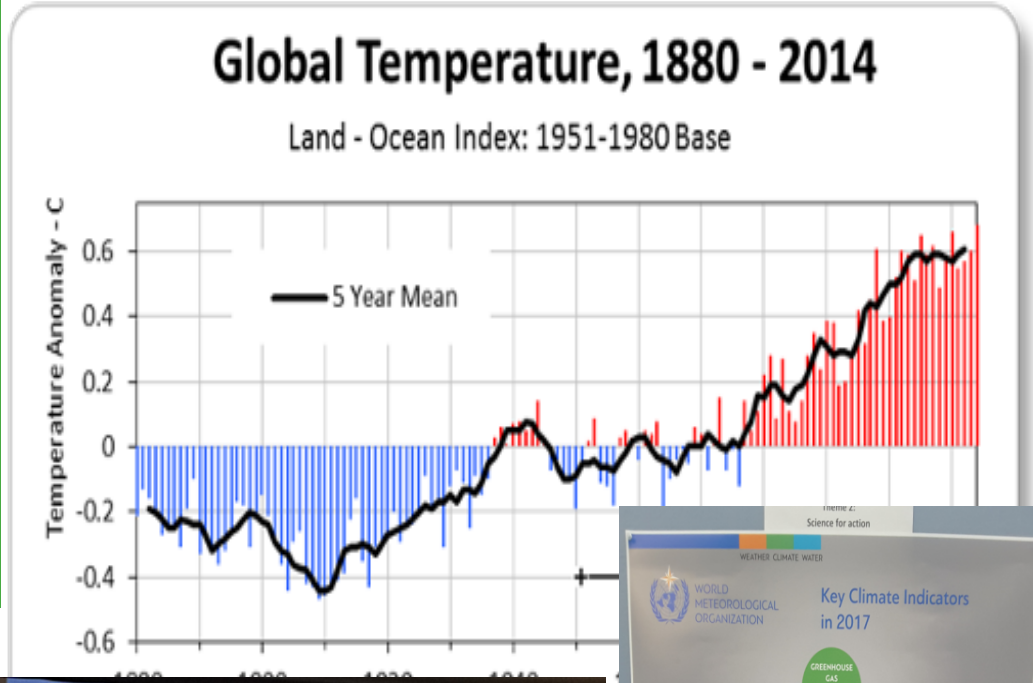
Hla Maung Thein
Director General
Environmental Conservation Department
MONREC

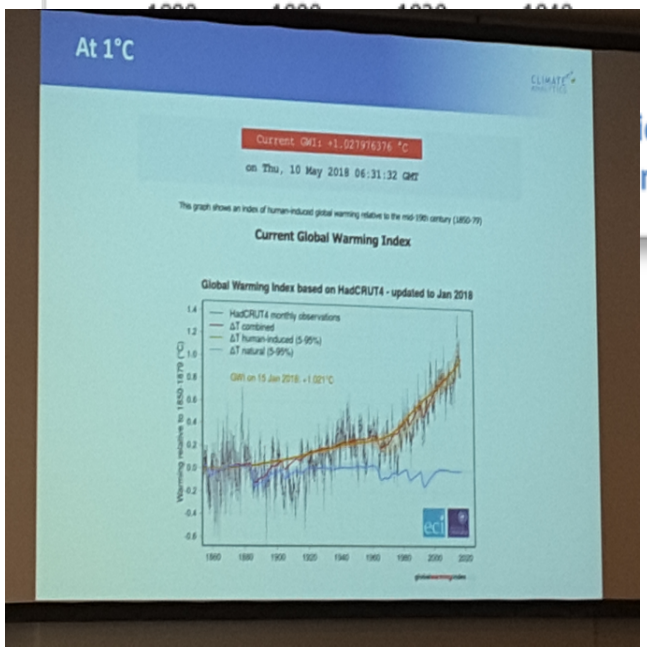
6-6-2018

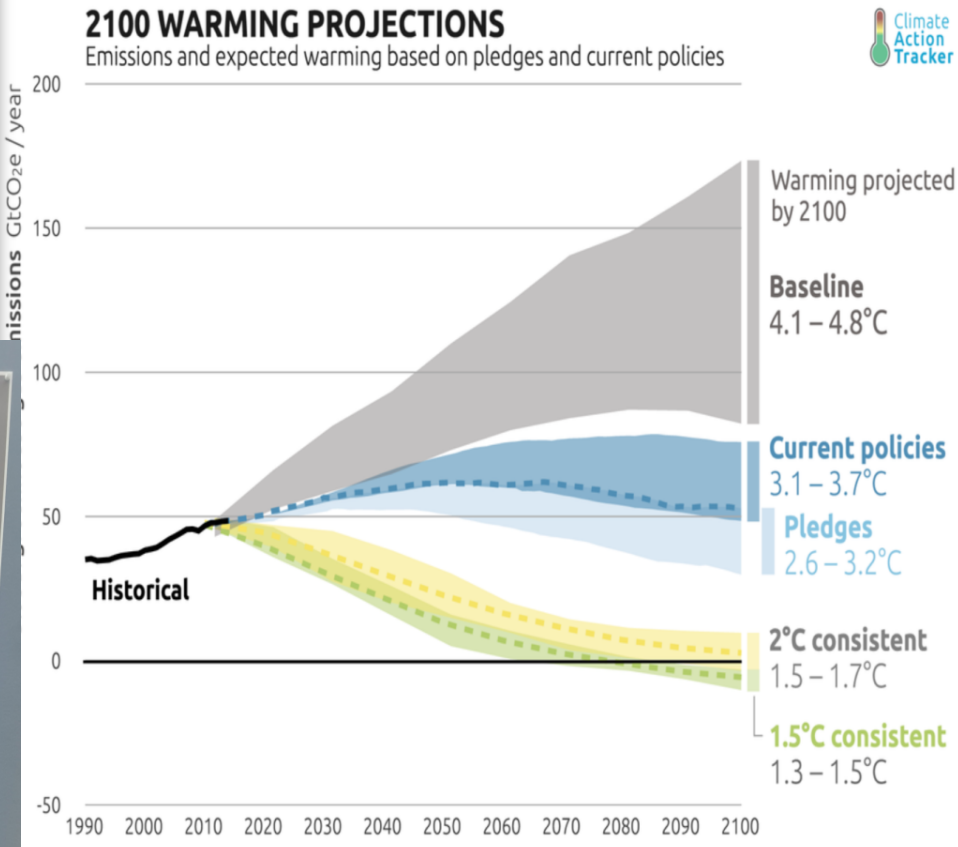
Outlines

- Global Climate Change
- Climate Change and Energy
- Goals of Paris Agreement
- Initiatives of Myanmar's INDC for Energy sector
- Way forward

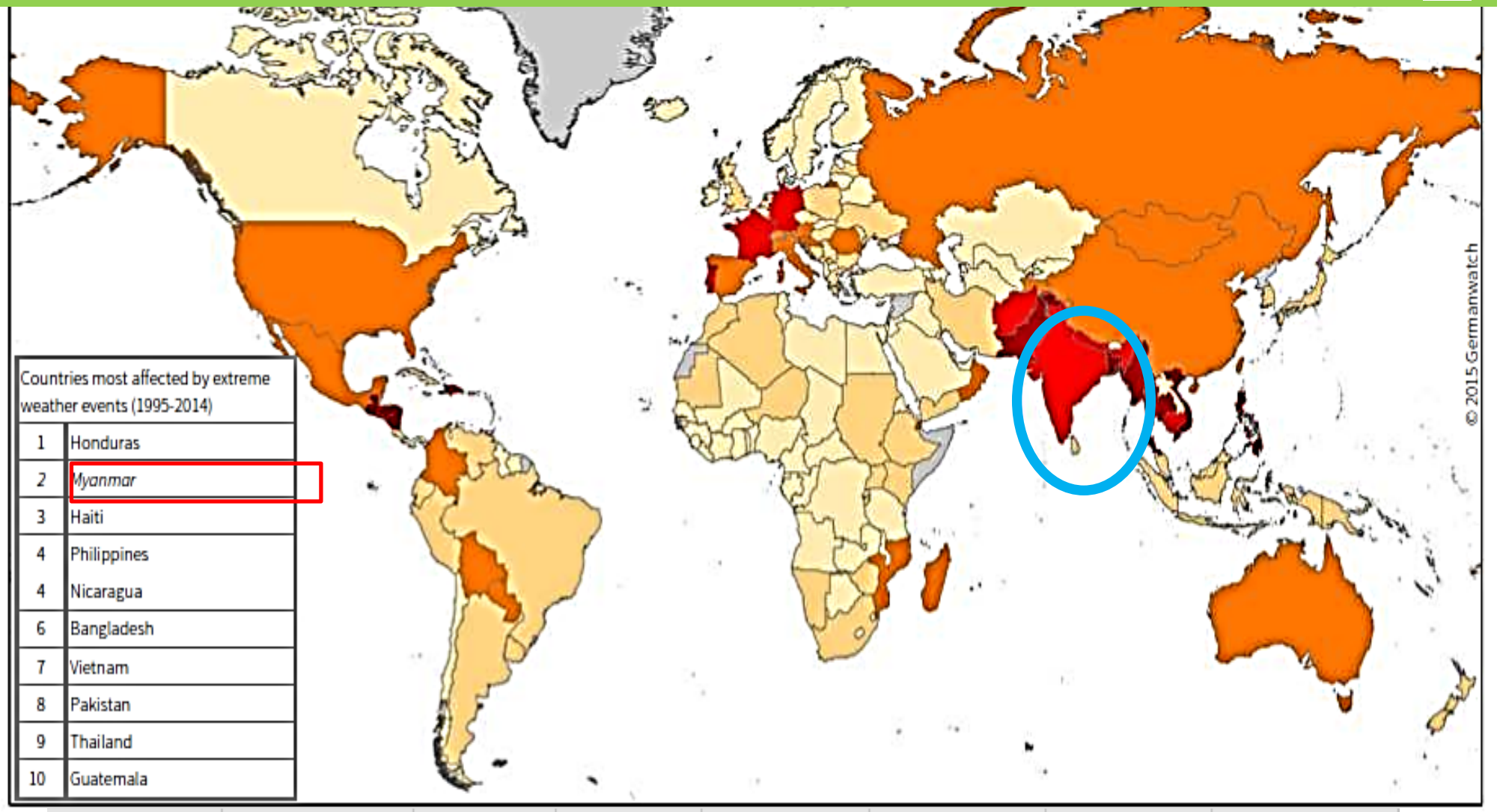
Overview on Climate Change







MYANMAR IS VULNERABLE



Countries most affected by extreme weather events (1995-2014)	
1	Honduras
2	*Myanmar*
3	Haiti
4	Philippines
4	Nicaragua
6	Bangladesh
7	Vietnam
8	Pakistan
9	Thailand
10	Guatemala

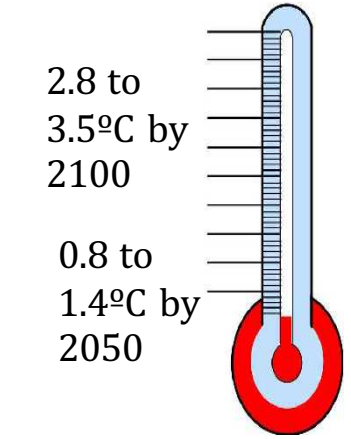
CRI 1995–2014 (1994–2013)	**Country**	**CRI score**	Death toll	Deaths per 100 000 inhabitants	Total losses in million US$ PPP	Losses per unit GDP in %	Number of events (total 1995–2014)
1 (1)	Honduras	11.33	302.75	4.41	570.35	2.23	73
2 (2)	Myanmar	14.17	7 137.20	14.75	1 140.29	0.74	41

Climate Risk in Myanmar: Summary for Policymakers and Planners & MCCS-MP (draft)

Projections of future changes in climate for Myanmar* 2050 and beyond

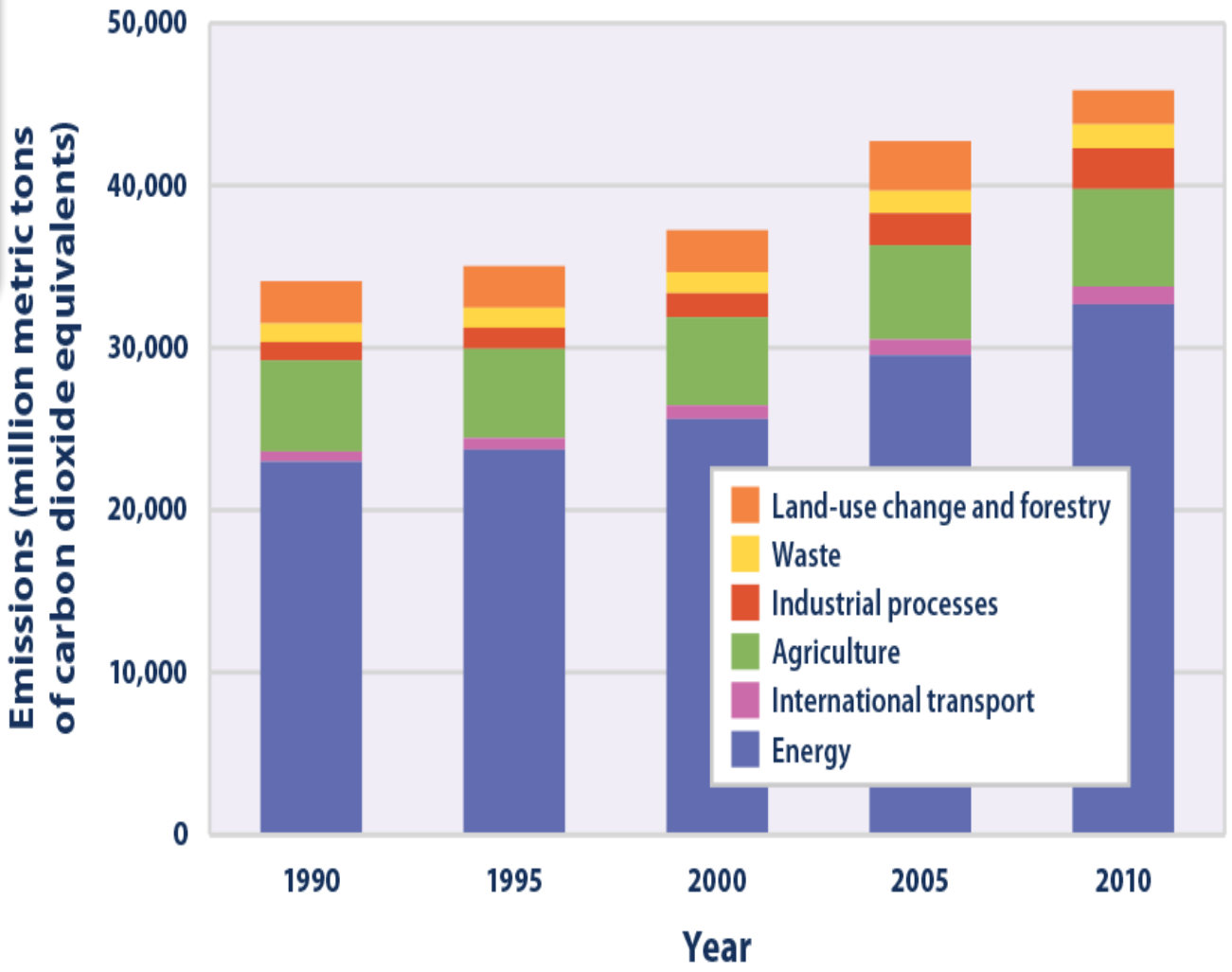
*NAPA; DMH/RIMES; CCSR

- **Increase in temperatures** by mid-Century (~1.4 degrees Celsius –low estimate)
- **Increased numbers of hot days** (extreme temperatures)
- **Increased rainfall with regional differences i.e.** wetter rainy seasons in-land
- **More extreme rains, storms/cyclones and flood events**
- **Shorter Monsoon season** (late on-set/early withdraw) and **droughts**
- **Sea-level rise** (up to 40cm by 2050)
- **Storm-surge**



Role of Energy Sector and GHG

Global Greenhouse Gas Emissions by Sector, 1990–2010

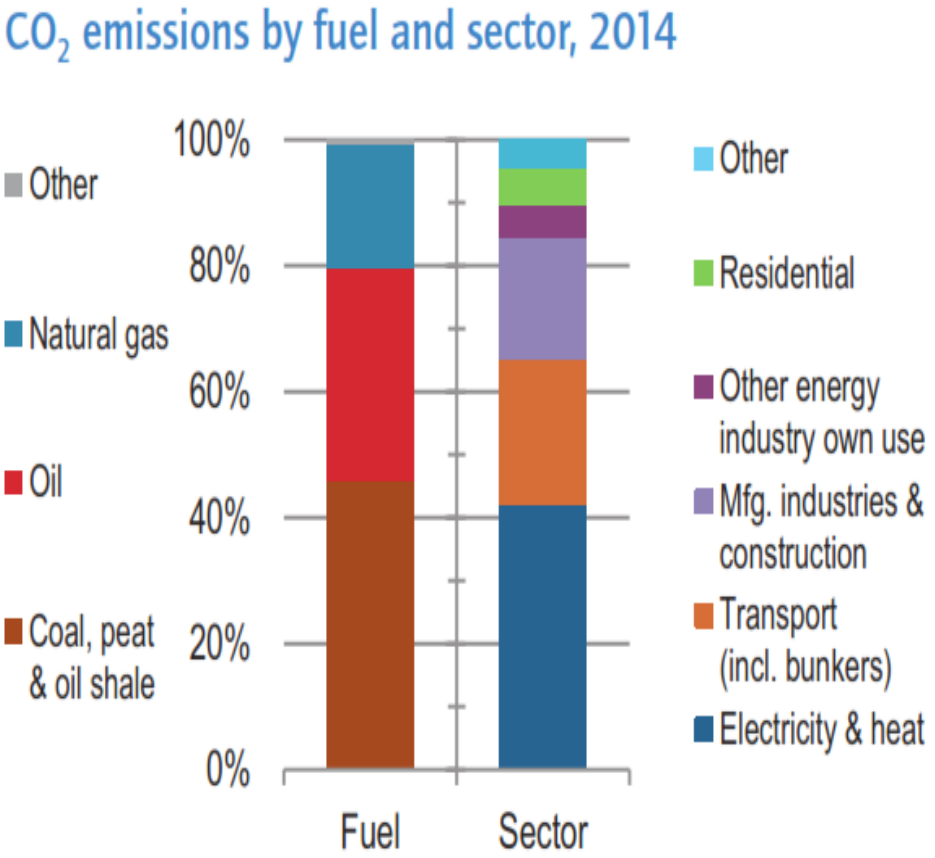


Data sources:

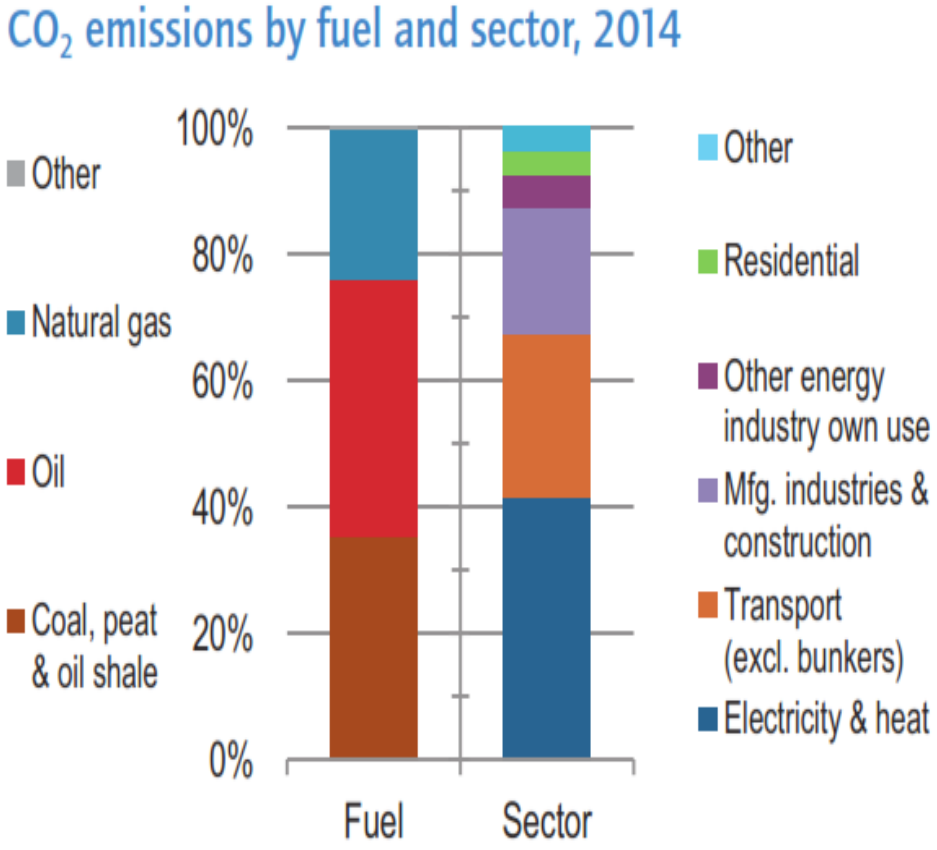
- WRI (World Resources Institute). 2014. Climate Analysis Indicators Tool (CAIT) 2.0: WRI's climate data explorer. Accessed May 2014. http://cait.wri.org.
- FAO (Food and Agriculture Organization). 2014. FAOSTAT: Emissions—land use. Accessed May 2014. http://faostat3.fao.org/faostat-gateway/go/to/download/G2/*/E.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

World



Asia (Excluding China & India)



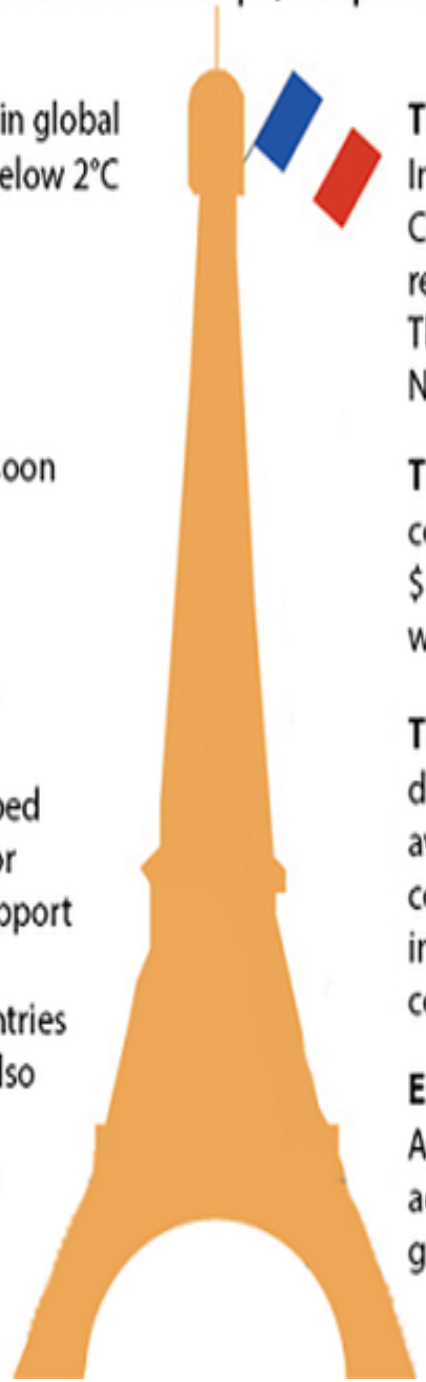
Source: Energy, Climate Change and Environment, 2016 Insights, IEA

Climate goals of Paris Agreement

The aim: to keep the increase in global average temperature to well below 2°C and to 1.5°C if possible.

The objective: to level off greenhouse gas emissions as soon as possible.

The principal: to differentiate between developed and developing countries. Developed countries must lead the way for reduction of emissions and support developing countries in implementing this. Other countries with the ability to do so may also contribute their support on a voluntary basis to achieve this target.



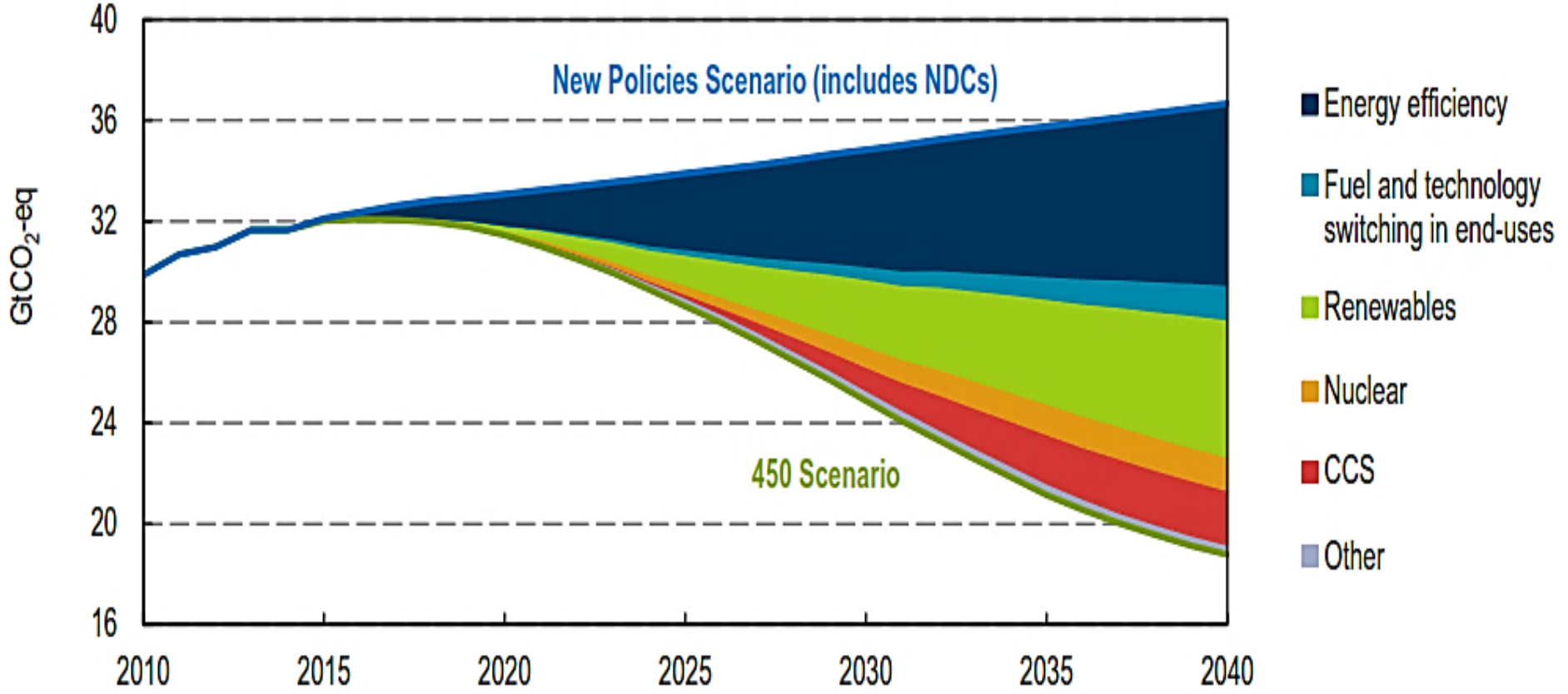
The means: Countries must submit Intended Nationally Determined Contributions (INDCs) which are revised upwards every 5 years.
The 1st report is due in 2023.
North-South technology transfer.

The financing: from 2020, rich countries must contribute at least $100 billion per year. This amount will be reviewed in 2025.

The new mechanism: loss and damage. Measures must be taken to avert, minimize and address the concrete effects of climate change, in order to help the most vulnerable countries.

Entry into force: 2020 if the Agreement is ratified by 55 countries accounting for 55% of global greenhouse gas emissions.

Measures needed to surpass current NDCs to reach 2°C trajectory (450 Scenario), through 2040

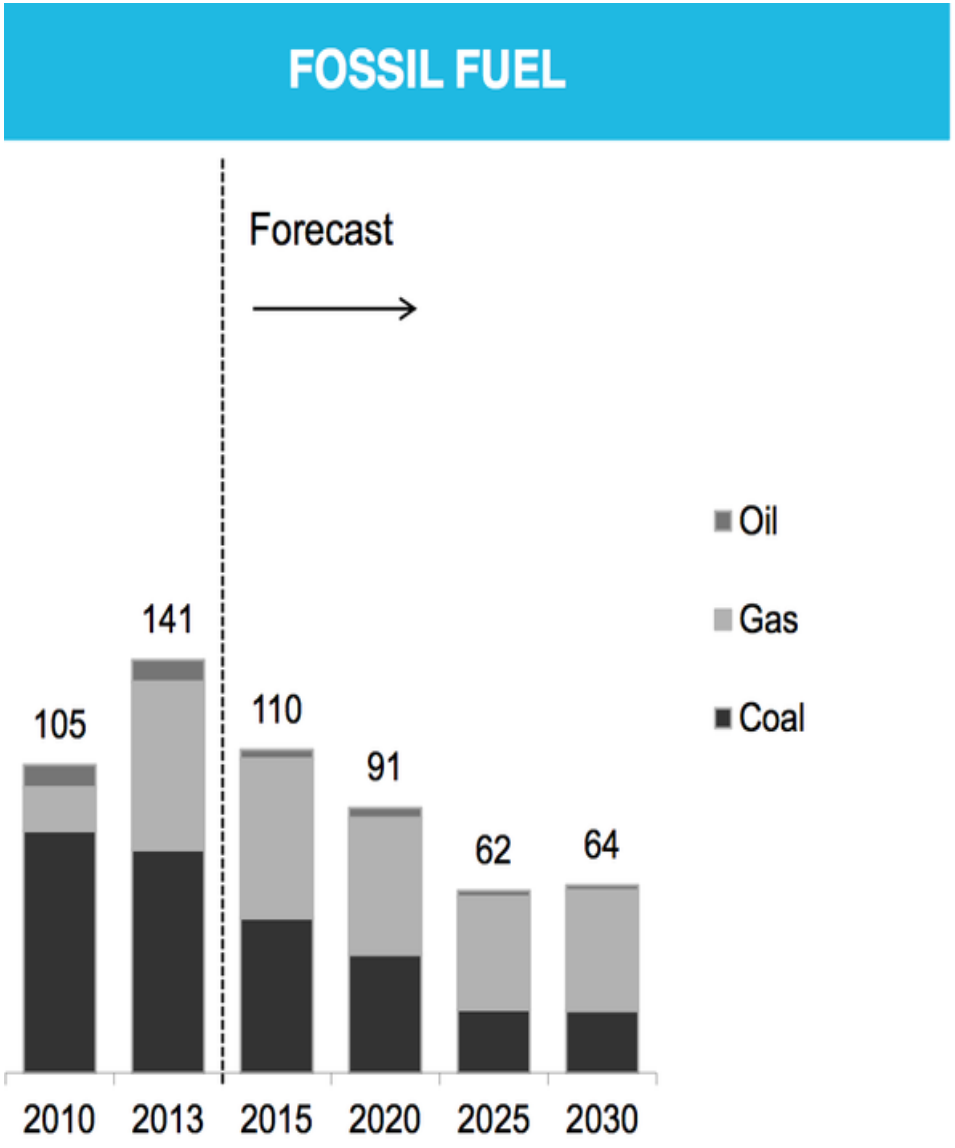


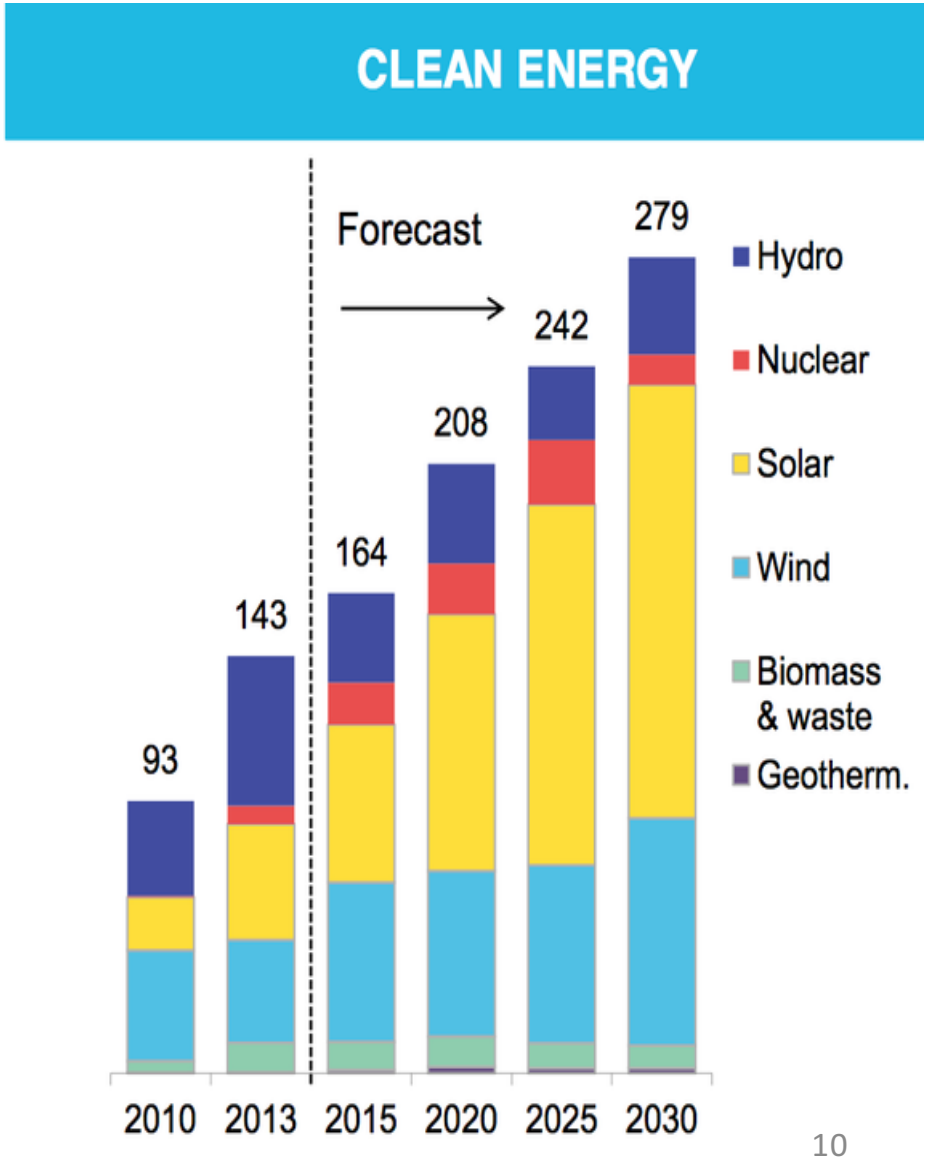
Note: The New Policies Scenario (NPS) is the central scenario of the World Energy Outlook *and includes the energy-related components of NDCs submitted by 1 October 2(*

Source: Adapted from IEA (2015b), World Energy Outlook 2015.

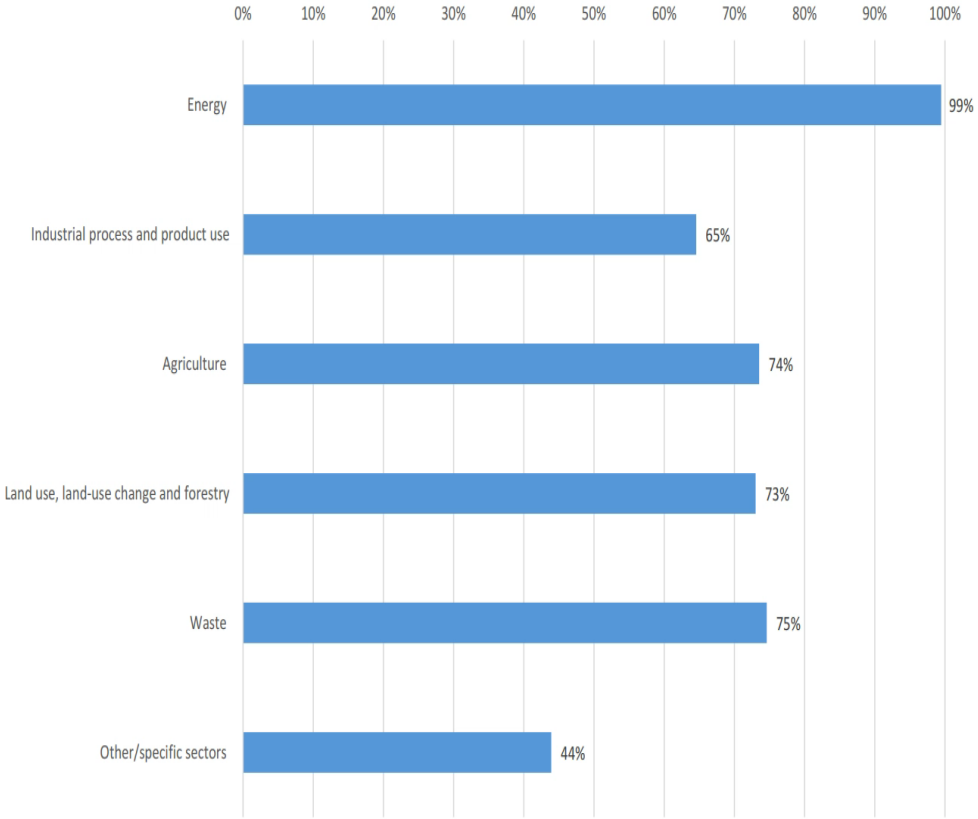
Source: Energy, Climate Change and Environment, 2016 Insights, IEA

Global projection for renewable energy



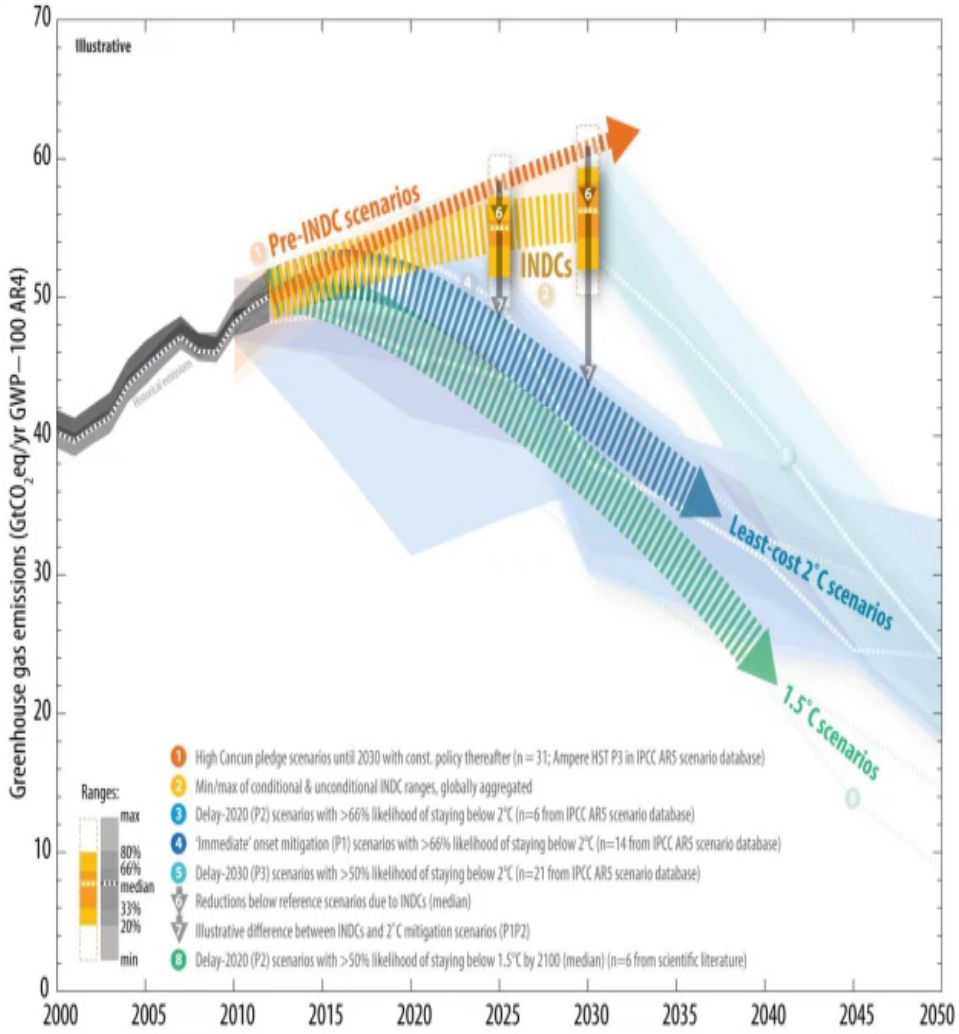


Sectors covered by INDCs



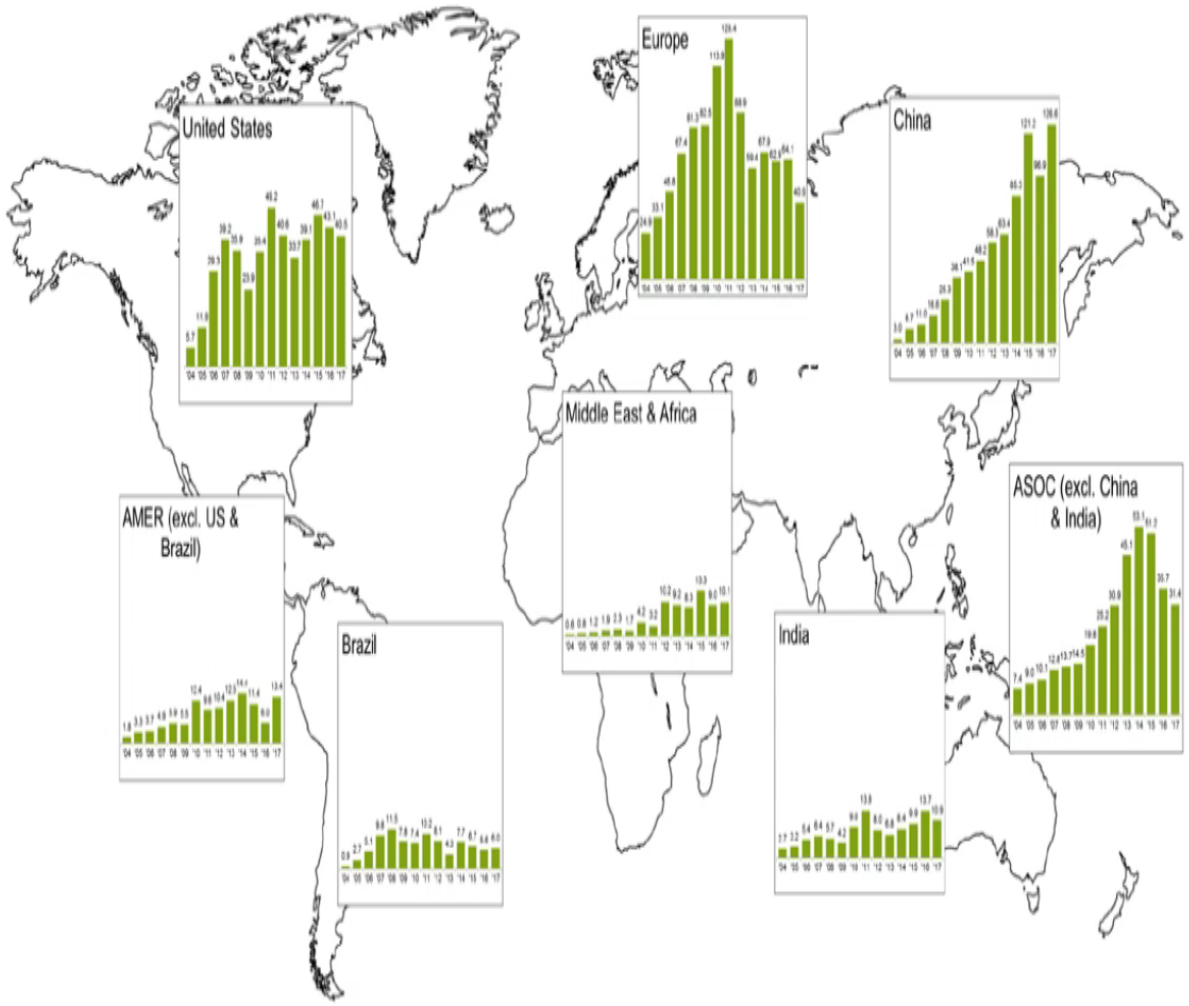
- Much greater emission reductions are required in the period after 2025 and 2030 to hold temperature rise below 2 degree Celsius above pre-industrial level

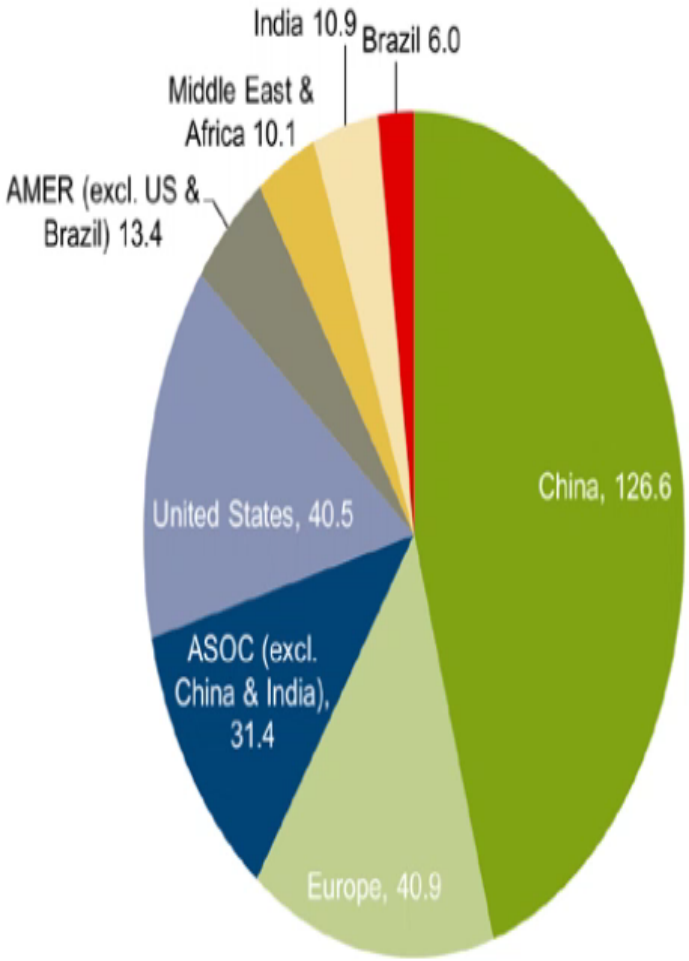
Comparison of global emission levels in 2025 and 2030 resulting from the implementation of the iNDCs and under other scenario



Source: Synthesis report

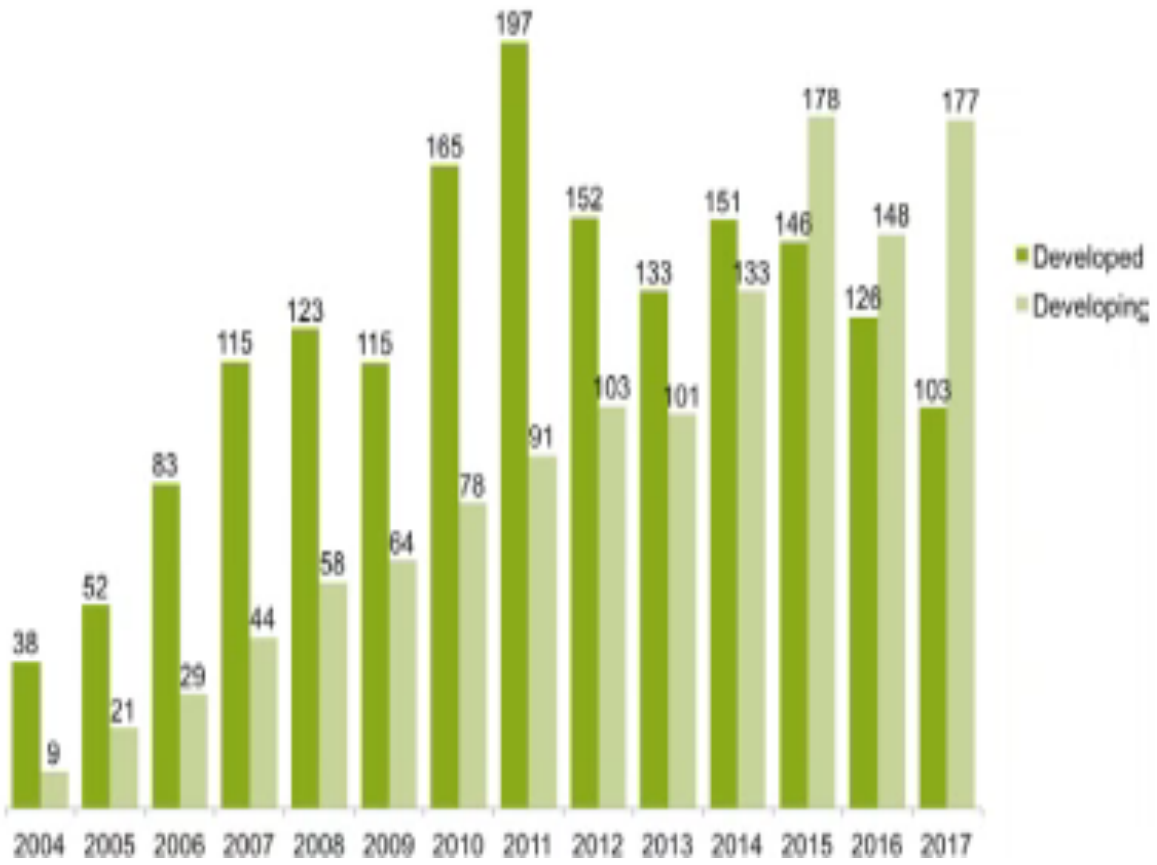
Global Renewable Energy Investment Trend (by Region)



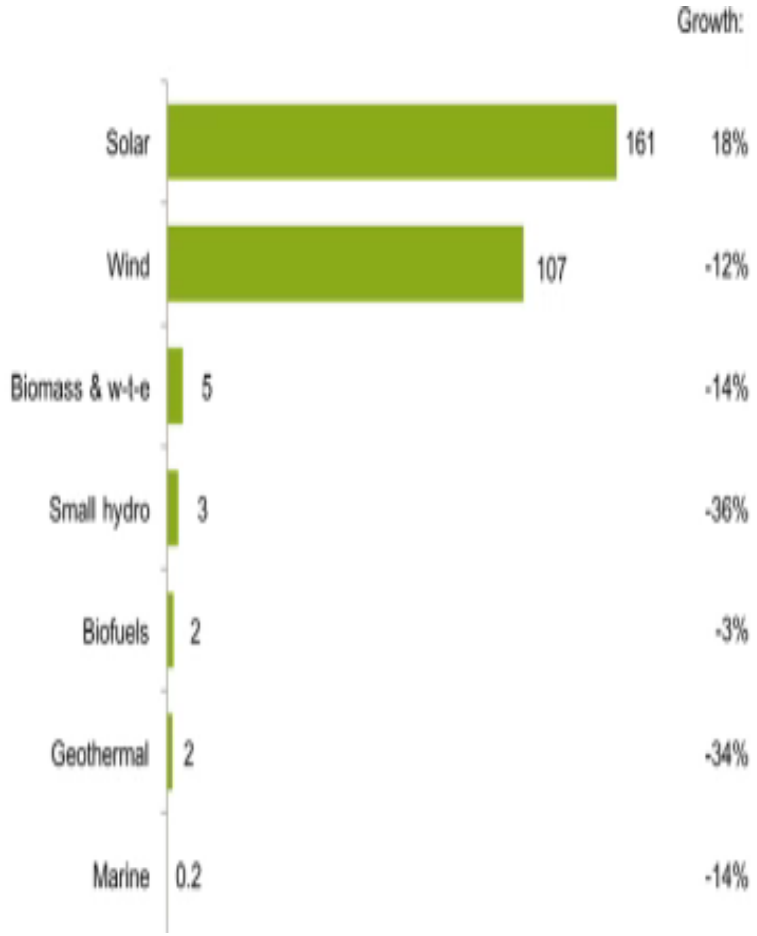


Source:UN Environment, Bloomberg New Energy Finance

Global Renewable Energy Investment Trend (Cont:)



Global New Investment in RE: Developed vs Developing



Global New Investment in RE by Sector 2017and Growth on 2016, $BN

Source: UN Environment, Bloomberg New Energy Finance

Myanmar's INDC (NDC)

INDC

- **Submitted on 28 September 2015 to UNFCCC Secretariat Office.**
- **Mitigation focus on Forestry & Energy sectors**
- **Adaptation mainly focus on Agri, EWS & Forestry**

Paris Agreement

- **Signed on 22 April 2016**
- **Ratified on 19 September 2017**

Adaptation targets in NDC

Priorities sector for Adaptation

- Agriculture
- Early warning systems
- Forestry
- Public health
- Water resource management
- Coastal zone protection
- Biodiversity preservation

Guiding Framework

- NAPA
- Climate smart Agriculture Strategy (2016)
- Policy and legal instruments
- MAPDRR (2017-2030)
- National Water Policy and IWRM (2017)
- Education and awareness
- NBSAP (2015)
- EOC
- ICMP
- Public Health

Mitigation Targets in NDC

Forestry Sector

- **Reserved Forest** (RF) and
- Protected Public Forest
- (PPF) = 30% of total
- national land area
- **Protected Area Systems** (PAS) = 10% of total national land area

Framework

- 30-Year National Forestry Master Plan (2001-30)
- REDD Programme
- European Union's Forest Law Enforcement Governance Trade (FLEGT)

Renewable Energy

- 9.4 GW Hydro installed capacity by 2030
- Rural electrification 30% renewable sources
- Energy

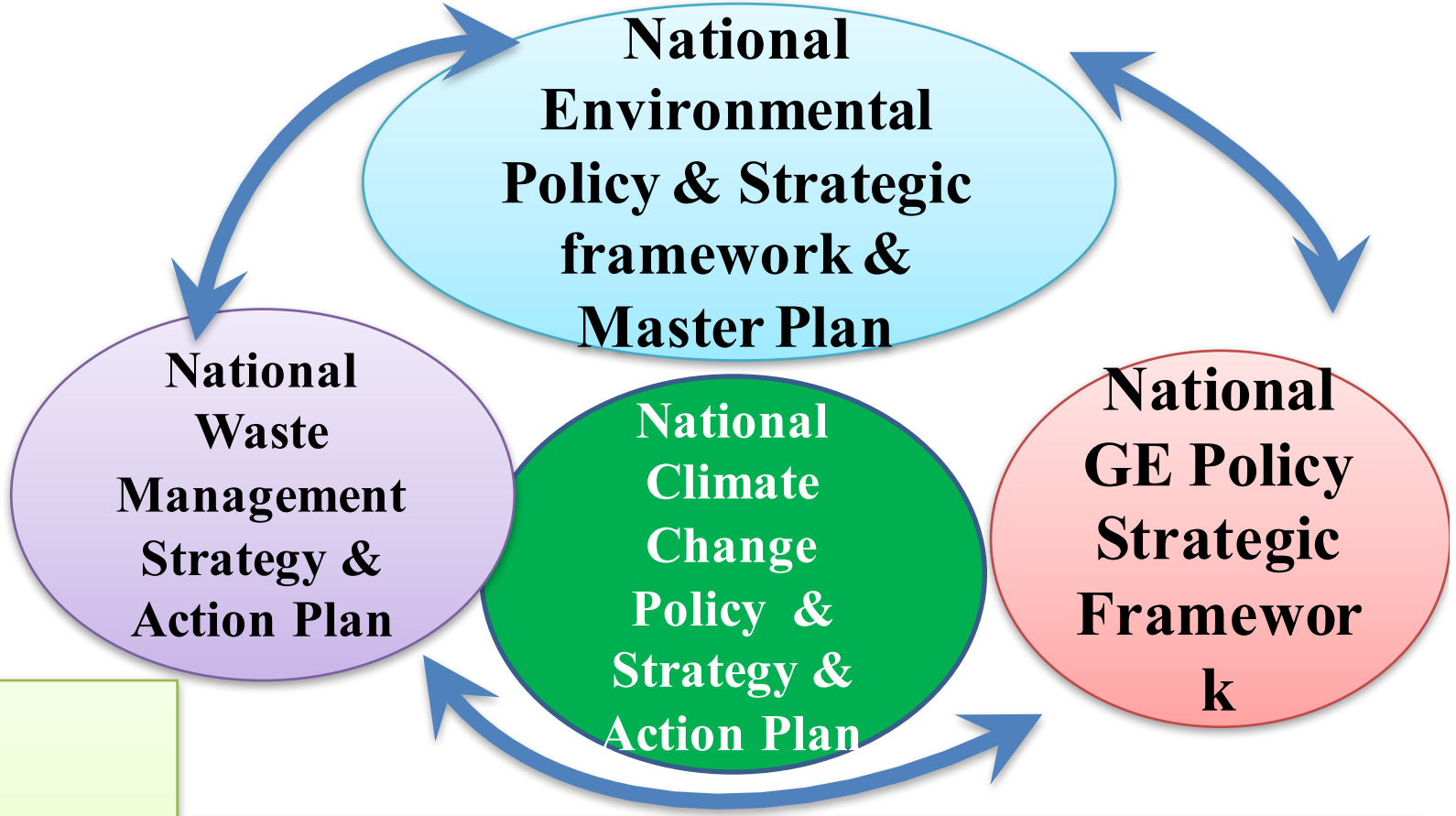
Energy Sector

Framework

Energy Master Plan (Draft)

- National Electrification Master Plan (2015-2030)
- Comprehensive Village Development Plan (2015-2021)
- National Energy Efficiency Policy, Strategy and Roadmap (2015)
- Dry Zone Greening

Synergy of Integrated Policy Approach



The aims:

Create a better environmental friendly investments in sectors for the growth of the country's economy and society while leading to clean environment and healthier ecosystem

National Comprehensive Development Plan

Sectoral Policy, Strategy & planning

Sustainable Development Goals

Myanmar National Climate Change Policy

Vision

A climate-resilient, low-carbon society that is sustainable, prosperous and inclusive, for the wellbeing of present and future generations

Purpose

Take and Promote climate change action on adaptation and mitigation	Integrate adaptation and mitigation considerations national priorities and all levels and sectors in progressive	Take decisions to create and maximize opportunities for sustainable, low-carbon, climate-resilient development ensuring

Guiding Principles

Sustainable development	Precaution	Prevention	Environmental integrity	Shared responsibility and cooperation	Inclusiveness	Good governance	Climate justice and equity	Gender equality and women's empowerment

Policy recommendations

Food and water security	Healthy ecosystem	Low-carbon and resilient growth	Resilient urban and rural settlement	Human wellbeing	Knowledge, awareness and research

Measures for implementation

Laws, regulations, strategies, action	Institutions	Finance, budgets and	Capacity building	Research and technolog	Partnerships	Transparency and accountabilit	Monitoring, evaluation, reporting and

Political Guidance

"A fast transition towards low-carbon and clean energy to achieve Sustainable Development Goals through environmental mainstreaming by;

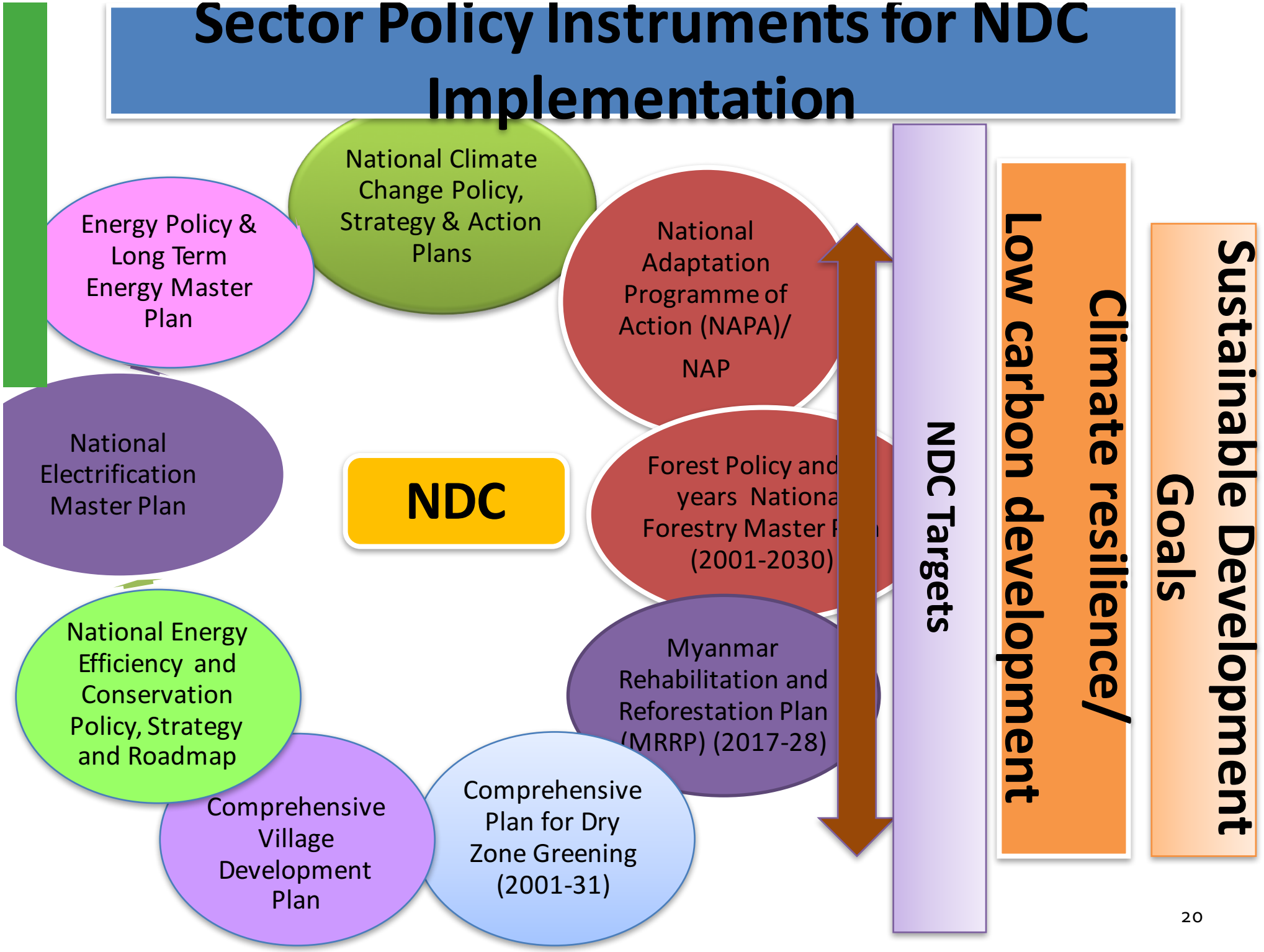
❖Encouraging and enabling new and renewable energy and setting targets for renewable energy use with time frames.

❖Increasing efficient use and conserving of energy, water, soil, biodiversity"

H.E. the President of the Union of the Republic of Myanmar, U Htin Kyaw, at

the 5th Green Economy Green Growth Forum, 2016

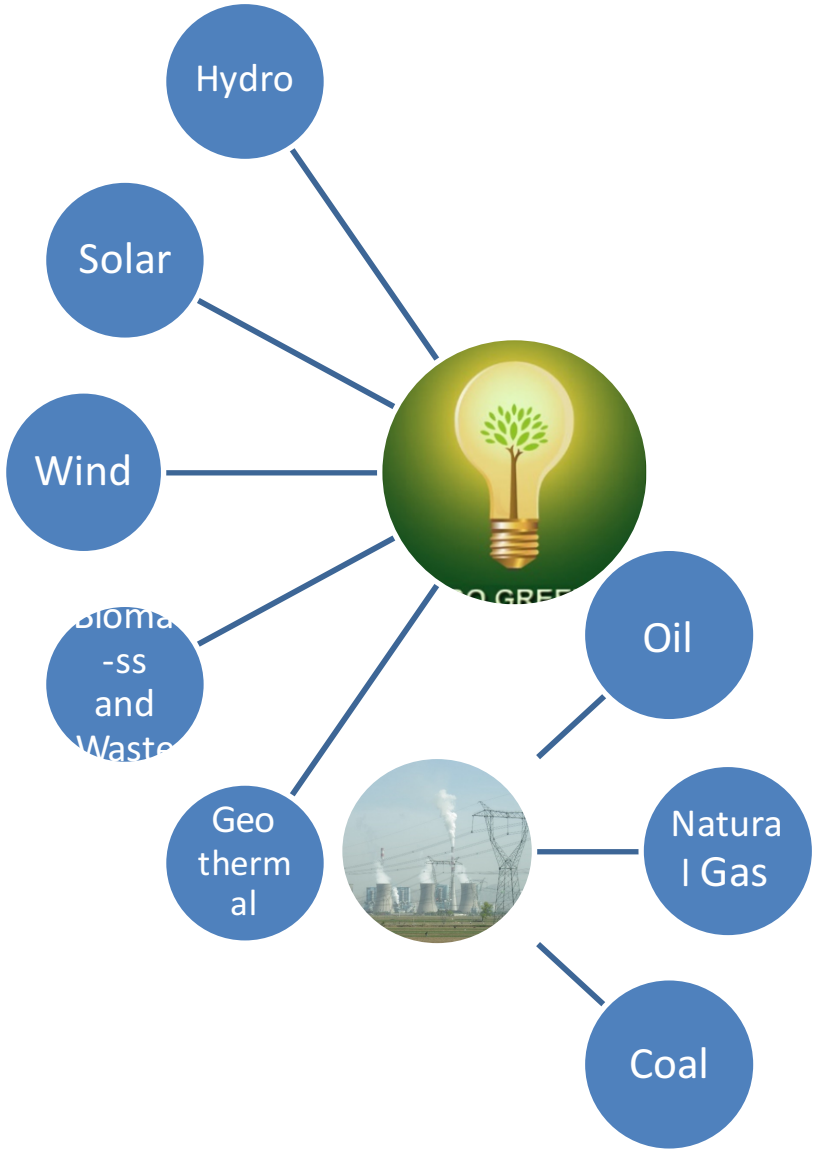
Sector Policy Instruments for NDC Implementation



Energy potential in Myanmar

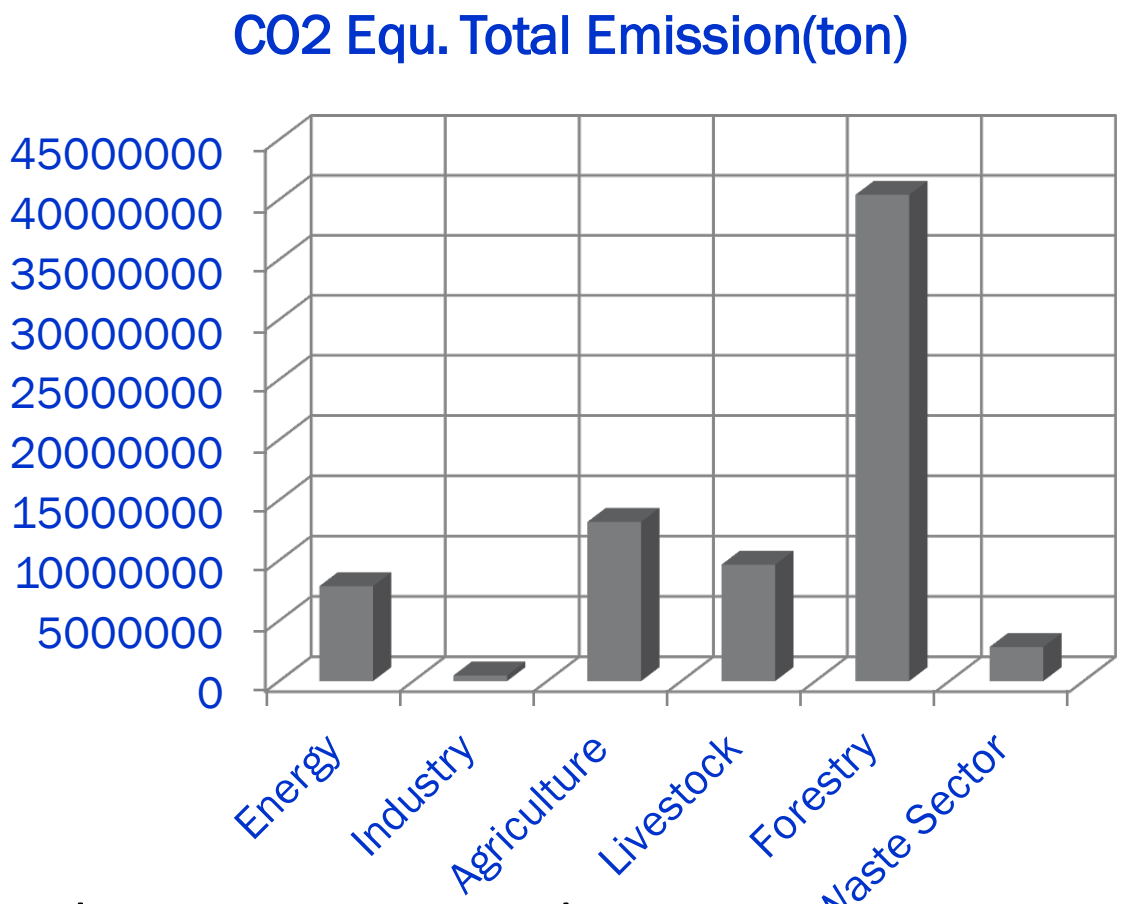
Energy, transport and industry sectors define Myanmar's economic growth, and are driven by processes such as urbanization.

- Attract large share of FDI
- Energy production, consumption and distribution (71% energy consumption from fuel-wood; 29% with access to electricity; 50-65% generated from hydropower)
- Industry development: risks for productivity and GHG
- Transport resilience and GHG: 1 million registered vehicles in 2004 and 4 millions in 2012
- May also lead to both environmental stress and risks related to climate changes: If not integration of environment and climate action (promotion of renewable energy), lead to be high GHGemission for risk of CC although Myanmar is sink (INC 2012) and,



GHGs emission (2000): Myanmar INC

Energy-	10.6%
Industry-	0.6%
Agriculture & Livestock	30.7%
Forestry-	54.3%
Waste-	3.8%



- **GHGs emission** in CO2 equivalent is approximately **74 m tons based** in the year 2000.
- Carbon sequestration from forestry sector was about **142 m tons**
- **Myanmar is not a net-emitter and in fact, a carbon sink country**.

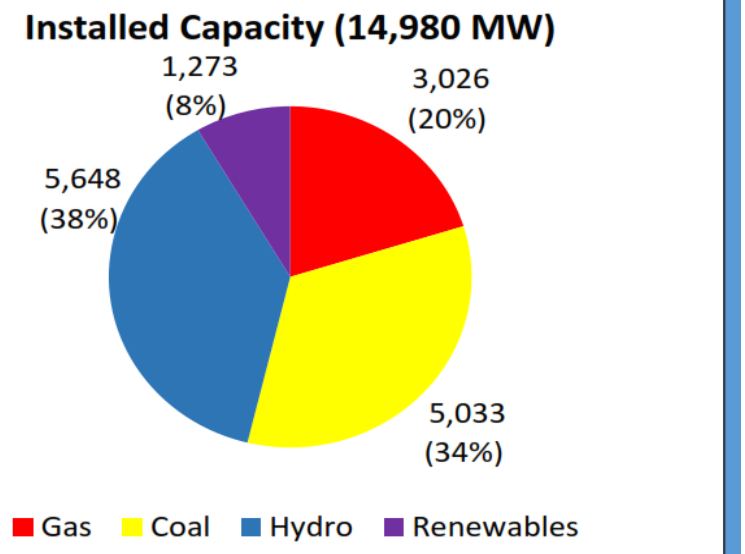
A BALANCE

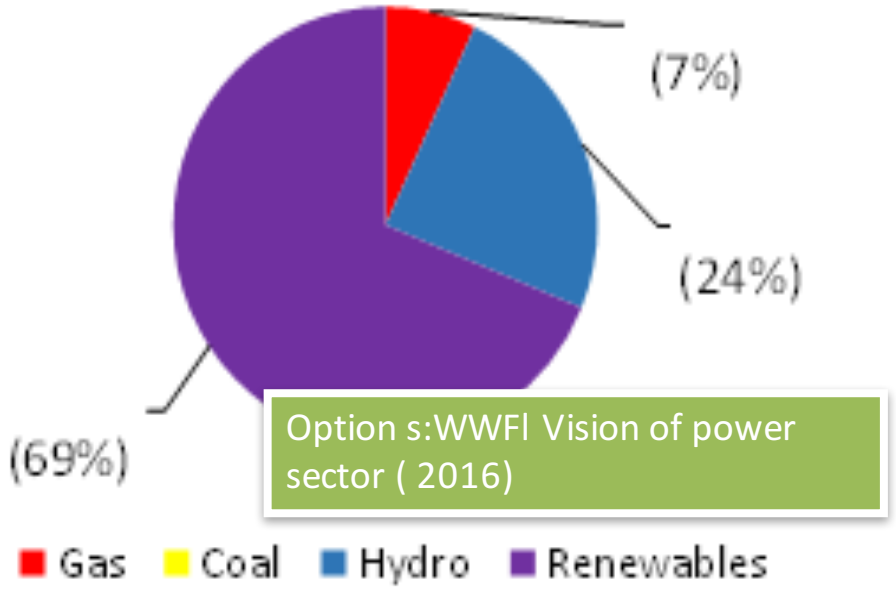
Develop in a green manner, in line with global trend while still maintaining high pace:

1. Achieving ambitious economic goals, while developing in **a low-carbon and green manner**
2. Expanding electric coverage to the whole country with the **highest possible share of renewable sources**
3. Satisfying **needs** of urbanization, industrialization **energy**, infrastructure, connectivity, services, wh preserving eco-system services essential to communities protecting from the negative effect CC

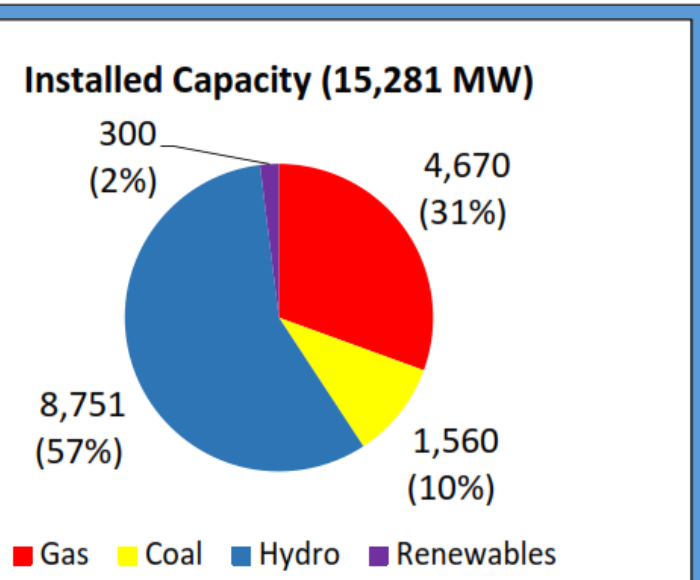
Generation MIX scenarios

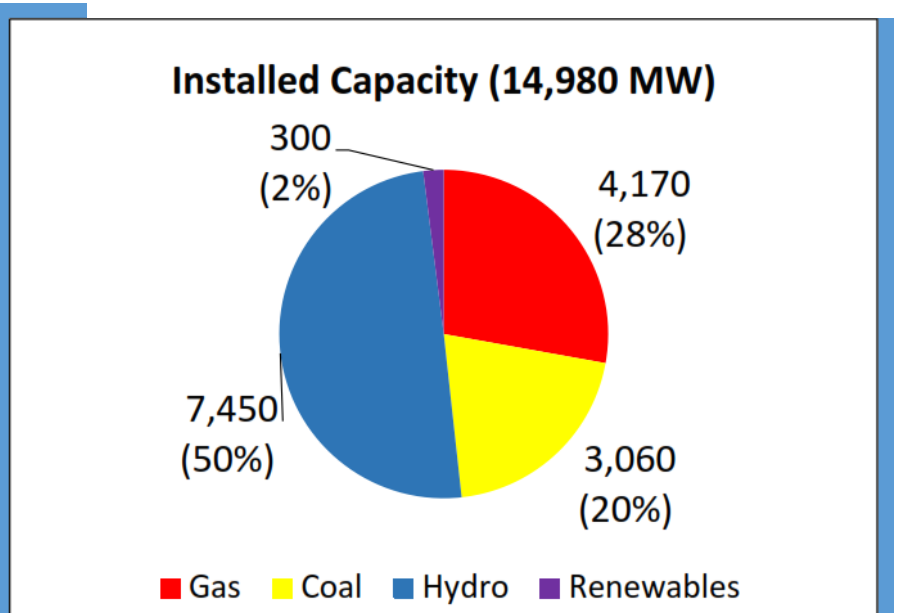
Options: JICA
Power Sector DP (Sep, 2015)





Option s:WWFl Vision of power sector (2016)

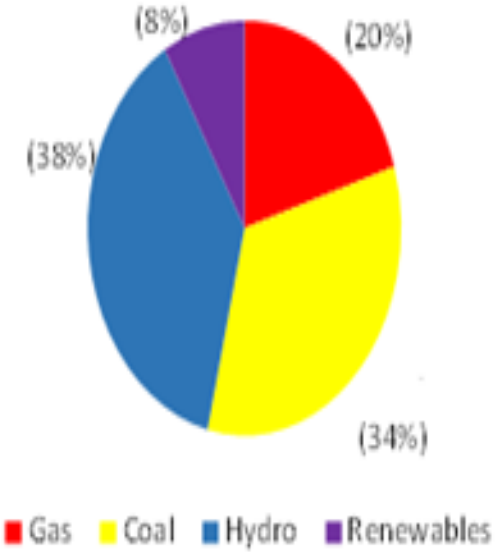




Option s:ADB National Energy Master Plan (Dec 2015)

Generation MIX toward promoting RE policy scenarios

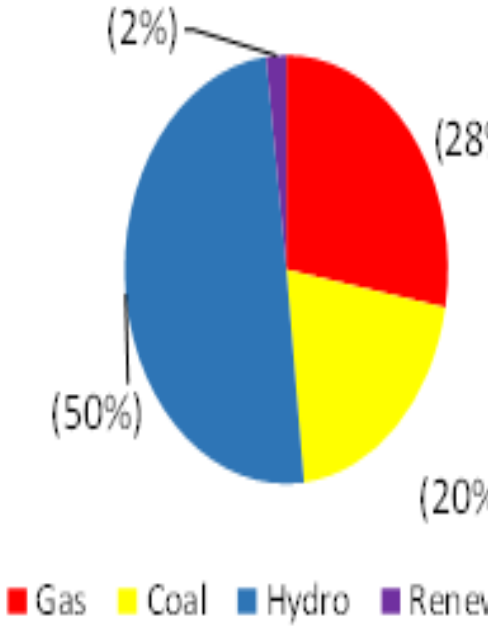
Business as Usual Scenario



Source: National Electrification Plan / JICA Data Collection Survey

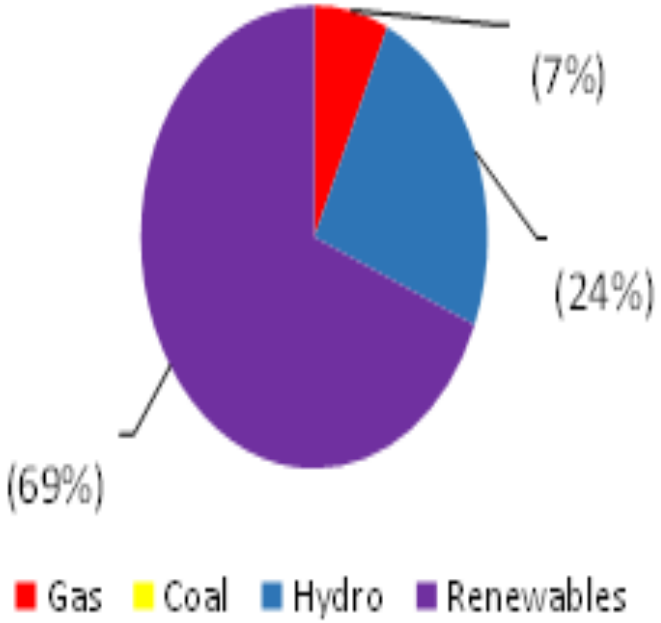
Ref: RICARDO, 2016

Policy Scenario 1



Source: National Energy Master Plan

Policy Scenario 2



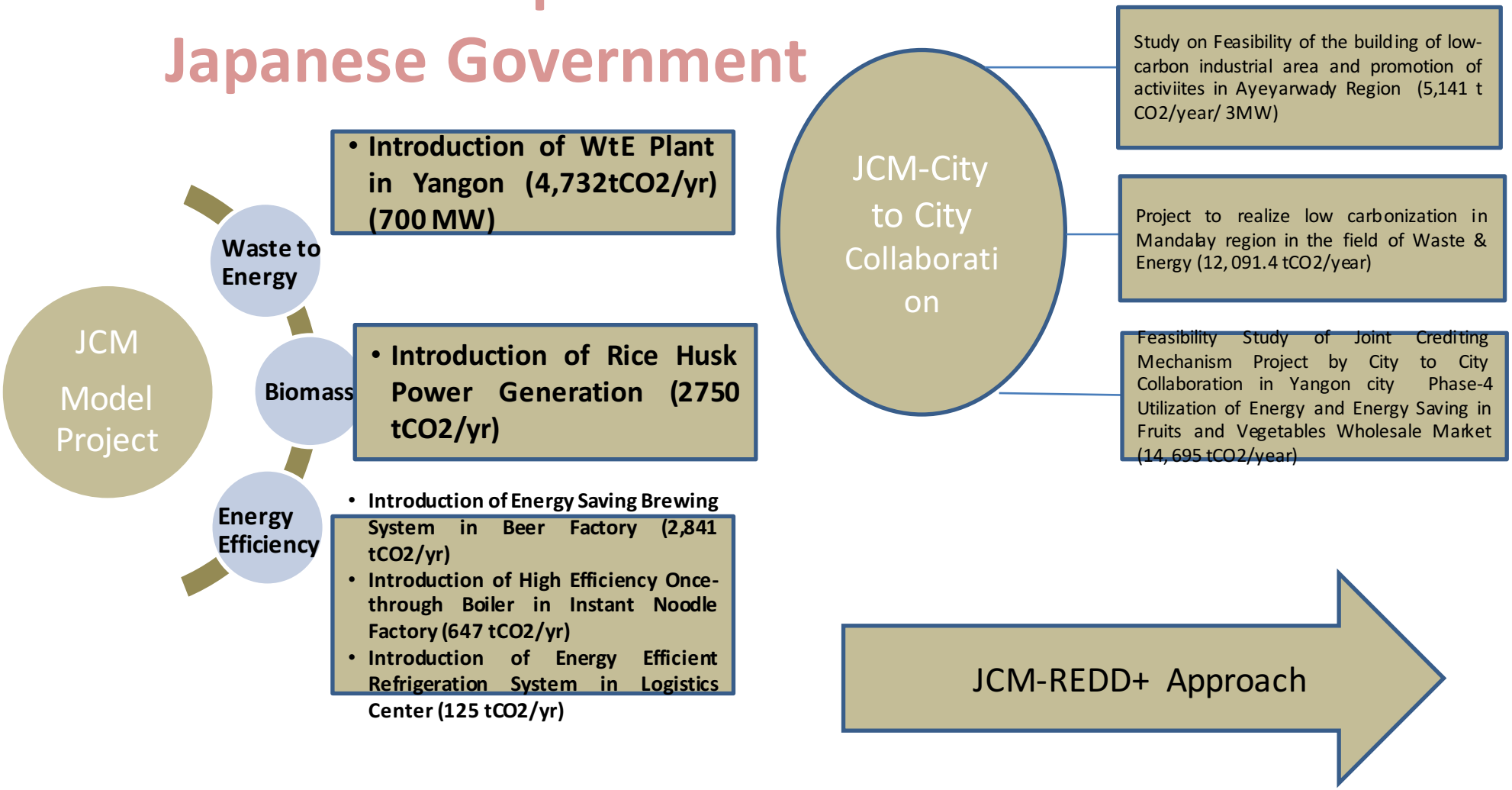
Source: WWF's 'Alternative visio for Myanmar's power sector: Towards full renewable electricity by 2050

Initiatives for NDC Roadmap Development

- Gap analysis on MRV System (Institution, Data management, Building Capacity) (2016-17)
- Gap analysis on National Adaptation Planning (2016) and submission NAP proposal to GCF (2017)
- Kick off consultation workshop, Dec, 2015
- National Consultation Workshop (April, 2016)
- Series of bi-lateral consultation meetings (2016-17)
- National Consultation Workshop on refining the existing targets in line with existing Forestry plans and strategies (15-3-2017)/(9-11-2017): stakeholders from Government, NGOs, INGO and CSOs
- National Workshop on Energy Sector Implementation (21-9-2017): stakeholders from Government, NGOs, INGO and CSOs

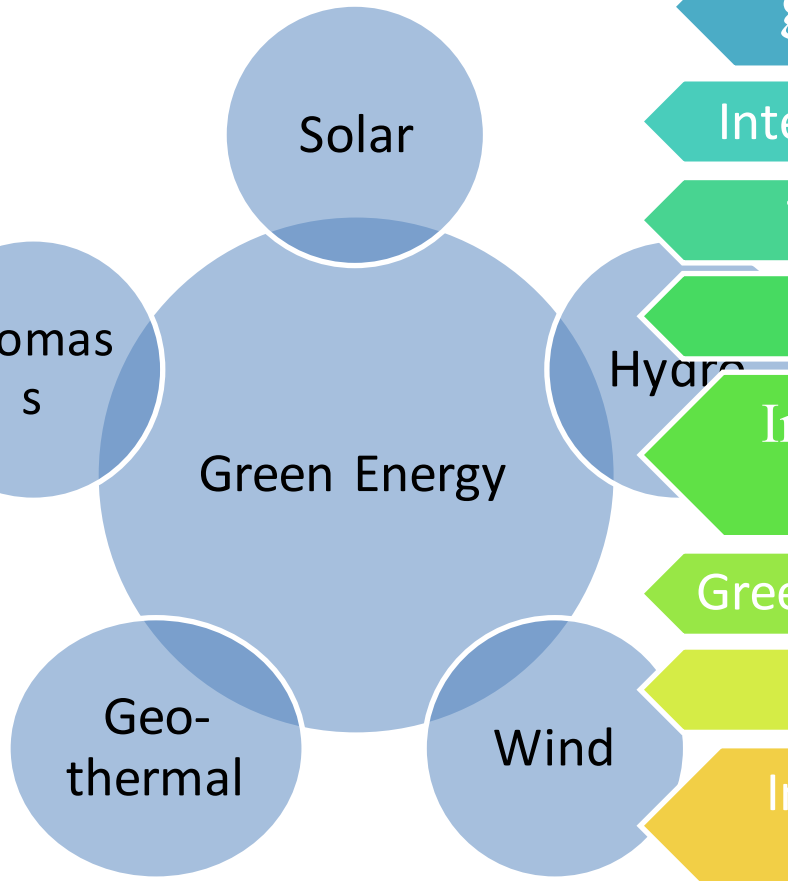
Myanmar's RE Initiatives (based on Market-based Mechanism)

- **Bilateral Cooperation with Japanese Government**



Challenges

- Technology
- Finance
- Capacity
- Conflicts
- Coordination
- Benefit sharing



Way forward

- green investments
- International Cooperation
- Technology Transfer
- Capacity Building
- Innovation of research and development
- Green Financial Mechanism
- PPP
- International Funding (GCF, GEF)
- SEA,EIA, EMP

Theme 3:

Renewable energy economics and co-benefits

Broad Benefits of Energy Transition towards 2050
Toshiaki Nagata, International Renewable Energy Agency (IRENA)

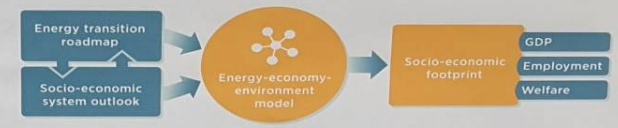
BROAD BENEFITS OF ENERGY TRANSITION TOWARDS 2050

IRENA
International Renewable Energy Agency

SOCIO-ECONOMIC BENEFITS OF RENEWABLE ENERGY DEPLOYMENT

The energy transition cannot be considered in isolation from the socio-economic system in which it is deployed.

The close interplay between the energy sector and the socio-economic system alters the socio-economic footprint and generates a number of benefits in terms of GDP, employment and human welfare.



1 The energy transition results in GDP growth higher than the Reference Case between 2018 and 2050.

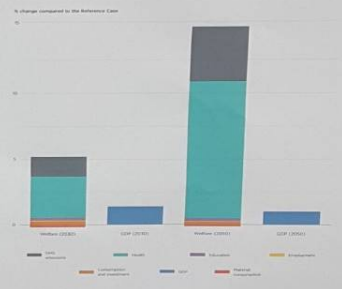
Relative difference of global GDP between the REmap Case and the Reference Case.

2 The energy transition results in employment growth higher than the Reference Case between 2018 and 2050.

Relative difference in global employment – REmap Case and Reference Case, disaggregated by three main drivers.

3 The energy transition generates significant increases in global welfare.

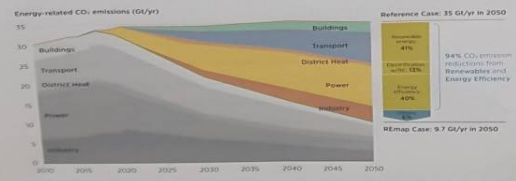
Global welfare indicators and GDP – the REmap Case compared to the Reference Case, 2030-2050.



REDUCTION OF ENERGY-RELATED CO_2 EMISSIONS TOWARDS 2050

IRENA estimates that annual energy emissions must be reduced by over 70% to bring temperature rise to below the 2°C goal. Renewable energy and energy efficiency measures provide over 90% of the reduction required.

Annual energy-related CO_2 emissions and reductions, 2015-2050.



CONTRIBUTION TO SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Articulating the link between SDG 7 and the other SDGs is essential to maximise development co-benefits.

The International Renewable Energy Agency (IRENA) supports countries in their transition to a sustainable energy future, and serves as the principal platform for international co-operation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy.

IRENA
www.irena.org

Way forward

Promote renewable energy with global trends, while still maintaining high pace:

1. Transferring INDC commitment into action-to-achievement with an effective implementation way
2. Setting ambitious targets for continuous, livable NDC document
3. Achieving ambitious economic goals, while developing in a low-carbon and green manner
4. Expanding electric coverage to the whole country, with the highest possible share of renewable sources


THANK YOU