THAILAND SUSTAINABLE GREEN GROWH IN ADDRESSING GLOBAL COMMITMENT: LESSON LEARNT & THE WAY FORWARD

Ms. Waraporn Hirunwatsiri

Senior Environmental Specialist

World Bank

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AGENDA

- Why Green Growth? & Thailand's Challenges..
- Global Commitments & World Bank Engagement
- What WB do & The Way forward..
- Montreal Protocol & KCEP: The Success Story of Thailand

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1. Why Green Growth?
& Thailand's Challenges..

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Why Green Growth? - Challenges to human security, sustainable & inclusive growth

1 Rapid natural resources depletion reduces future growth & poverty reduction prospects

COASTAL RESOURCES & FISHERIES

- Thailand to attract tourist (40 mill/yr, 14% of GDP) depends on pristine coastal resources
- Fisheries resources, especially in coastal waters, are severely degraded (9-25% of original stock in 1960s)

FORESTRY

- Deforestation contributes to recurring flood/droughts with economy-wide impact
- Gov't target to increase forest area to 40%
- Non-traceable of commodity's products dampen the country's competitiveness.

2 Environmental degradation reduces quality of life, livability

AIR, WATER & WASTE

- Over 50% of waste (30 MT py) managed through open burning resulting in accumulated waste
- Air pollution in industrial areas in Eastern Coast, smog and air problem in the North and BKK still problematic. Harvard Study mentioned that increase of only 1 μg/m3 in PM2.5 is associated with an 8% increase in the COVID-19 death rate
- the amount of plastic waste generated has surged by 15% after the Covid-19

SUSTAINABLE INFRASTRUCTURE

- EIA implemented for almost 30 years, but environmental impacts are still cause of concern. EIA does not inform decision making. Limited use of SEA and upstream planning due to capacity and institutional gaps
- Low public trust/acceptance in projects causing delays

3 Climate change & natural disasters poses risks to sustained growth in the future

CLIMATE RISKS/ADAPTATION

- Flood/droughts are key risks to the economy. The total damage and losses from the 2011 floods in Thailand amounted USD 46.5 billion
- Coastal erosion on both Gulf of Thailand and Andaman Sea coasts have a total length of 1,900 km, the severe eroded land occurred along the coastline of 200 km with average rate of 5 meters/year.
- Relative sea level rise in the Gulf of Thailand ranging from 1.4–12.7mm/year between 1985 and 2009.
- By 2070-2100, up to 2.5 million people in Thailand are potentially exposed to flooding from sea-level rise.

CLIMATE CHANGE MITIGATION

- NDC target to reduce emission by 20-25% and impact on growth and competitiveness
- Target of Net Zero Carbon
- Forestry (/REDD ++) included in NDC for emission reduction/adaptation
- Global trade barriers from international agreement

Common Issues >>

- Plans/strategies in place but implementation often lacks behind
- Lack of integration
- Weak enforcement of regulations

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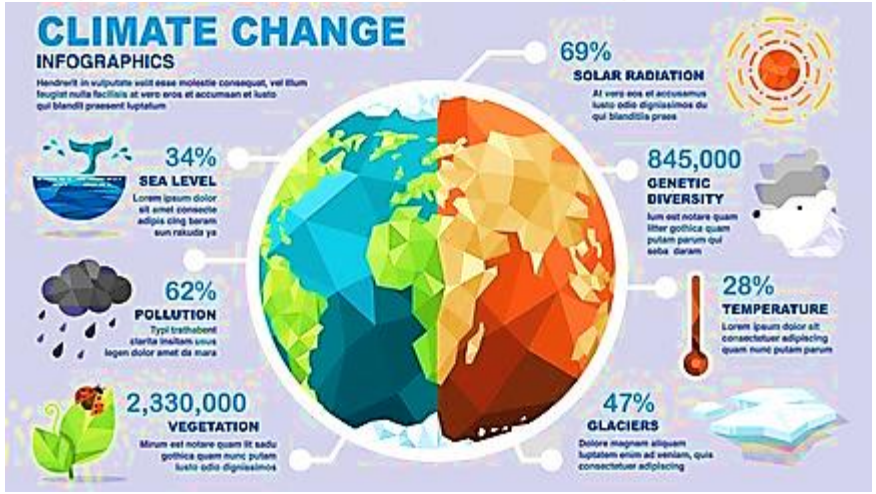
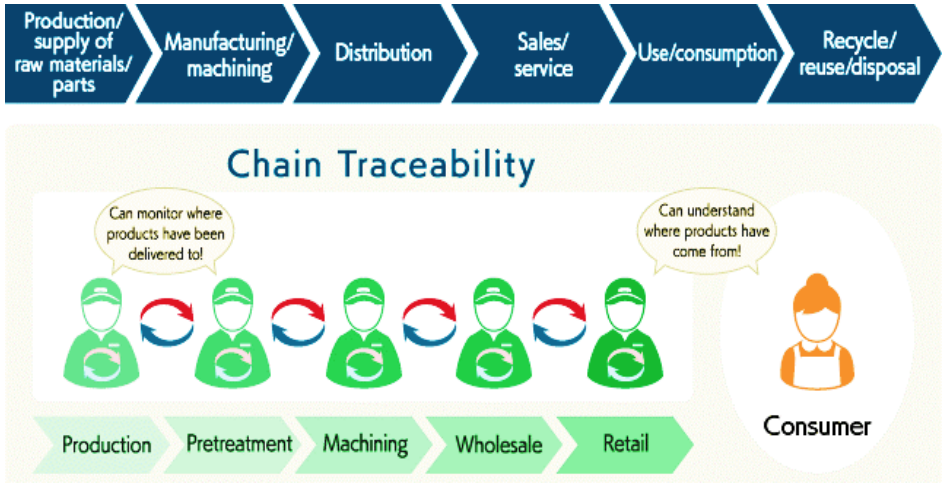
Why Green Growth?

Reduction of Energy Consumption

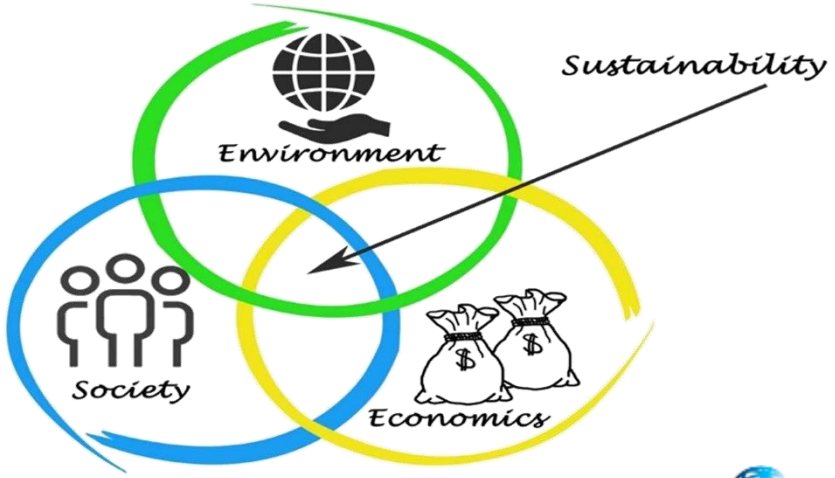
Mitigation of Climate Change Impacts



Increase Trade Competitiveness



Strengthening Sustainability



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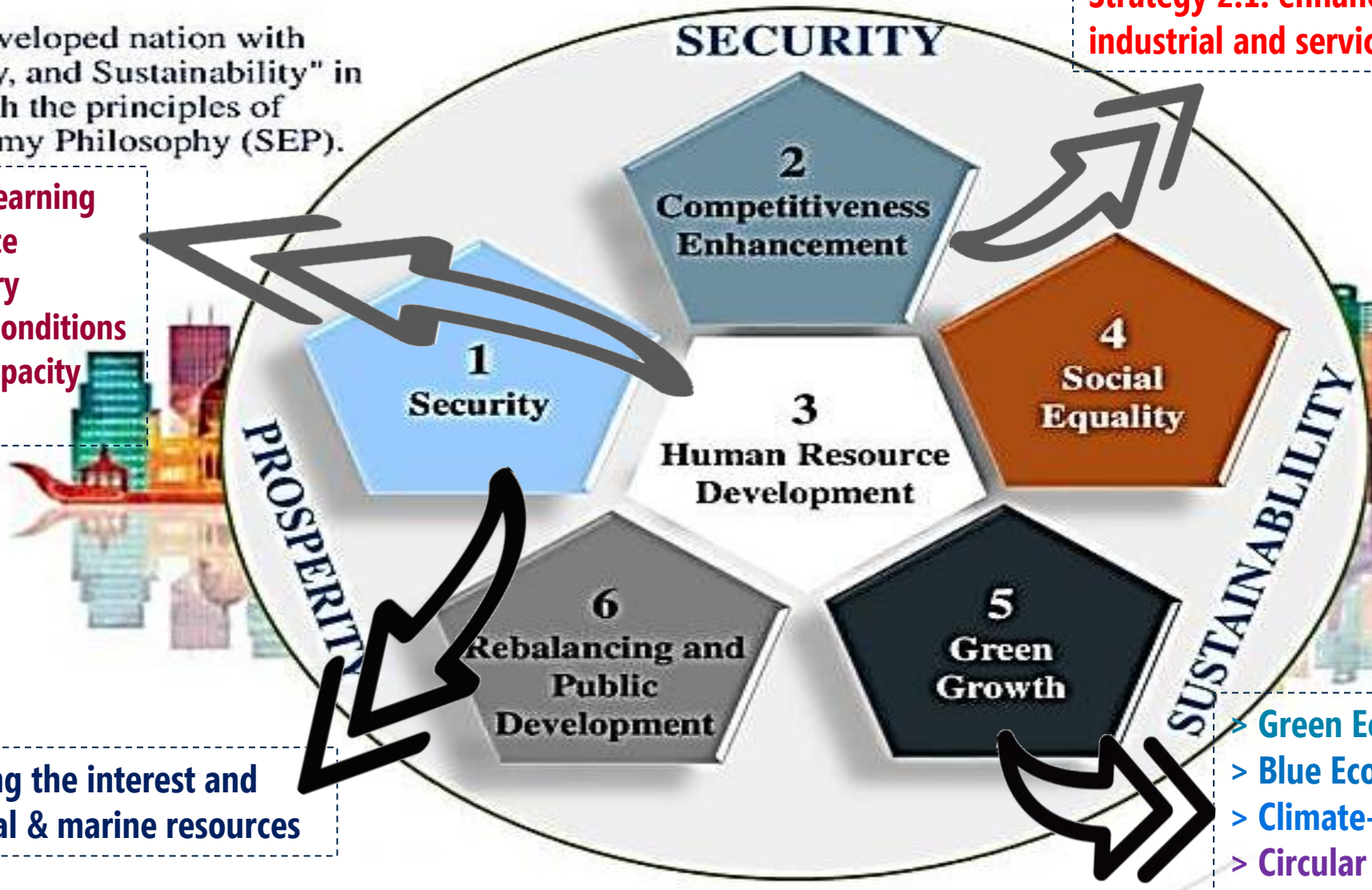
THAILAND's 20-Yr National Strategy (2018-2037)

VISION:

Thailand as a developed nation with "Stability, Prosperity, and Sustainability" in accordance with the principles of Sufficiency-Economy Philosophy (SEP).



Strategy 2.1: enhance the industrial and service sectors

Strategy 3.3: Improving learning processes to accommodate changes in the 21st century

Strategy 3.6: Promoting conditions that encourage human capacity development

Strategy 1.4: retaining the interest and security of the natural & marine resources

- Green Economy
- Blue Economy
- Climate-friendly Economy
- Circular Economy

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2. Global Commitment & World Bank Engagement

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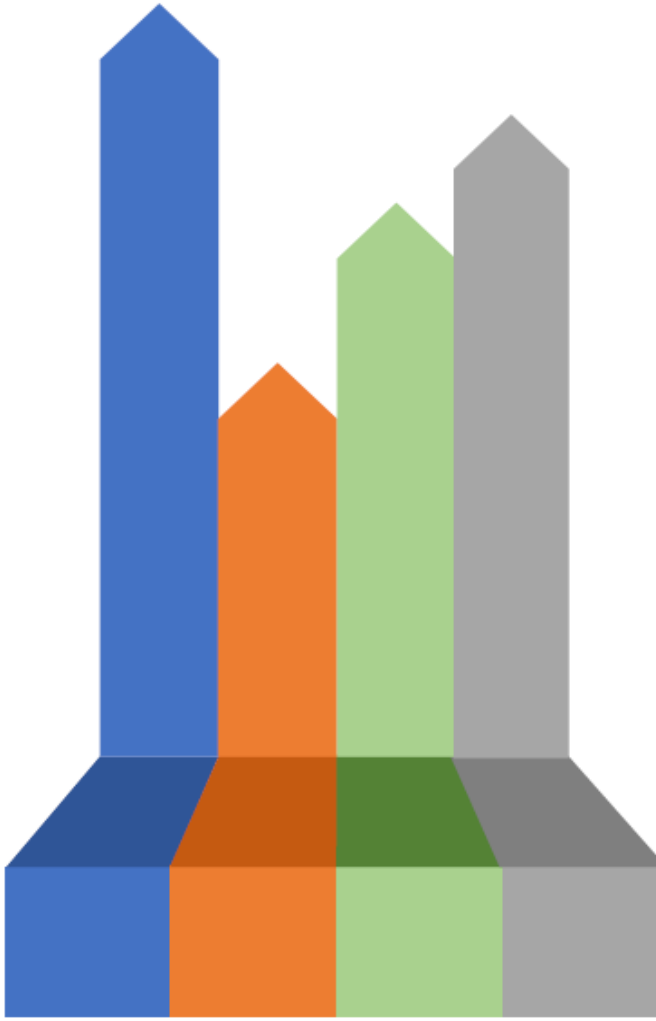
Climate and Development

Climate change is the defining development issue of our time and is critical for the WBG to deliver on its ambition to reduce poverty and boost shared prosperity.

- Climate change, poverty, and inequality are defining issues of our time and are interlinked. Climate change represents a serious and increasing threat to the WBG's twin goals.
- The WBG's vision is good outcomes for developing countries and their people. Countries need to integrate climate into their development strategy, and focus on green, resilient, and inclusive development (GRID).
- The WBG will work to play a leading role on climate and development challenges at the local, regional and global level.
- The WBG will step up support on climate change through a combination of analytics and advisory work, a wide range of financing instruments, and a convening role for global and regional cooperation.



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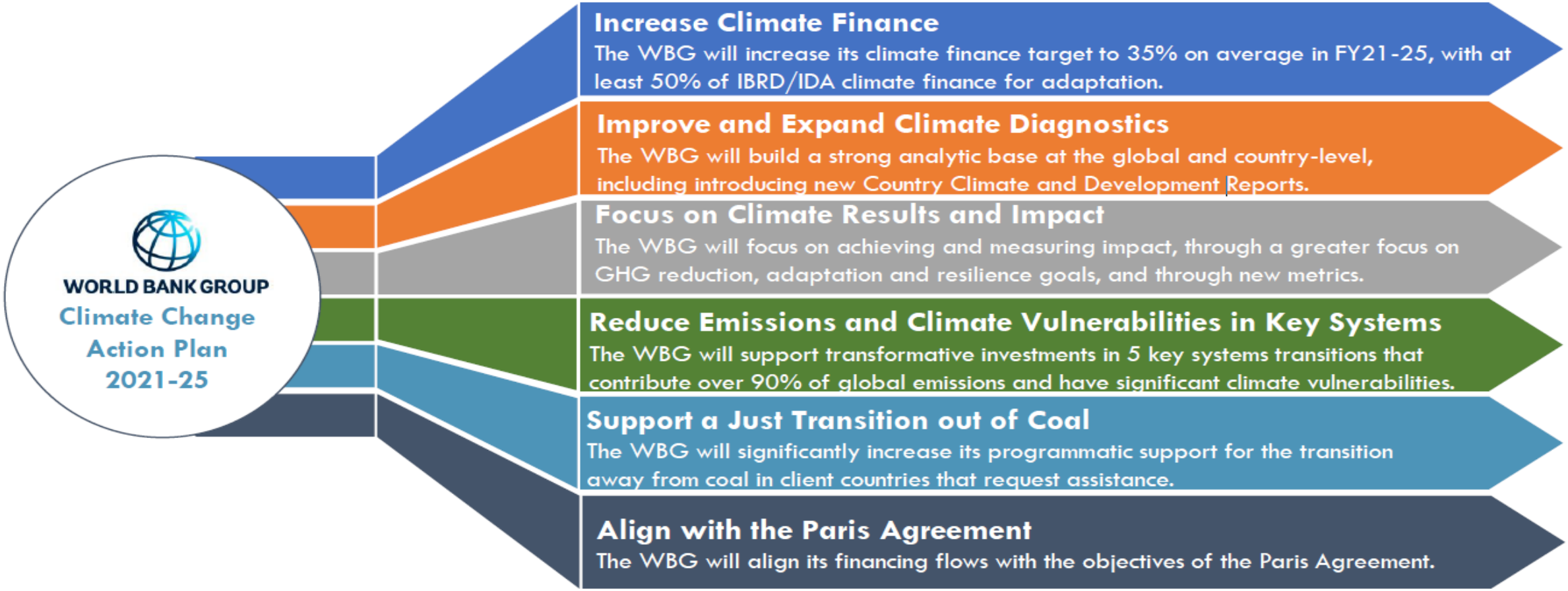
WB Climate Action Plan at a Glance

This Action Plan aims to increase the WBG's impact on GHG emissions and adaptation outcomes by increasing climate finance, improving and expanding diagnostics to prioritize climate-related actions, and focusing on climate results to deliver impact. The Bank will prioritize transitions in five key systems. It will use its convening power to support a "just transition" out of coal. The WBG will become aligned with the principles and goals of the Paris Agreement.



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Achievements under the WBG CCAP 2016-2020

The WBG has exceeded its target for the last three years to increase climate finance to 28% by 2020. The WBG delivered over $83 billion in climate finance, reaching the highest levels ever in 2020 at $21.4 billion, making it the largest climate financier for developing countries.

Renewable Energy

World Bank added **18 GW** of variable renewable energy into grids and **16 GW** of renewable energy generation; IFC added **8 GW** and MIGA added over **5 GW** of generation and integration; totaling **48 GW** for WBG of renewable energy to help communities, businesses and economies thrive.

Adaptation Finance

Boosted adaptation support from 40% of climate finance in 2016 to **52%** in 2020.

IFC and MIGA diversified their support for climate financing, expanding beyond the renewable energy sector.

Hydromet

Ensured that **120 million people** in **50** countries gained access to hydro-meteorological data and early warning systems crucial to saving lives in disasters.

NDCs

Supported **30 countries** to implement or enhance NDCs and supported over **35 national or sub-national governments** in their efforts to put a price on carbon.

Green Bonds

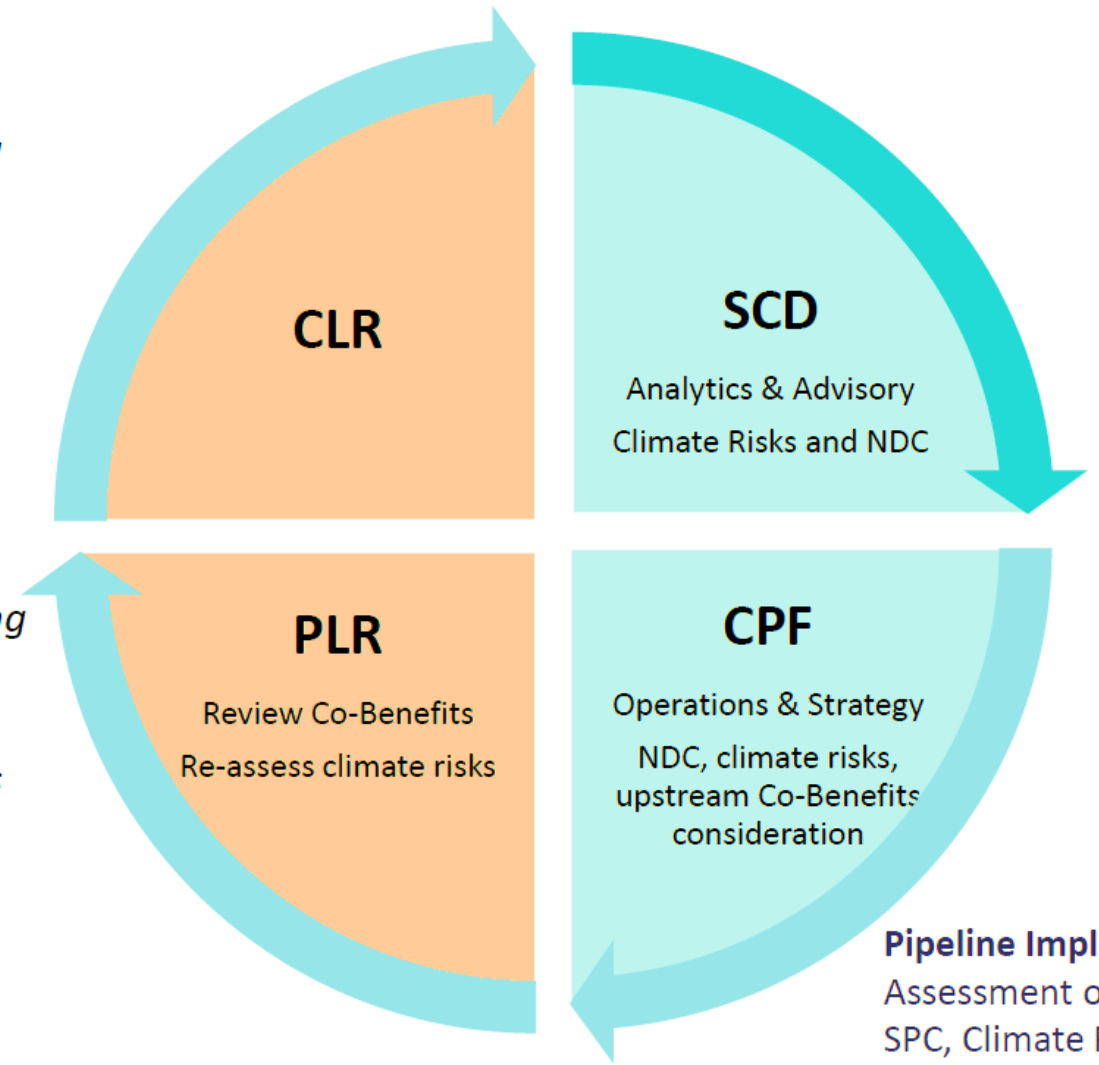
World Bank issued **$5.9 billion** equivalent in green bonds in 17 currencies; IFC issued more than **$6.6 billion** equivalent in green bonds in 18 currencies; and MIGA's issued its first greenfield infrastructure project bond in Turkey.

Green Buildings & FIs

IFC and MIGA advanced certification programs, and scaled investments in green buildings, and continued to green the financial sector through investments in Financial Intermediaries (FIs) and through the Sustainable Banking Network.

WB Country Engagement Cycle: Mainstreaming Climate Change

Completion and Learning Review:
assesses CPF results and draws lessons learned



Systematic Country Diagnostic: analytical underpinnings for CPFs
*(*In the future will draw upon additional analytical work from CCDRs)*

Performance and Learning Review:
updates CPF to reflect implementation progress

Country Partnership Framework: WBG program based on SCD, WBG comparative advantage, country demand

Pipeline Implementation
Assessment of Co-Benefits, GHG Accounting, SPC, Climate Risk Screening, Climate Indicators

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WB Country Engagement: Mainstreaming Climate Change Considerations in SCDs

Achievement of Twin Goals and Sustainability

- Assesses climate change as a potential binding constraint to poverty reduction and inclusive growth
- Includes analysis of current and projected climate risks and opportunities (including impacts on GDP and jobs)
- Identifies groups with greater vulnerability to climate change, which could impact shared prosperity
- Determines extent to which climate change poses risks to and opportunities for growth (sustainability)
- Reflects NDC priorities and highlights ongoing government programs and policies supporting NDC implementation

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THAILAND: International Commitment and World Bank's Engagement

SDGs 9,11, 12,13

- ✓ Promote inclusive/sustainable industrialization; foster innovation
- ✓ Make cities inclusive, safe, resilient & sustainable
- ✓ Responsible consumption & production
- ✓ Urgent action to combat climate change & impacts

Montreal Protocol | **Paris Agreement** | **ASEAN Marine Plastics**

Country Challenges

- Energy Security and Affordability - Demand for cooling
- Country Competitiveness and Human Resource Development
- Low-carbon Manufacturing and Products
- Priority Actions for Climate Change Mitigation
- Unbalance Growth and Inequality
- Plastic Waste and Marine Debris

WBG Country Support

MLF

K-CEP

TH HCFC Phase-Out
- Green & Inclusive Growth
- Competitiveness
- HFC TA

TH PMR/PMI
- Green & Inclusive Growth

TH FCPF Readiness
- Green Growth
- Poverty Reduction

PROBLUE Marine Plastics
- Green Growth
- Sustainable Development

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3. Montreal Protocol & KCEP:
The Success Story of Thailand

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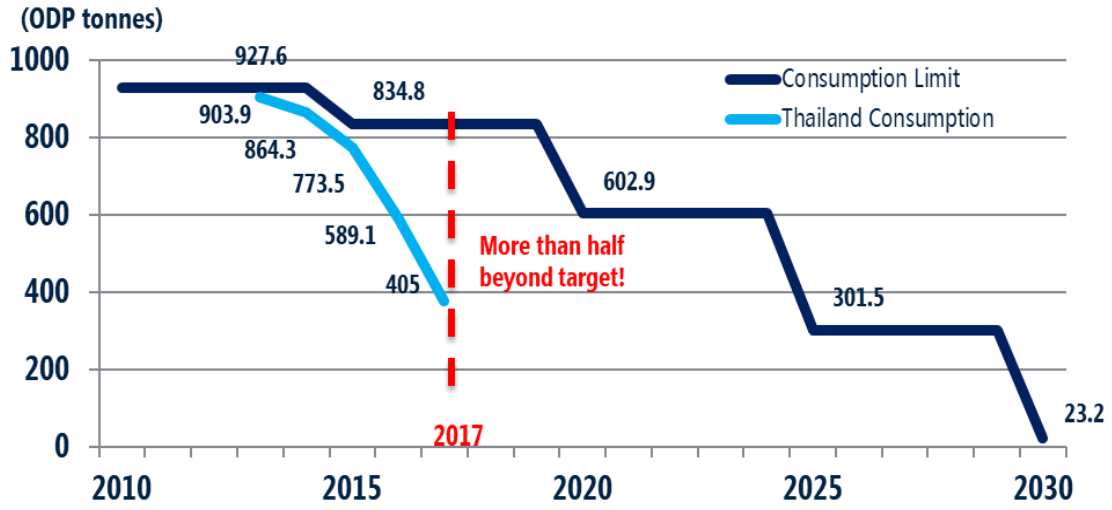
THAILAND: OZONE PROTECTION – CFCs & HCFCs Phase-out and HFCs Phase-down

Successful Reduction of TH HCFC Phase-out Phase I



Thailand: Total Climate Benefit of the HCFCs Phase-out Project

Since the start in 2014...

more than **6.5 million ton** emission reduction per year

Equivalent to.. about **1.4 million passenger cars** off the road

almost **2 coal fired power plants** shutting down the emission

Total Grant Funds **US$17.5 Million** (or about 560 MTHB)

Cost of CO2 emission reduction **US$3.08 per tCO2** (or about 100THB)

more than **80SMEs** Foam Enterprises changing production technology to non-ODS & low GWP

Thailand: Total Climate Benefit of the CFCs & HCFCs Phase-out Project

Since the start in 2002...

more than **31.68 million ton** emission reduction per year

Equivalent to.. about **6.7 million passenger cars** off the road (70% of the cars & moteorcycle in BKK)

almost **8 coal fired power plants** shutting down the emission

Total Grant Funds **US$62.5 Million** (or about 2,000 MTHB)

Cost of CO2 emission reduction **US$1.97 per tCO2** (or about 60THB)

Past Engagement

TH CFC Phase-out

TH HCFC Phase I – Closed Dec 19

> Air-conditioner sector

> Foam sector (Except spray foam)

Current Program

TH HCFC Phase II – GA signed in Aug 20

> Spray foam sector

> Commercial Refrigerator

> A/C Servicing sector

Additional Resources

> KCEP – Kigali Cooling Efficiency Performance

> Enabling Activities Kigali Amendment

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Thailand Competitiveness: : The Global 2nd Exporter of Air-Conditioner

In 2016, Thailand is the world's second largest air conditioner exporter after China (32%).

> Thai export value is approximately 4.8 billion US dollars

> representing 11.8% of the global export value.

ประเทศผู้ส่งออกเครื่องปรับอากาศที่สำคัญของโลก

อันดับ/ประเทศ	มูลค่าการส่งออก (พันล้านดอลลาร์สหรัฐ)	คิดเป็นสัดส่วนมูลค่ารวมทั้งโลก
1.จีน	13.1	32%
2.ไทย	4.8	11.8%
3.เม็กซิโก	3.1	7.6%
4.สหรัฐอเมริกา	2.7	6.6%
5.สาธารณรัฐเช็ก	1.8	4.5%

Source: **World's Top Exports from The World Factbook, Field Listing: Exports – Commodities, Central Intelligence Agency (as of 4/7/2017)**

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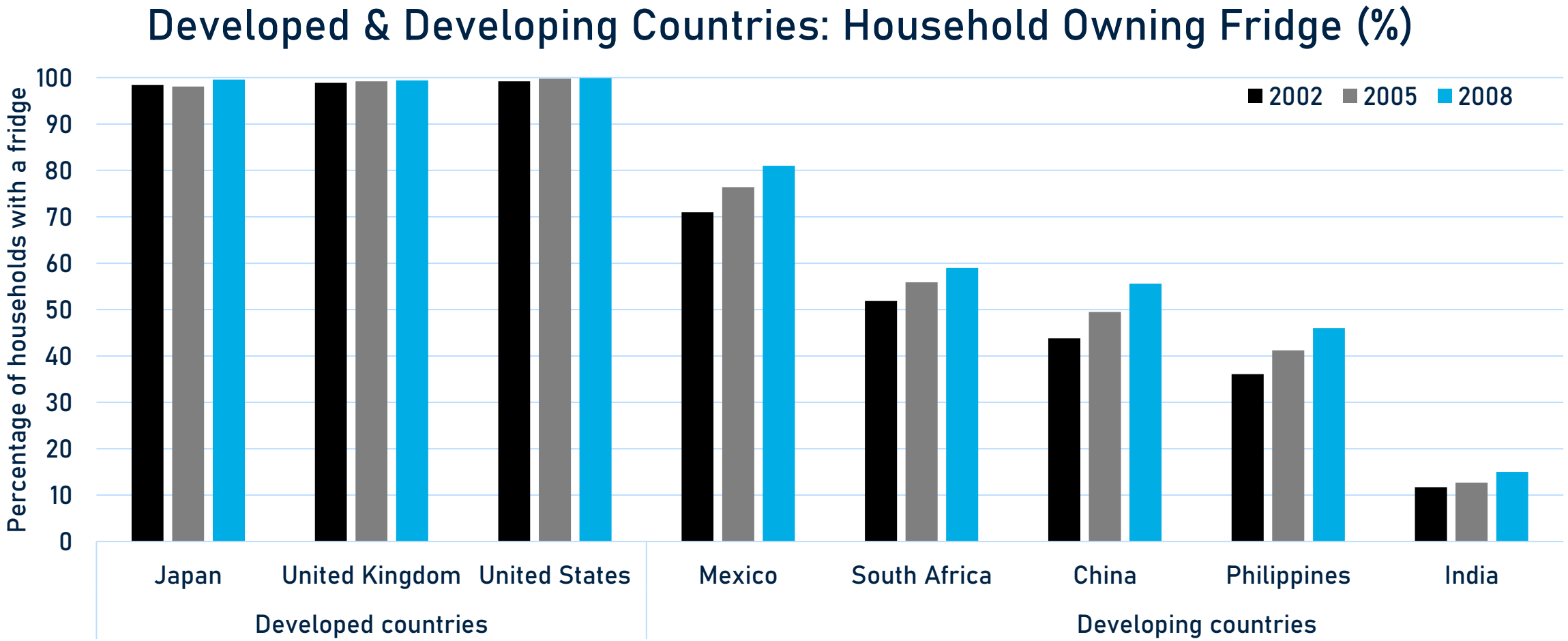
Thailand Competitiveness: : Fridge ownership in different parts of the World



Source: Euromonitor, from national statistics, 2009.

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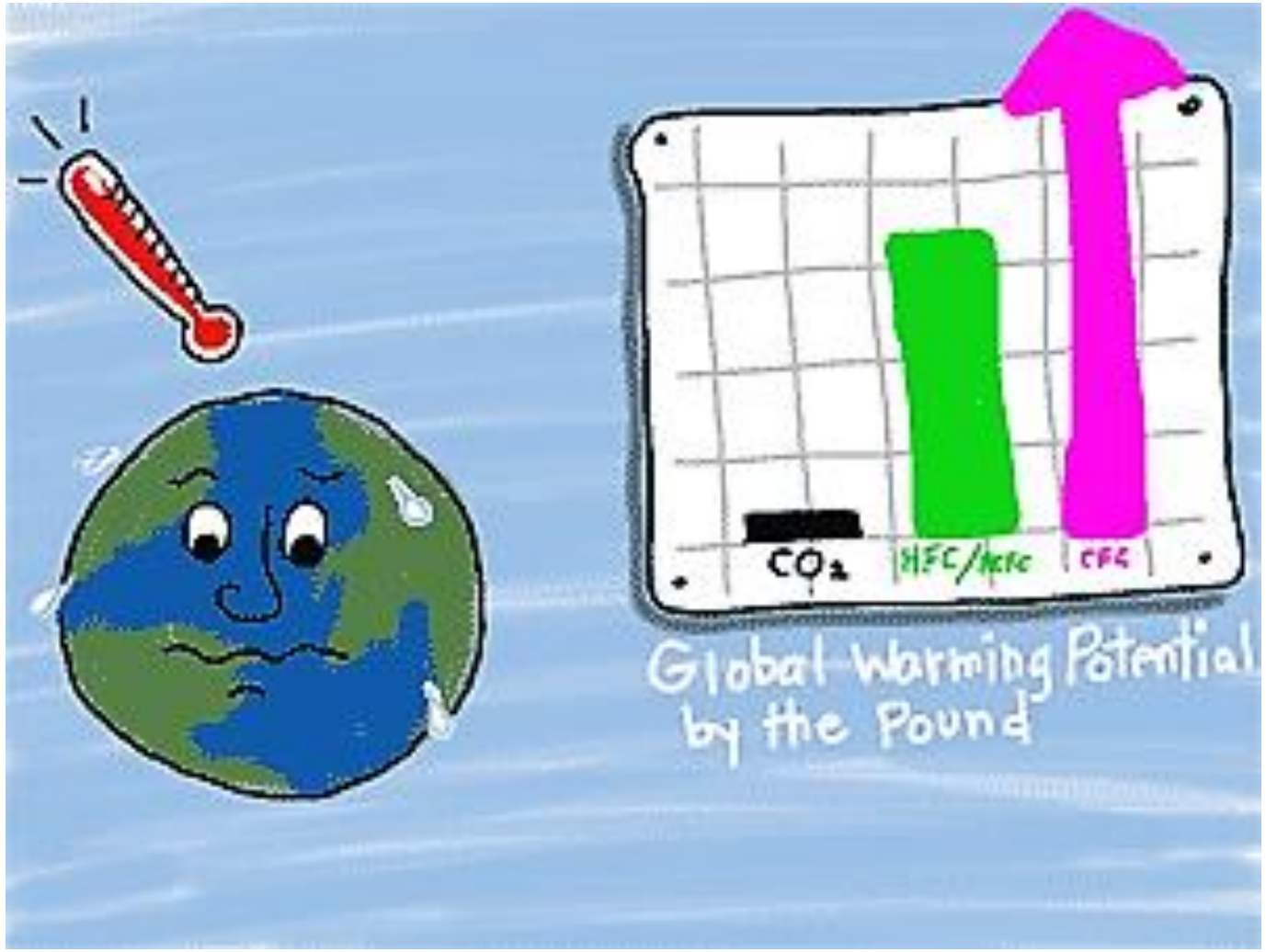
Thailand Competitiveness: : The Global 2nd Exporter of Air-Conditioner

"Cooling systems" significantly contribute to "Climate Change"…



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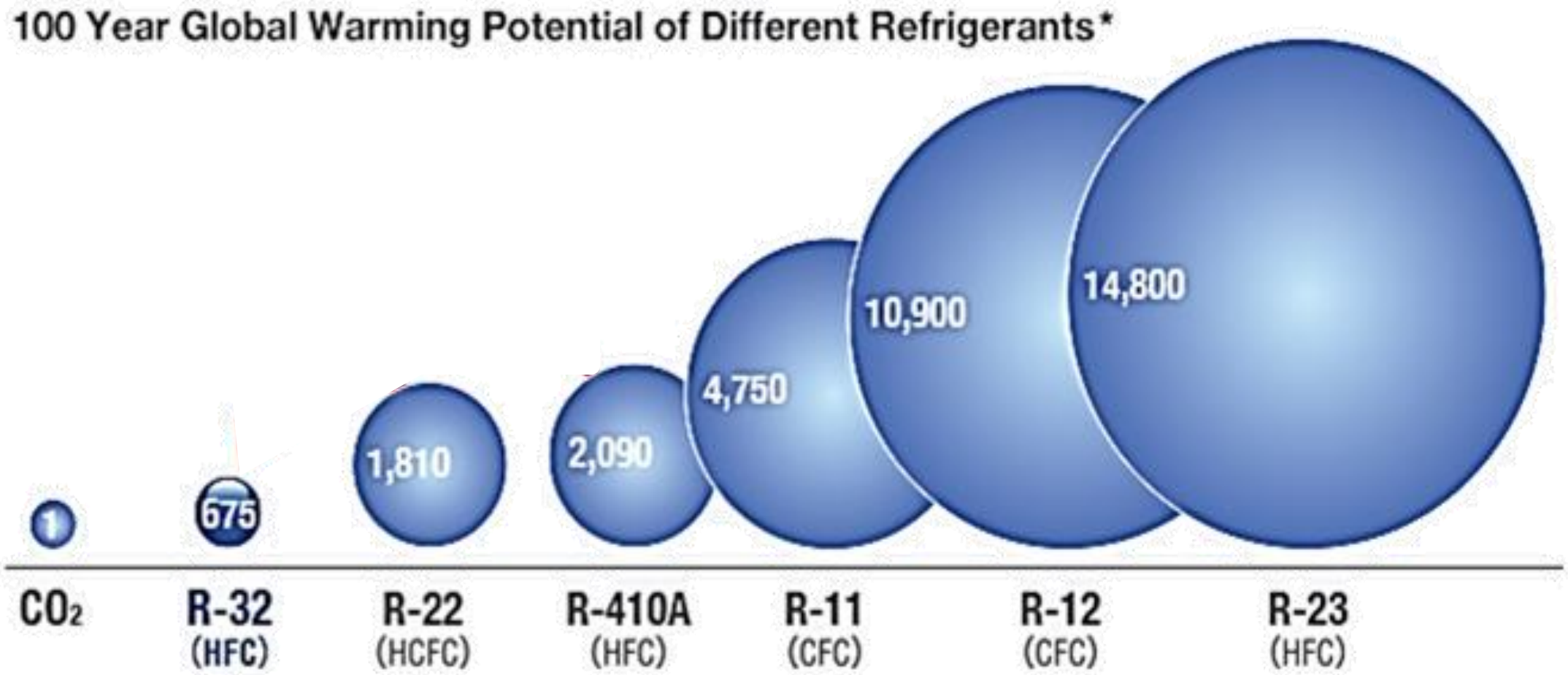
Thailand Competitiveness: : GWP of Different Refrigerants



Source: Values for 100-year global warming potential (GWP) from IPCC Fourth Assessment Report

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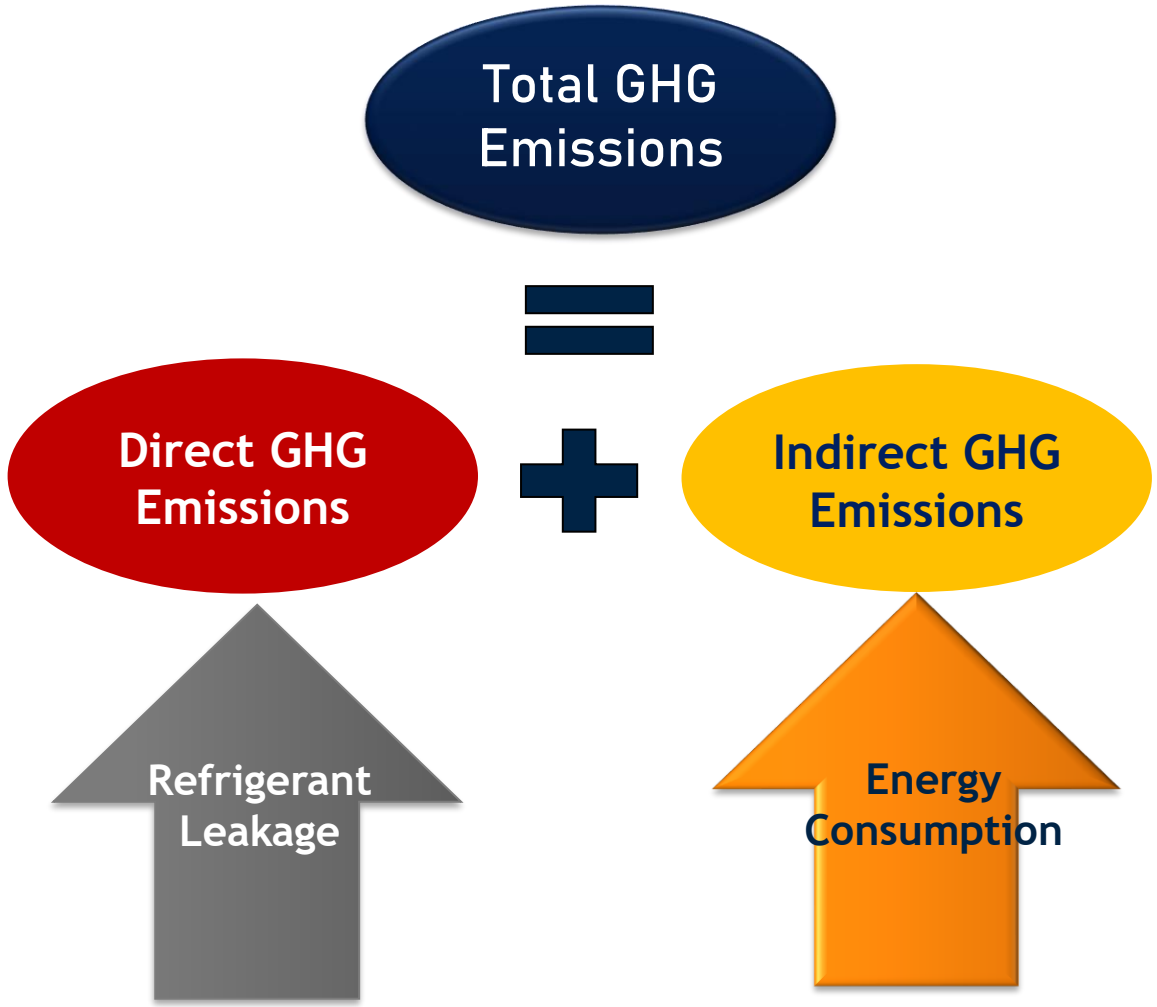
Inter-linkages: Montreal Protocol & Energy Efficiency Agendas



Sector/Area	Description
Agriculture and Fisheries	Agribusiness, aquaculture & seafood, food processing
Buildings / Infrastructure	Cooling and insulation in public buildings (schools, hospitals, etc.), city-wide measures (building certification, greening schemes), green procurement
Energy	Energy efficiency in appliances and refrigeration and cooling equipment, policy and standards, replacement schemes

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Inter-linkages: Addressing EE and MP agenda together in the AC sector

Q: What is the value added of integrating low GWP refrigerants in conjunction with these interventions?

A: Common Goal

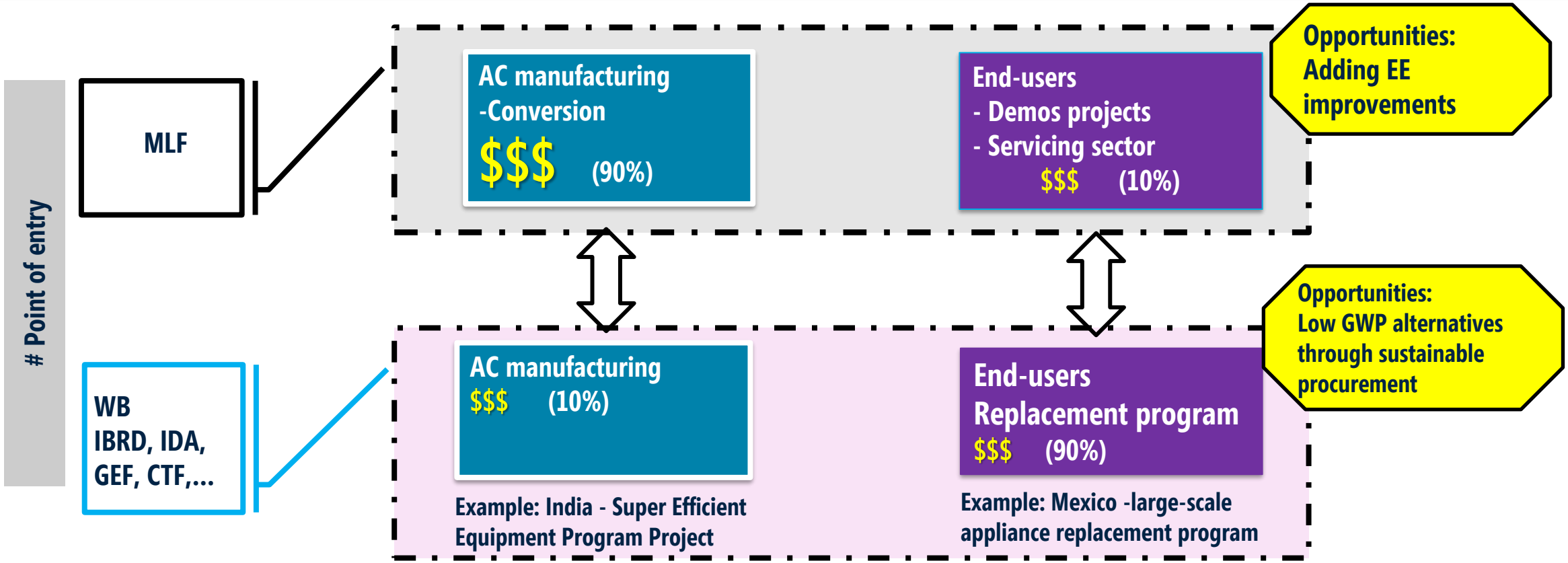
'Shared prosperity for all in an environmentally sustainable way'

KCEP & ASEAN Shine – Support for Invertor Technology in A/C with contingent target to the ASEAN Shine Energy Efficiency Standard at 20%

Energy	↘ Energy demand & peak load
Shared goal	↘ GWP climate impact (from EE and refrigerant)
Shared goal	↗ Access to cooling & refrigeration [SE4ALL]

Cooling & air conditioning are critical to developing countries for labor productivity, economic development, including health & education outcomes

Key of Success: Air Conditioning Sector- Blended Approach

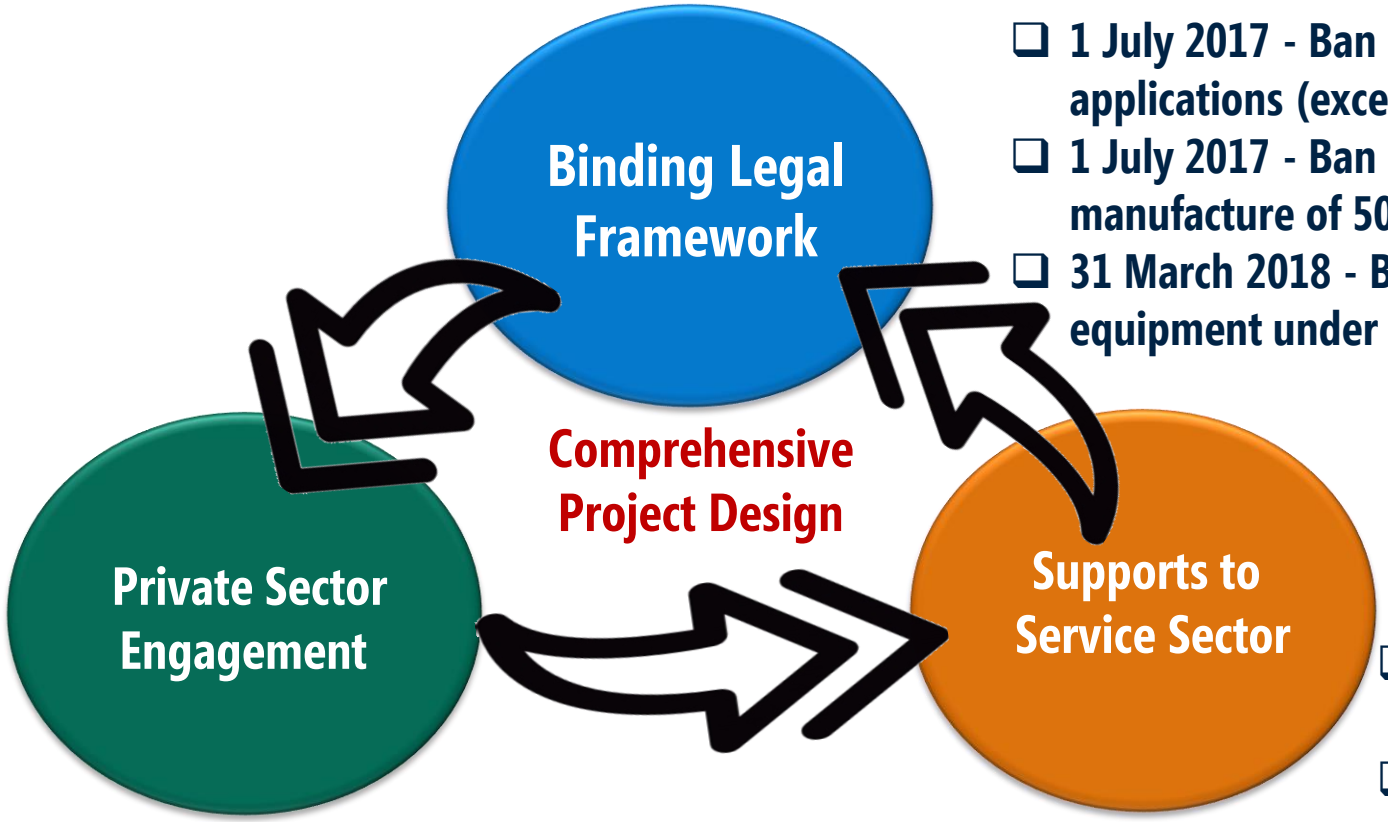


Acting on both supply-side and demand-side management to increase EE and use low GWP refrigerants is needed to:

- Accelerate market transformation
- avoid the risk of " technological lock-in" in world bank investment projects. Technologies may become obsolete, as the market is evolving rapidly, driven by local regulations (in EU & USA) & international discussion on a regulatory regime for HFCs.
- support developing countries in their compliance with international treaties.

Key of Success: Comprehensive Project Design & Stakeholder Engagement

Key Success of Montreal Protocol Implementation in Thailand



- ❑ 1 July 2017 - Ban of HCFC-141b in almost all foam applications (except spray foam)
- ❑ 1 July 2017 - Ban on HCFC-22 use for domestic AC manufacture of 50,000 BTU/hr or lower
- ❑ 31 March 2018 - Ban on HCFC-22 import based AC equipment under 50,000 BTU/hr

- ❑ Training equipment support to the OVEC and DSD
- ❑ Train the Trainers (TOTs) Activities for A/C Service Technicians

- ❑ Daikin's Transfer of Know-how on R-32
- ❑ Closed collaboration with the FTI and Foam System Houses
- ❑ KCEP – Hands-on training & Knowledge transfer of Inverter Technology

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