IRENA
International Renewable Energy Agency

REMAP 2030

IRENA Roadmap to double the share of renewable energy by 2030

Model Assumptions and Key Parameters

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Developing REMAP 2030

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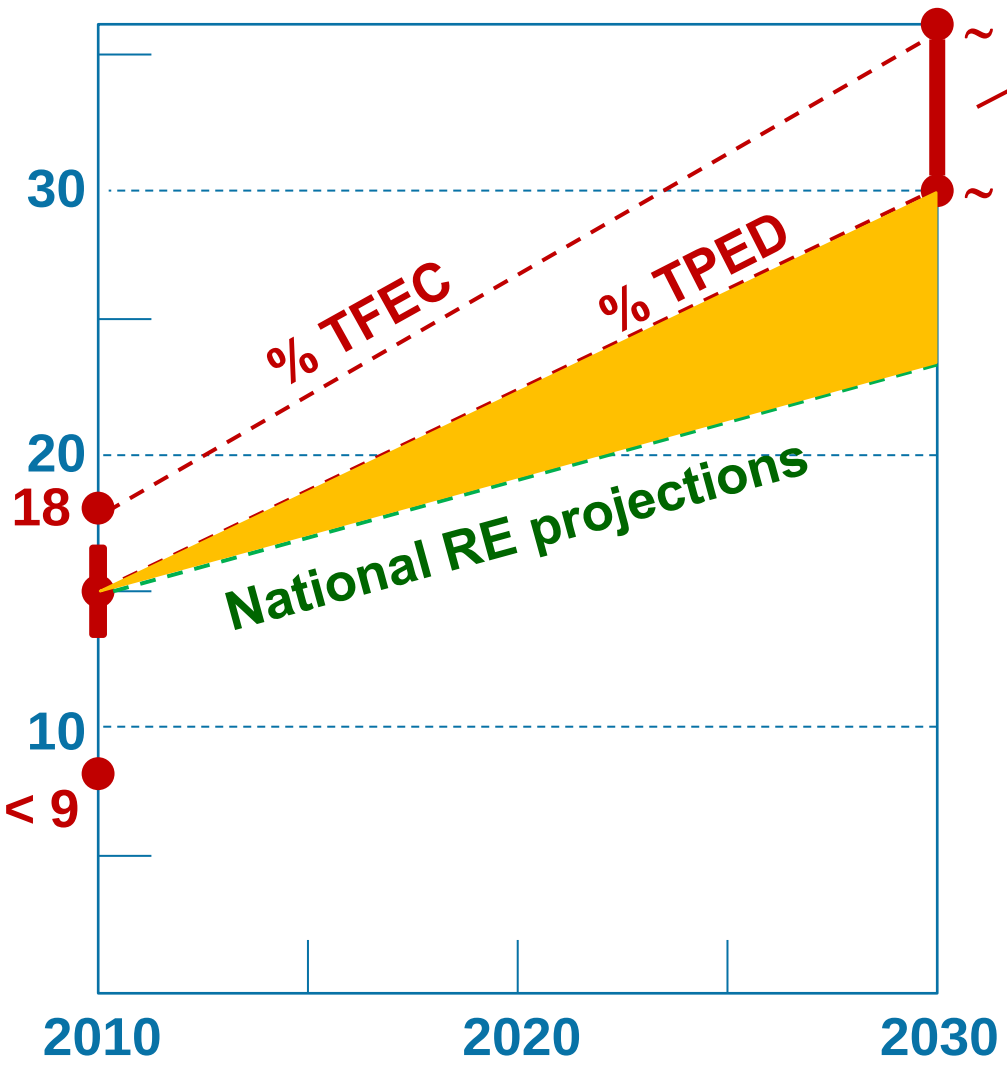
RE Share in the global energy mix (%)



The SE4ALL aspirational target

Step 1:
Assess the challenge

Step 2:
Identify the gap

Step 3:
Translate the gap into action

Assessing the challenge

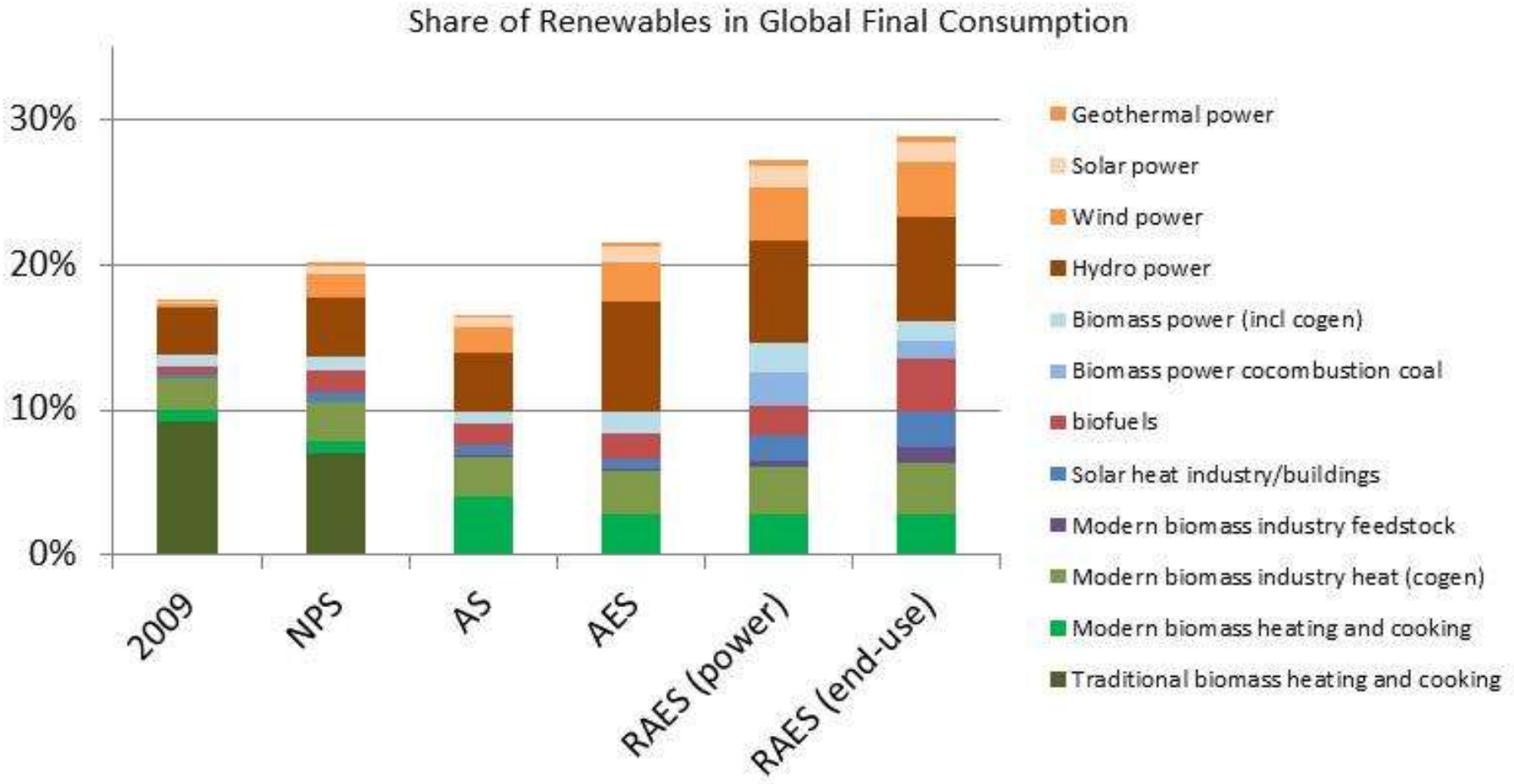
Main considerations

- Simple and accessible
- Multiple indicators
- Assess interaction between universal access, energy efficiency, and renewable energy
- Consistent with resource potential, trade, and investments
- Not descriptive, but explorative
- Allow for country input
- Easily verifiable

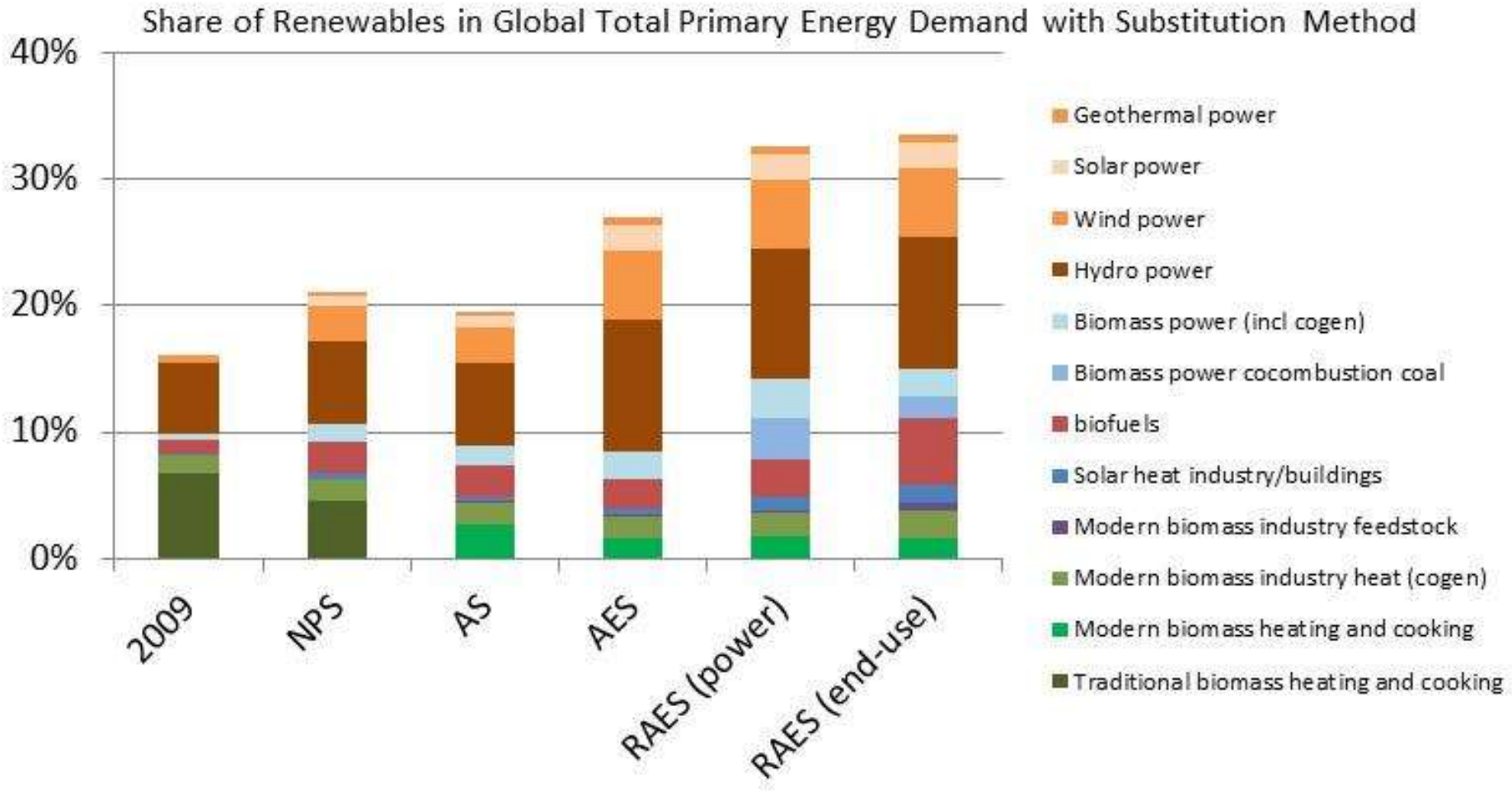
Approach

- Use existing model as basis
- Use two divergent indicators
- Develop a three-step analysis
  - Universal access
  - Energy efficiency
  - renewables
- Verify pathways on basis of resources, trade and investment
- Develop multiple pathways
- Use global assumptions

Assessing the challenge



Assessing the challenge



Modelling assumptions & key parameters

IRENA ANALYSIS	ASSUMPTIONS/PARAMETERS
Global energy demand in 2030	• Energy demand • Nuclear
Access scenario	• Household electricity consumption • Role of traditional biomass
Access and efficiency scenario	• Electrification in: • *Transport* • *Buildings* • *Industry*
Renewables, access and efficiency scenario	• RE power generation • Biofuels • Solar heating in buildings • Solar heating in industry • Biomass in industry

Modelling assumptions for global energy mix

Energy demand assumptions

- **Global energy demand is projected to grow from 350 in 2010 to 460 EJ in 2030 under planned policies**

	2009	IEA NPS (2030)	WWF (2030)	GREENPEACE (2030)
% electricity in industry	350	460	320	375

Modelling assumptions for universal access (AS)

Household electricity consumption

- 1000 kWh/hh/year for both urban and rural households

	2009	2030	IEA (2030)	UNDP (2030)
Rural (kWH/hh/year)	0	1000	250	600
Urban (kWh/hh/year)	0	1000	500	600

Modelling assumptions for electrification (AES)

Electrification rates

- Number of electric vehicles in the transport sector
- Electricity demand in the residential and commercial sector
- Industry projections

	2009	IEA NPS (2030)	IEA BLUE (2030)	GREENPEACE (2030)
% electricity in industry	25	32	34	35

Modelling assumptions for renewable energy (RAES)

- Additional 10-50% growth for renewable energy power generation displacing fossil fuels

- Displacement of fossil fuels in the end-use sectors
  - Displace 5-20% fossil fuels feedstock in chemical industry with biomass feedstock (bio plastics);
  - Displace an additional 5-7% of fossil fuel in transport by biofuels;
  - Displace 5-10% fossil fuels for industrial heat by biomass;
  - Displace 5-20% fossil fuels for industrial heat by solar;
  - Displace 5-30% fossil fuels for buildings heating/cooling by solar

RAES assumptions

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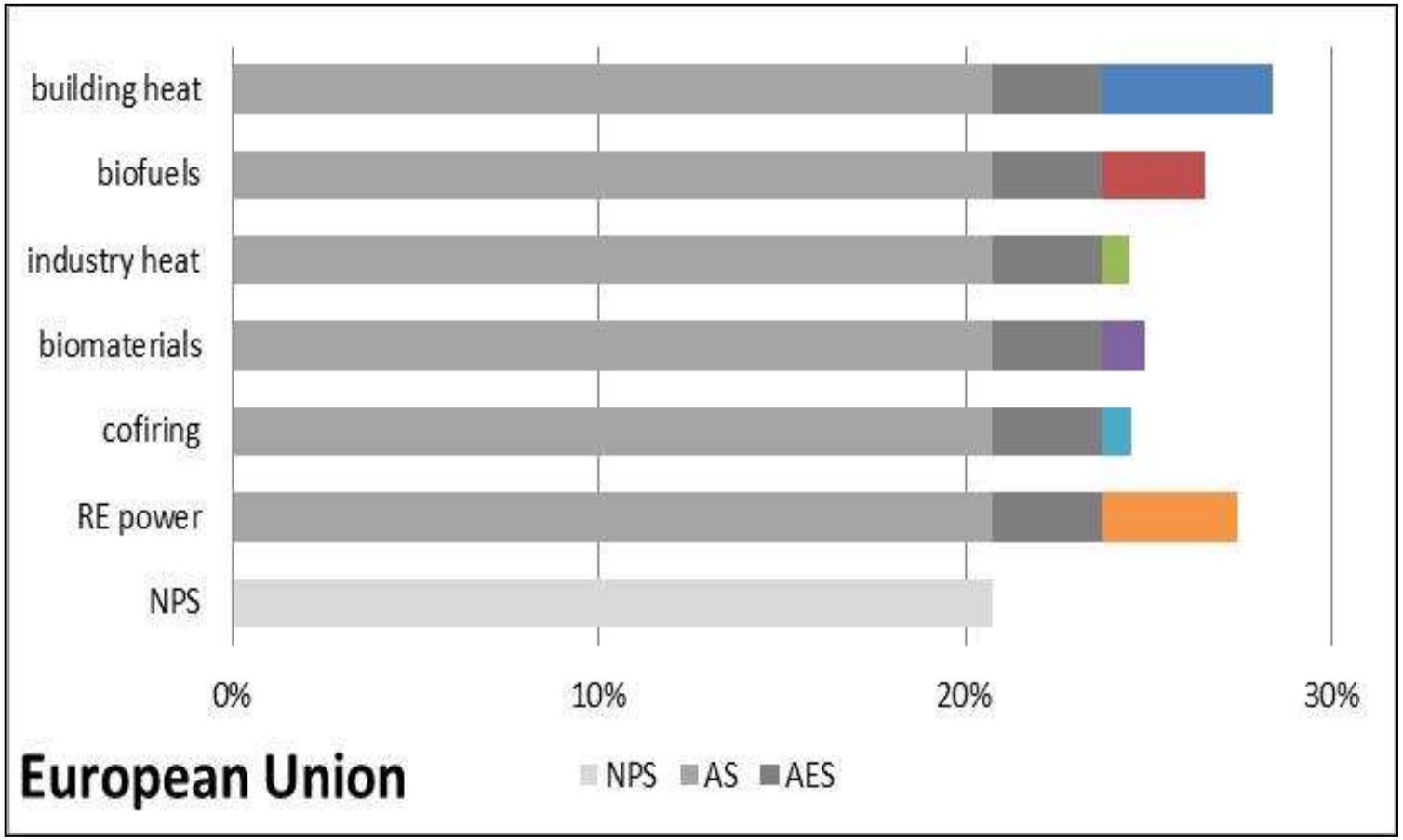
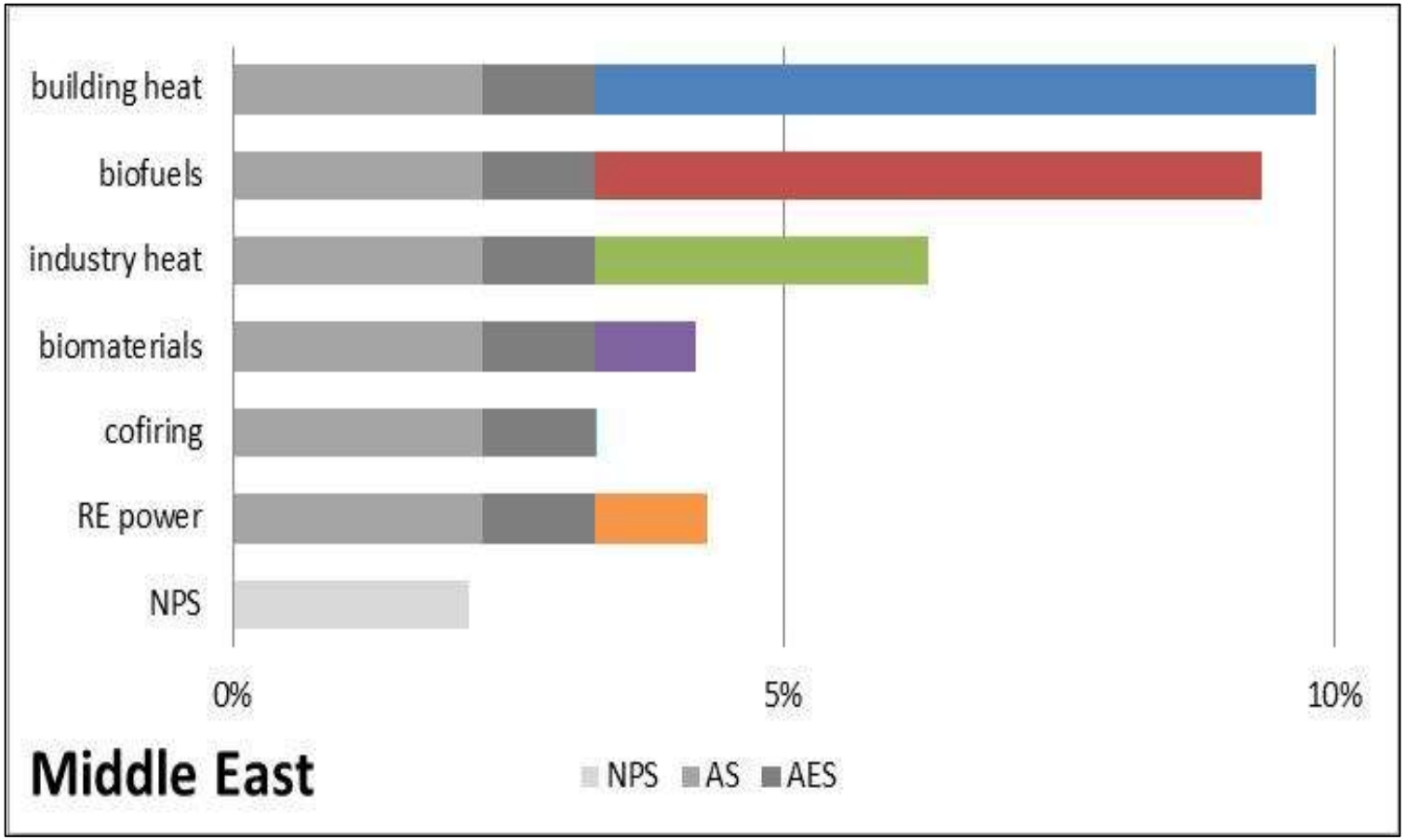
Share of renewables in total final energy demand



RAES assumptions

Share of renewables in total final energy demand



Verification of RAES assumptions

	Draft results RAES	Other 2030 scenarios
Hydro (GW)	2000-2500	1600 – 3000
Wind (GW)	1600-1800	1055-2280
Solar PV (GW)	850-900	200 - 1950
Solar Thermal (residential)	0.6-3.4	4
Solar Thermal (industrial	0.8-3.7	2.5

Identify the gap

Main considerations

- Based on existing information
- Ease of use
- Transparent
- Allow for evaluation of national policies from an international perspective
- Provide framework for newcomers

Approach

- Create simple spreadsheet for data collection
- Provide data points to countries
- Ask for ranges
- Create uniform format
- Complement country data with regional data

Identify the gap

PARAMETERS	IRENA ASSUMPTIONS	2030 (LOW)	2030 (HIGH)
• Energy demand • Nuclear	• *Quantity* • *Quantity/costs*		
• Household electricity consumption • Role of traditional biomass	• *Quantity* • *Quantity/costs*		
• Electrification in: • *Transport* • *Buildings* • *Industry*	• *Quantity/costs* • *Quantity/costs* • *Quantity/costs* • *Quantity/costs*		
• RE power generation • Biofuels • Solar heating in buildings • Solar heating in industry • Biomass in industry	• *Quantity/costs* • *Quantity/costs* • *Quantity/costs* • *Quantity/costs* • *Quantity/costs*		

Data country

Electricity demand projections (TWh)

Country	2009	2030
Saudi Arabia	193	650
USA	3800	3600
Japan	1111	1000

Renewable energy shares in electricity (%)

Country	2009	2030
Saudi Arabia	0	23
USA	11	29
Germany	20	50
Japan	11	25-35
UAE	0	5 (Dubai) 7 (AD - capacity target for 2020)

Key questions

- **Feedback on:**
  - **Considerations and approach for IRENA analysis on level of challenge?**
  - **Considerations and approach for IRENA gap analysis?**

- **What additional parameters should we collect in the future for your country/region?**