REmap
A Renewable Energy Roadmap

IRENA
International Renewable Energy Agency

#REmap

ROADMAP FOR A RENEWABLE ENERGY FUTURE

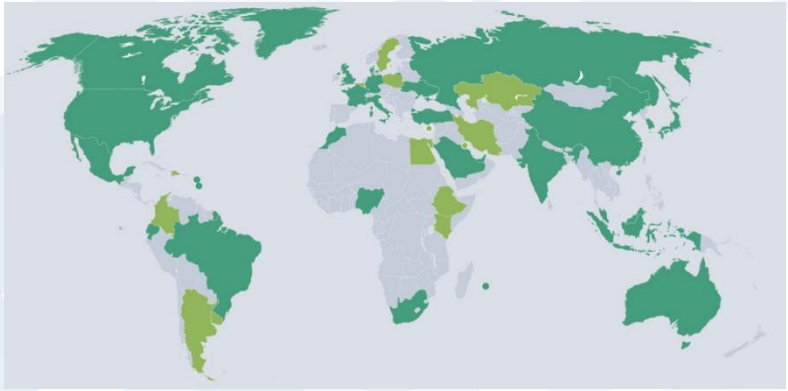
8 June 2016, Asian Clean Energy Forum - Outlook

International Renewable Energy Agency

The Voice, Advisory Resource and Knowledge Hub for 176 Governments

- 5th year anniversary this year
- Abu Dhabi headquarters, **Bonn Innovation and Technology Centre**, New York

IRENA's REmap Programme



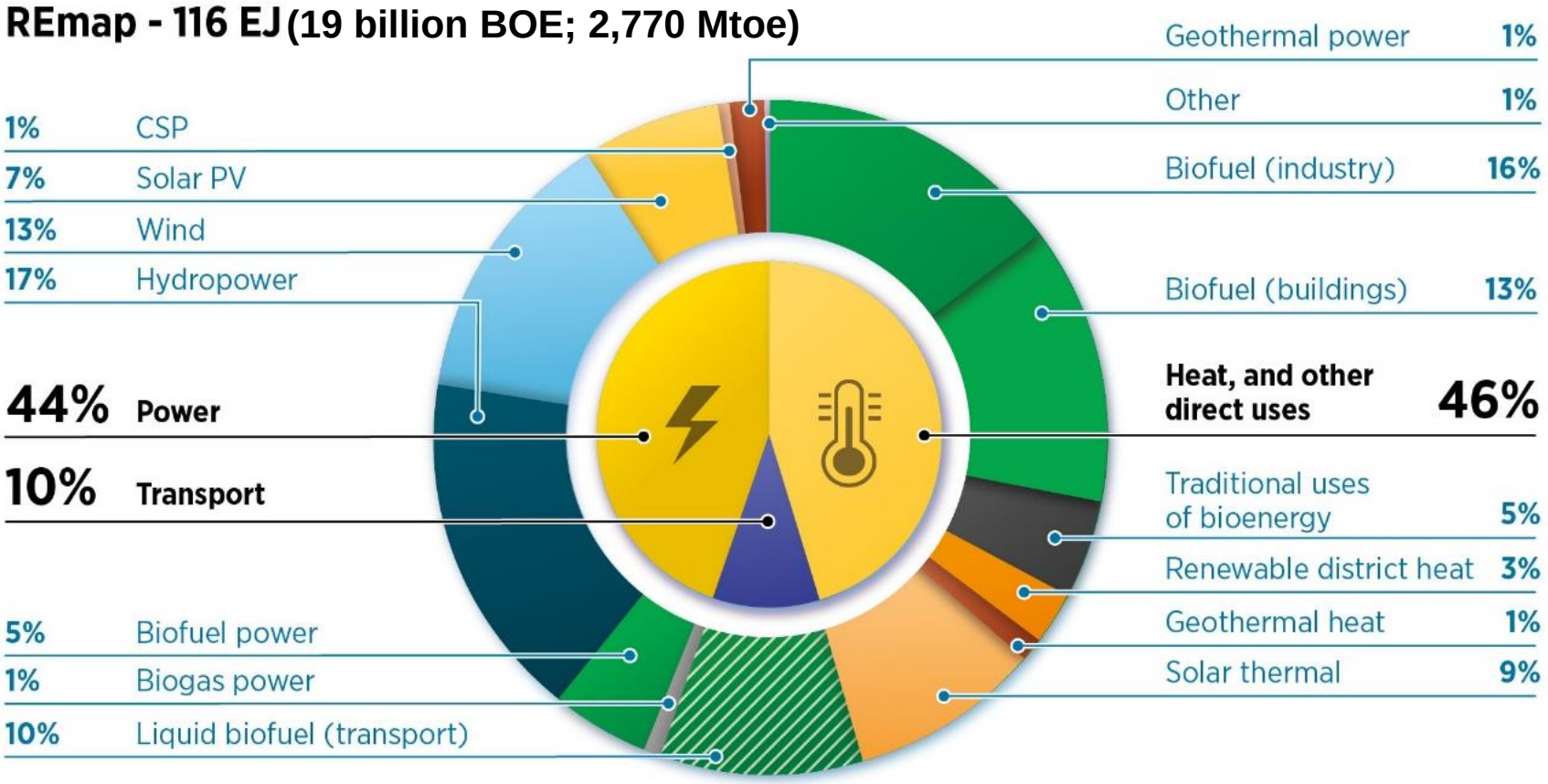
- IRENA's REmap programme explores **potential, cost and benefits** of accelerating the growth of renewables in global energy mix, key to realize **SDG 7: Affordable and clean energy**
- **Technology Options in power, district heat, end-uses** (industry, transport, buildings)
- Unique in that is developed **together with and validated by country experts from 40 countries, representing 80% of global energy demand**

More available at: www.irena.org/remap

REmap 2030 highlights – importance of a doubling

- Sustainable energy and climate change objectives can be reached by **doubling the share of renewable energy by 2030**
- Doubling renewables in the world's energy mix by 2030 will lead to **savings exceeding costs 4 to 15 times**
- Savings related to air pollution alone are **up to 10 times more than costs**
- The transition to renewables, with greater energy efficiency, can **limit the global temperature increase to below 2 degrees**
- Doubling the share of renewable energy by 2030 is feasible, but only with **immediate, concerted action in transport, buildings and industry**
- **High importance of Asia region due to energy demand growth and RE potential**

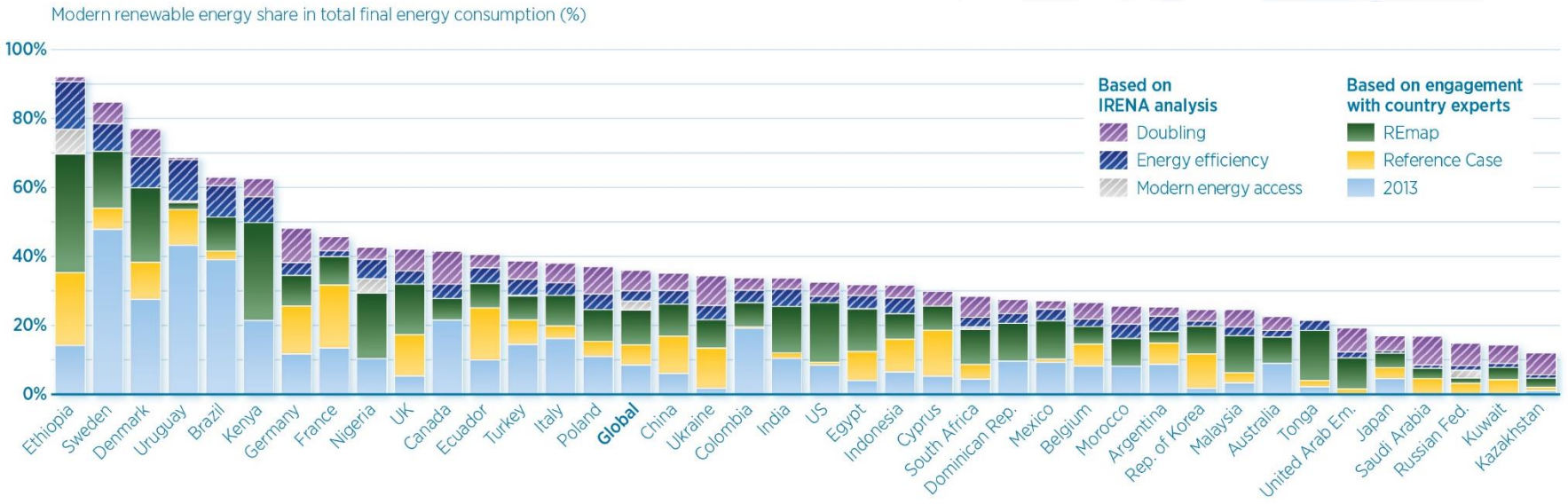
Expanding renewables in all sectors



Renewables use in buildings, industry, and transport as well as renewables-based district heating would account for nearly 60% of modern

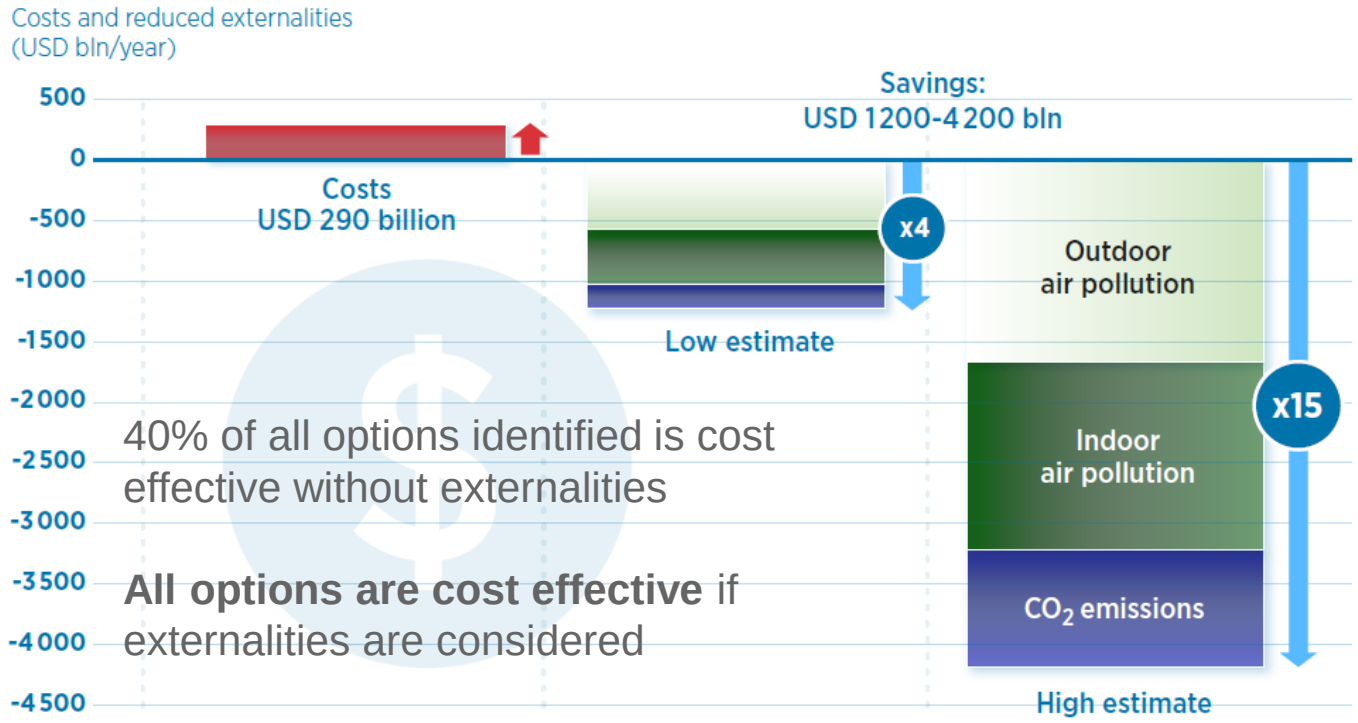
Growth in selected technologies

Country RE shares in 2030 vary from 10% to 90%



Potential for additional renewable energy in all countries is identified, with great differences between countries in starting points, local capabilities, and realistic deployment potential

Savings greatly exceed costs



Reducing human health damage and CO_2 emissions would save at least four times more than the cost of doubling renewable share

Key Action Areas

Correct
for market distortions to create a level playing field and reform power markets

Introduce
greater flexibility into energy systems and accommodate the variability of key renewable energy sources and increase sector coupling

Develop and deploy
renewable heating and cooling solutions for urban development projects and industry

Promote
transport based on renewable power and biofuels

Ensure
the sustainable, affordable and reliable supply of bioenergy feedstock

Renewable Energy Outlook for ASEAN

- Working in collaboration with the ASEAN Centre for Energy (ACE) and experts from the 10 member countries
- Aim is to identify how to achieve the 23% renewable energy share target for the year 2025
- The “REmap Options” will identify the gap between expected developments in the Reference Case and the 23% target
- Results will be presented at the 34th AMEM in September in Myanmar

DRAFT Results – significantly rising energy demand

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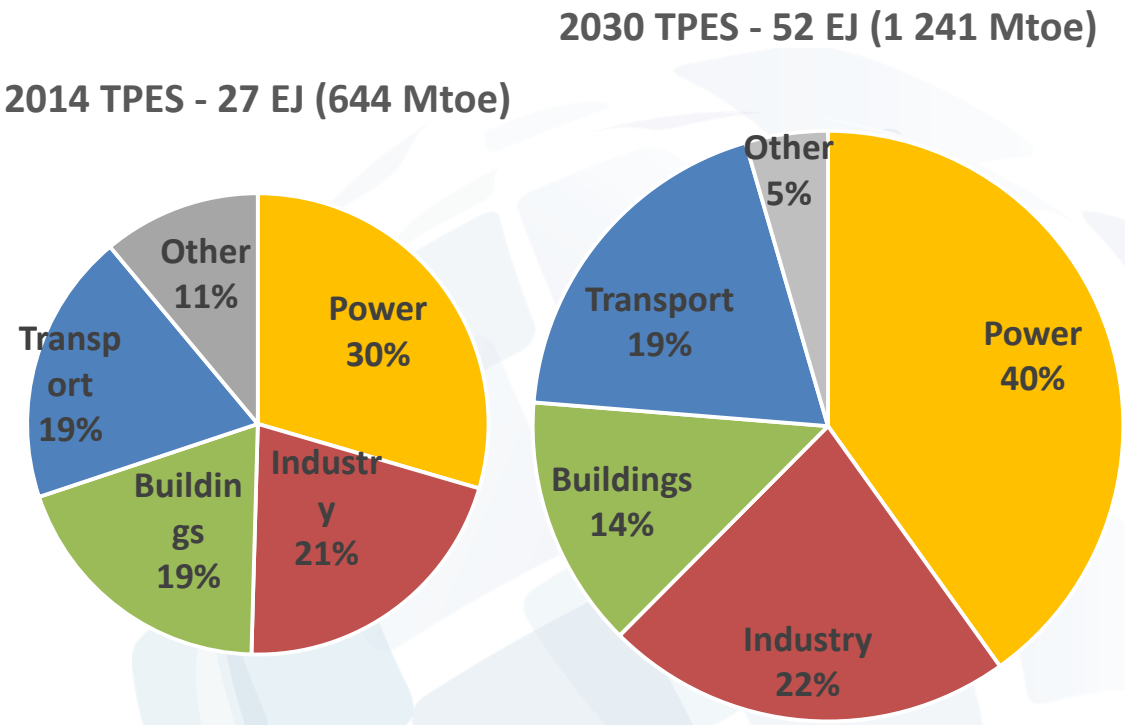
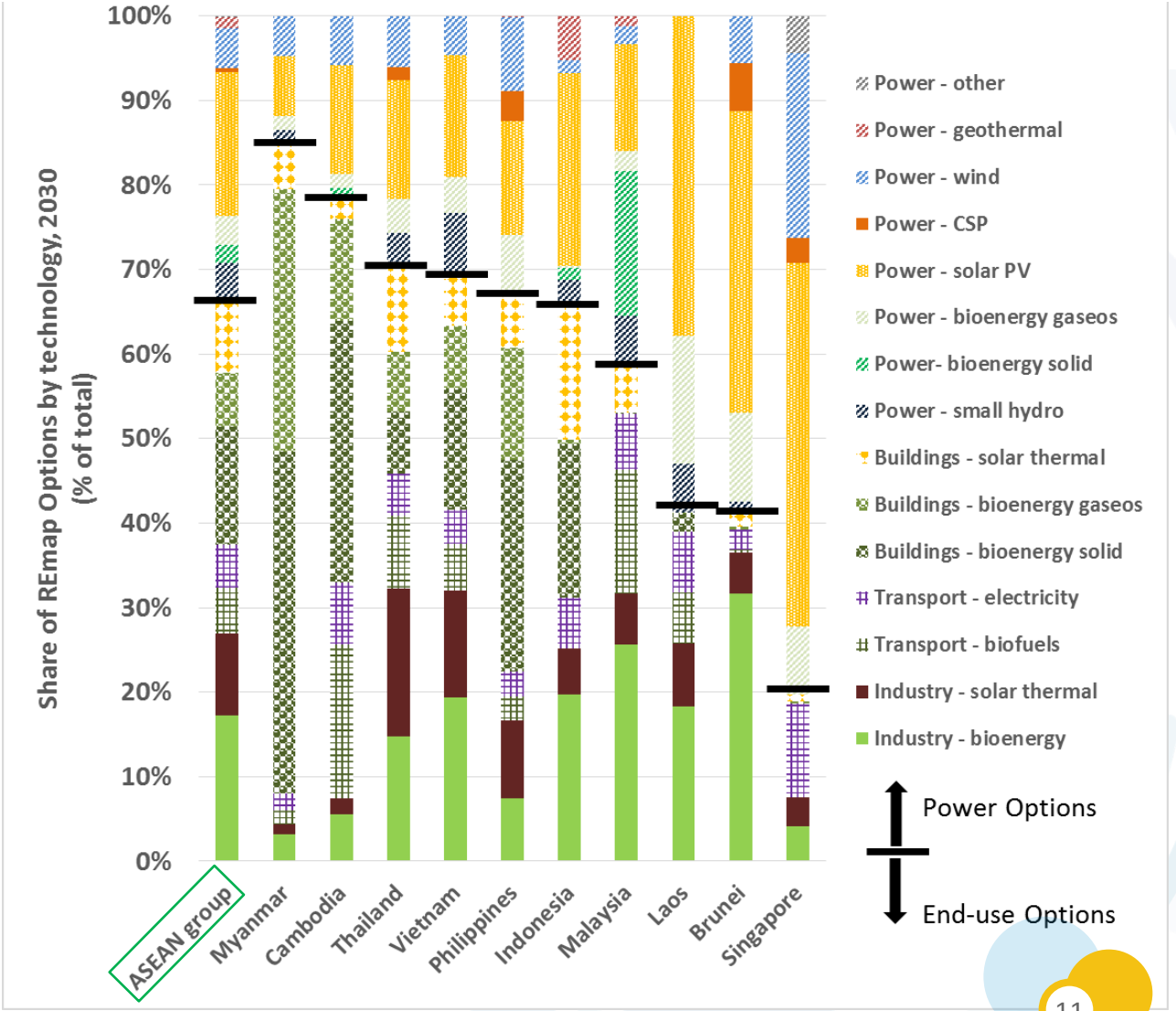
- In ASEAN total energy demand nearly doubles
- Power and industry see the largest demand growth
- Vietnam, Indonesia, Philippines see largest growth, at over 100%
- Remaining countries see growth of between 10-80%



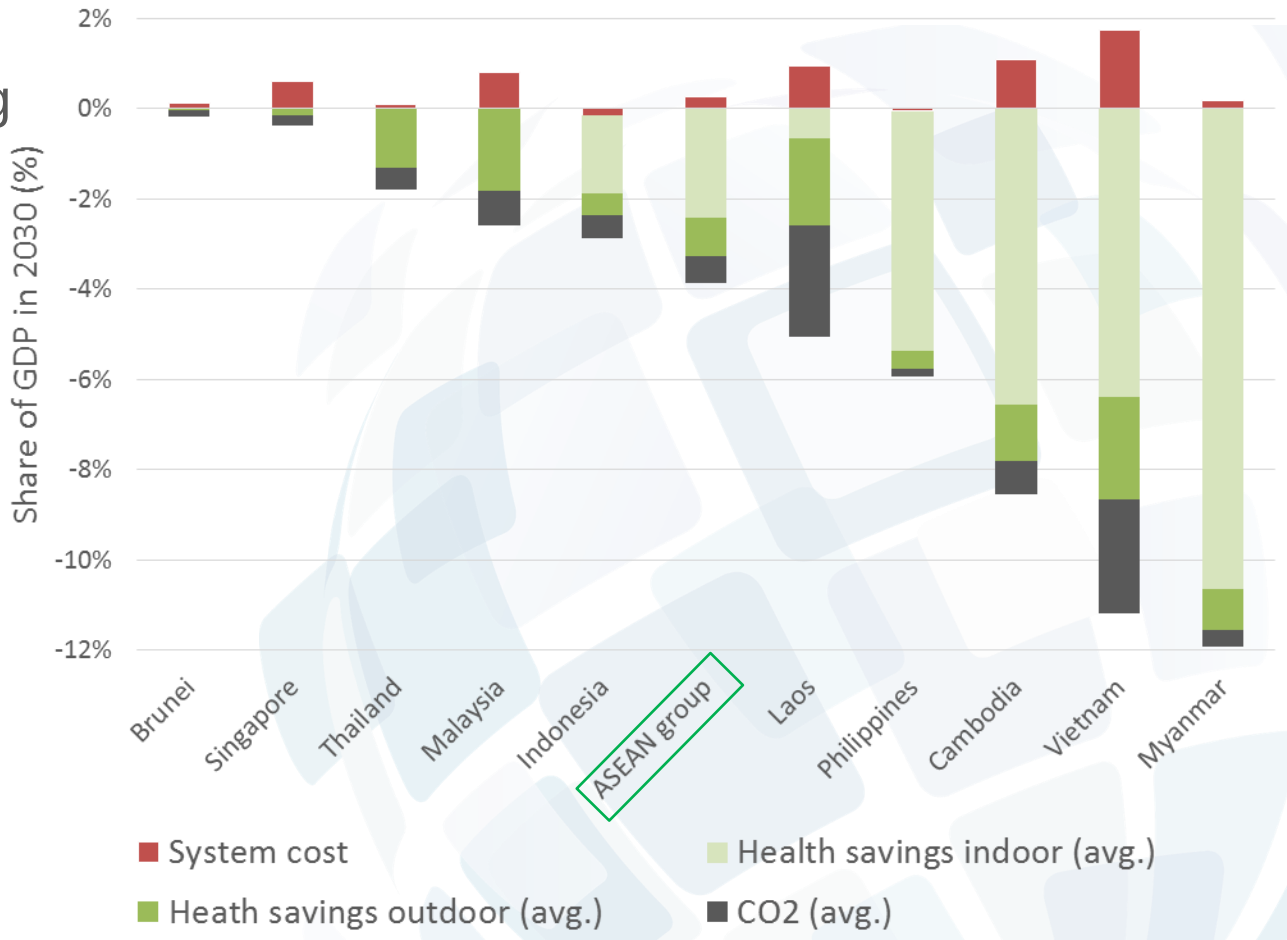
DRAFT Results – The "gap" to achieving 23%

- Power sector technologies around one-third and end-use (heating, transport) two-thirds
- Key technologies include Solar PV, bioenergy
- End-use options important, particularly in Myanmar, Cambodia, Thailand, Vietnam, Philippines, Indonesia, Malaysia



DRAFT Results – Costs and Benefits

- System cost increases resulting from REmap Options are small compared to external cost savings
- Savings are between 3-10+ times higher than costs



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