

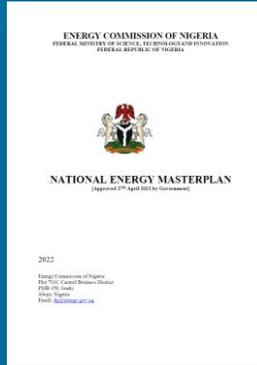
# Long-Term Energy Scenarios and Low-Emission Development Strategies: Stocktaking and Alignment

Nadeem Goussous, IRENA  
4<sup>th</sup> International LTES Forum, 7 December 2022

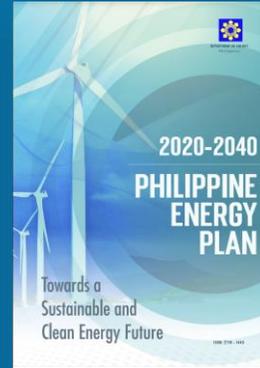
## LTES



Brazil



Nigeria



Philippines

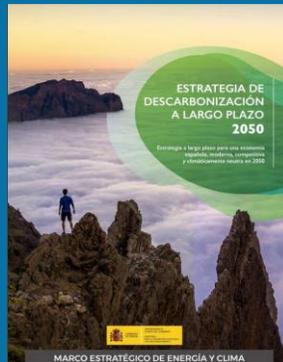


Canada

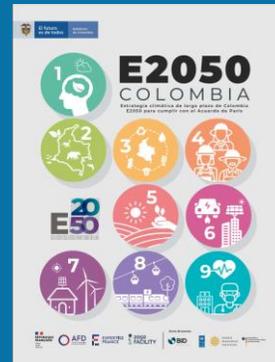
## LT-LEDS



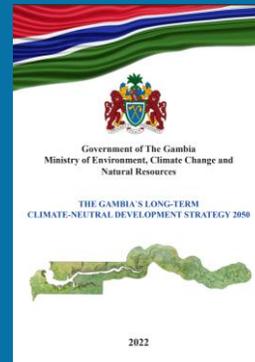
Fiji



Spain



Colombia



The Gambia

## Introduction and scope

### LTES (Long Term Energy Scenarios)

- Ensuring a secure, affordable and sustainable energy supply
- Scope: energy or power sector, over the coming 15-30 years

### LT-LEDS (Long Term Low Emission Development Strategies)

- Mid-century goals for a just transition to global net zero emissions
- Scope: whole economy until 2050 or later

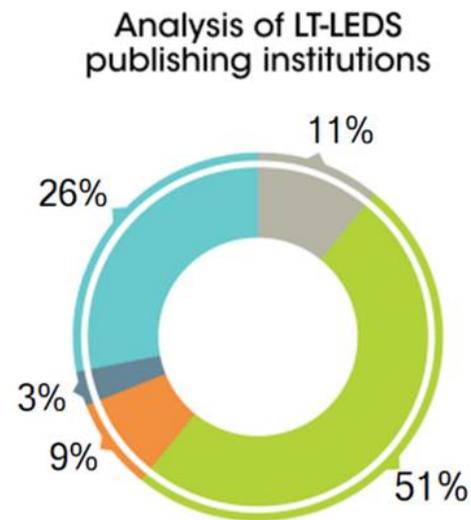
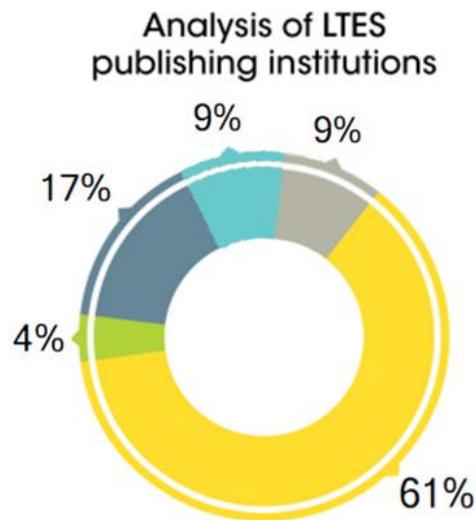
### Aim: comparative analysis of institutional processes and technical coverage of scenario-based LTES and LT-LEDS

- 60 scenario-based documents analysed (36 LT-LEDS and 25 LTES)
- Complementing the UNFCCC's LT-LEDS synthesis report



## Institutional results

### Publishing institutions, stakeholder consultations and modelling tools



#### Stakeholder consultations

- 67% of LTES and 94% of LT-LEDS held consultations, with expert consultations being the most common (38% for LTES, 32% for LT-LEDS)
- Public consultations were often held online or through (random) selection in working groups

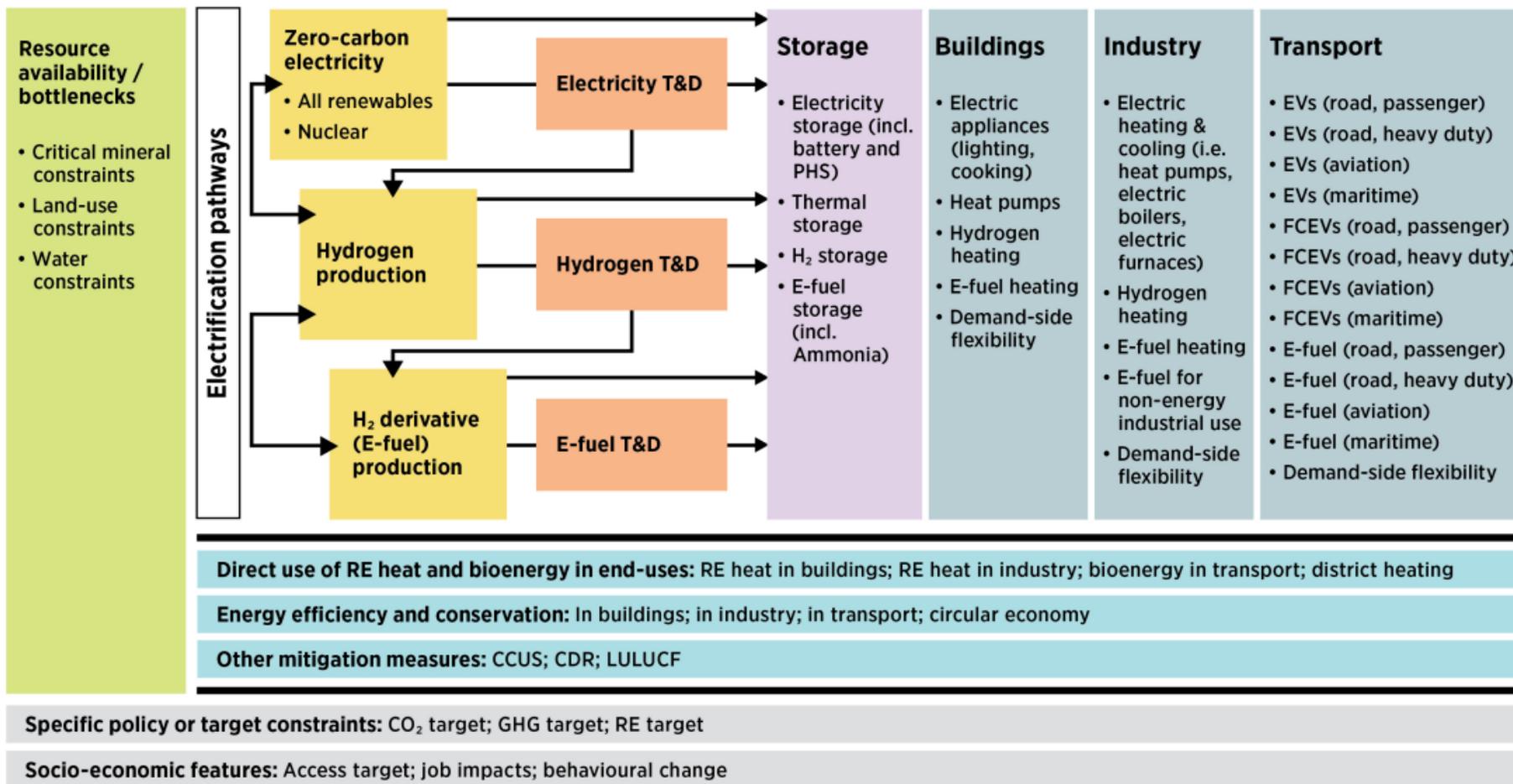


#### Modelling tools

- LEAP and TIMES are the most commonly used modeling tools: 44% of LTES and 27% of LT-LEDS use either of the two
- Several countries integrate their main model with models focused on sub-sectors through collaborations with external experts

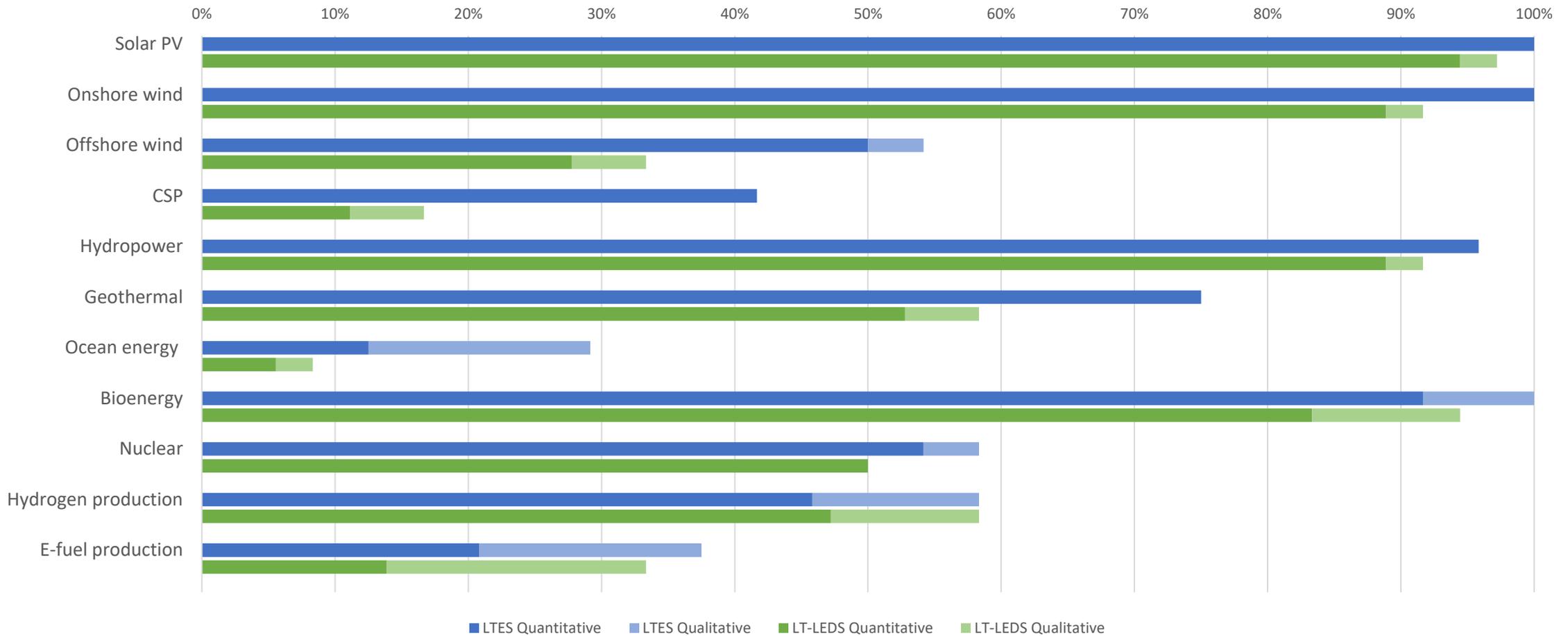


## Energy transition landscape





## Inclusion of electricity generation in LTES and LT-LEDS scenarios

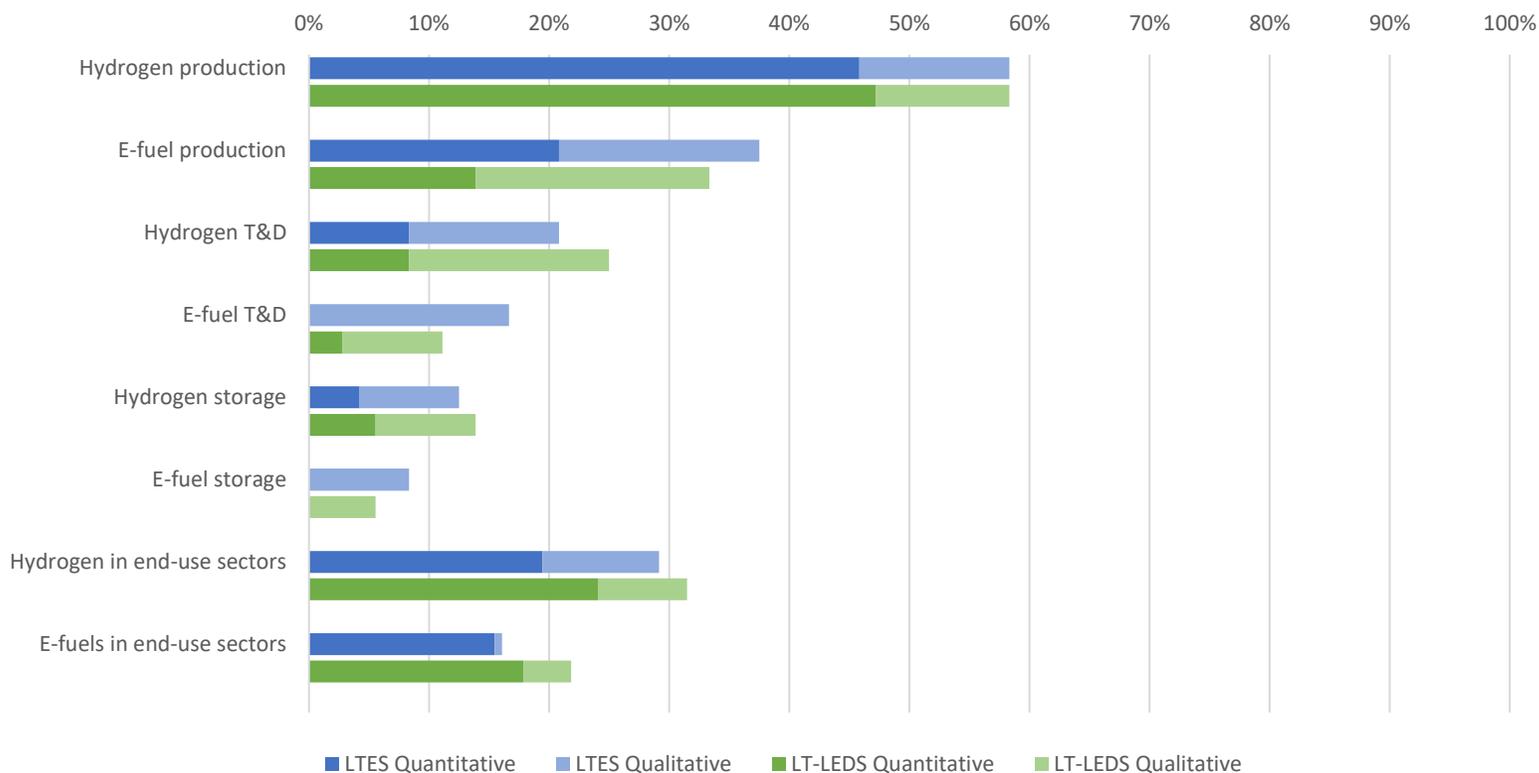




## Technical results

### Hydrogen/e-fuel production, transmission & distribution and storage, and end-use application focus

Inclusion of hydrogen and e-fuel elements in LTES and LT-LEDS scenarios

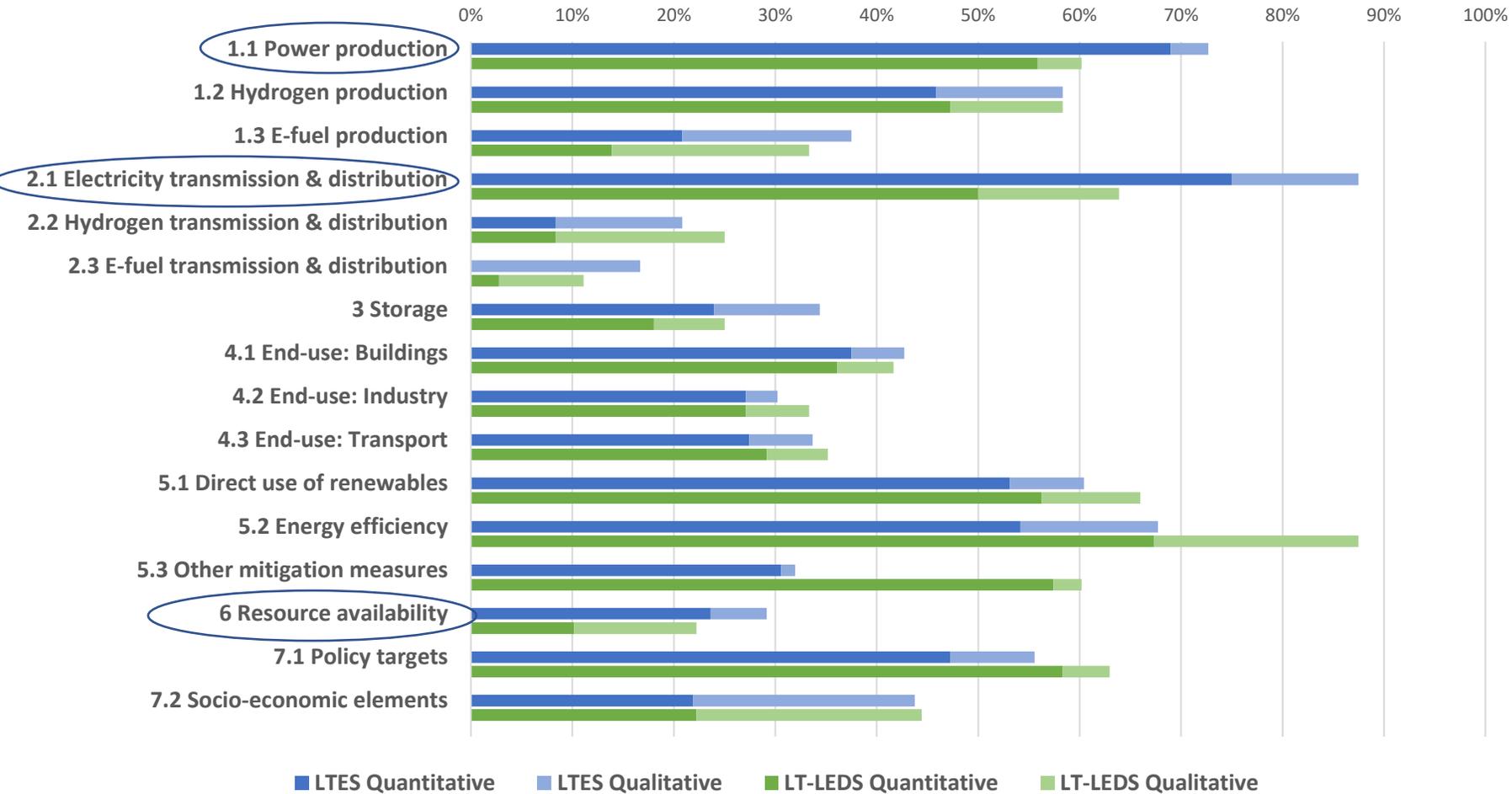


- Hydrogen and e-fuel production, infrastructure and end-use applications are **underrepresented** in today's official scenarios
- More extensive assessment of these sectors in future scenarios could lead to new insights regarding **crucial infrastructure** for the energy transition



# Technical results

## What can LT-LEDS learn from LTES?

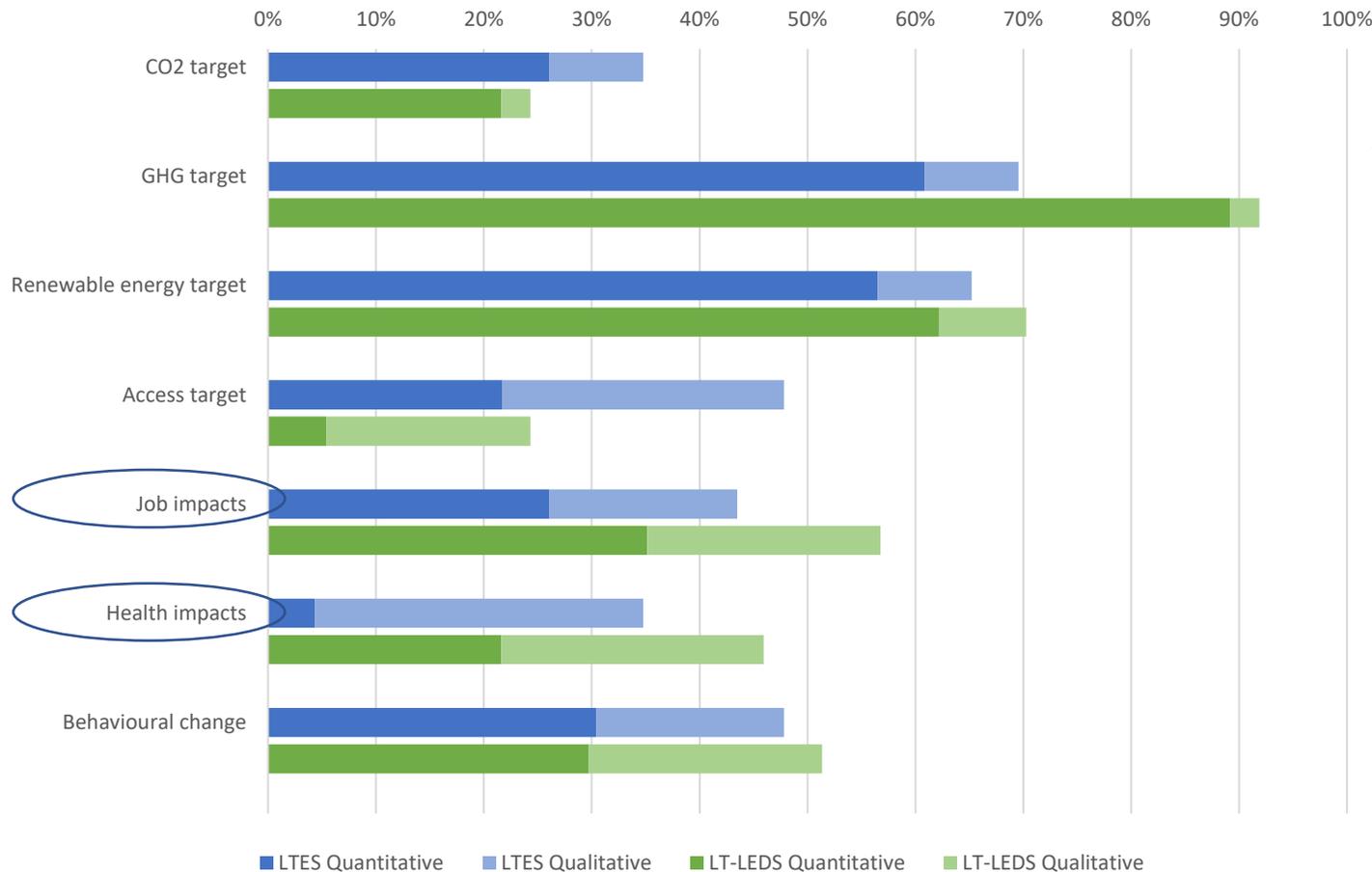


- LTES have better representation of **generation, transmission and distribution infrastructure**
- LTES have also been better at representing **more recent storage solutions**
- On **natural resource availability**, LTES are more comprehensive than LT-LEDS, but there is **room for improvement for both**



## Technical results

### What can LTES learn from LT-LEDS?



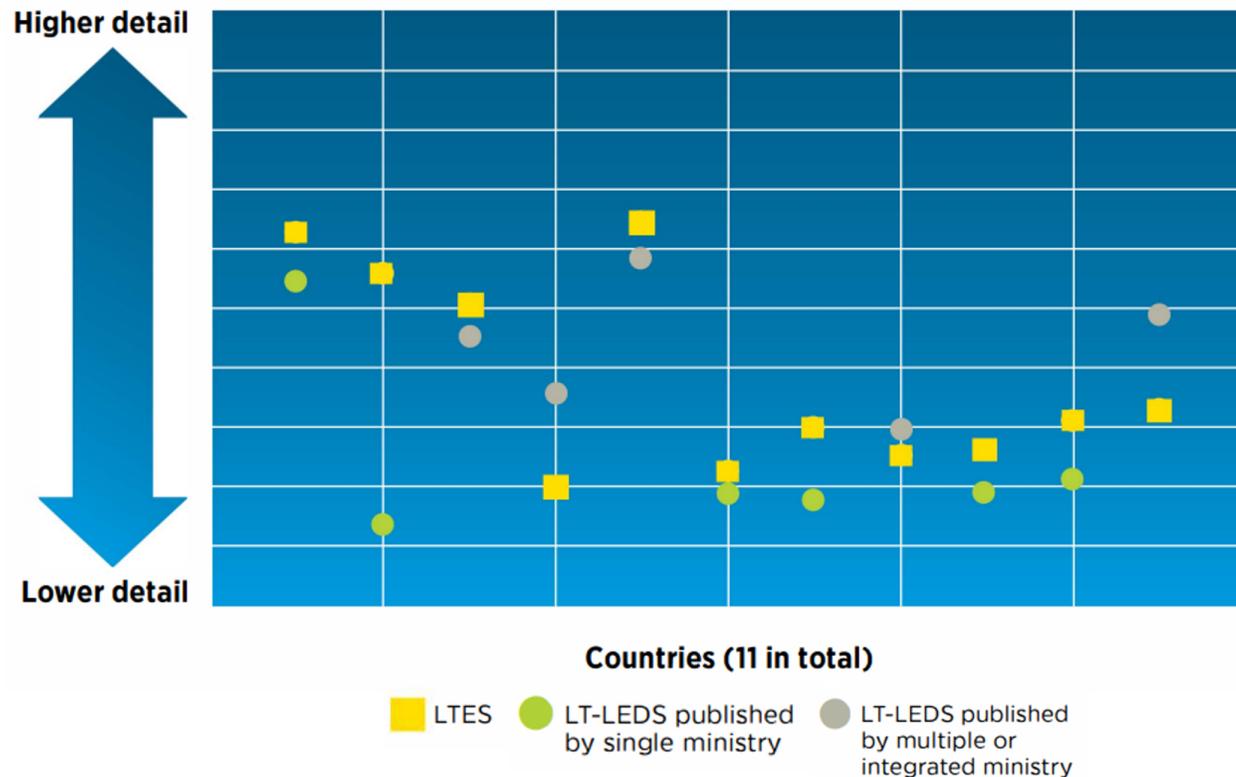
- LT-LEDS have a better representation of many variables in the **wider transition landscape**:
  - Mitigation measures
  - GHG, not just CO2 targets
  - Job and health impacts
  - Circular economy



## Focus on countries with both an LT-LEDS and LTES

# Alignment in the development process leads to more comprehensive planning documents

Comprehensiveness LTES vs LT-LEDS - Inclusion of energy production and infrastructure variables



- Chart shows comprehensiveness of variables relating to **energy production and infrastructure** to show where LT-LEDS can learn from LTES
- LT-LEDS that have **interdisciplinary publishing institutions** perform **relatively well** or even **better than their respective LTES**
- **Alignment** between LTES and LT-LEDS or being published by an **interdisciplinary institution** can lead to more comprehensive planning documents

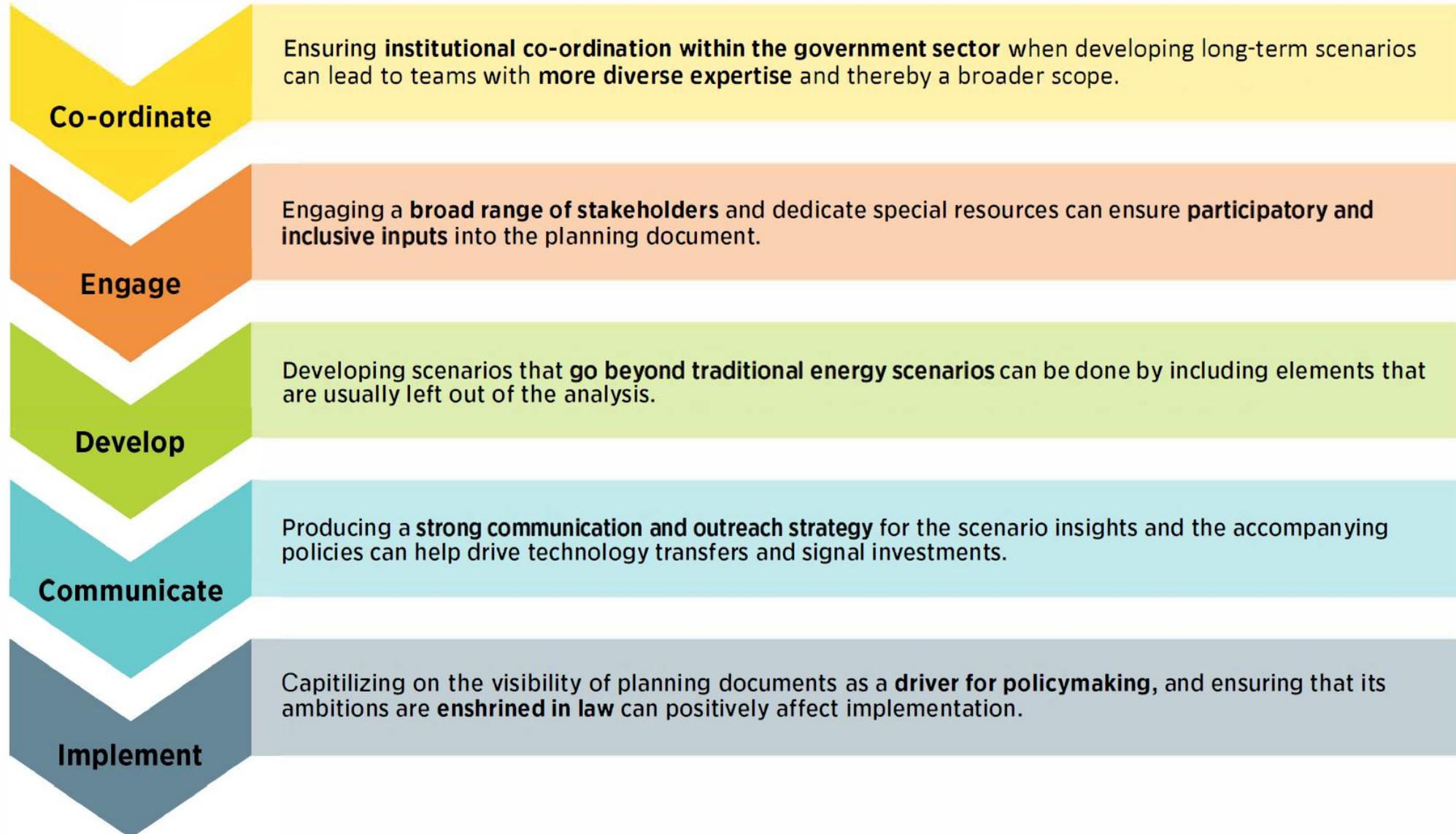


## Conclusion

- LT-LEDS present **opportunities for energy, climate, and development policymaking** to come closer and communicate mutual objectives and targets
- The analysis in this report shows a generally **good level of alignment between LTES and LT-LEDS scenarios**
- **Wider adoption of scenario-based planning** approaches for LT-LEDS can lead to robust strategies, as it leads to further **stakeholder engagement** and **data-based dialogue**, that can result in **greater buy-in from sectors** beyond energy and climate
- Common observations with LT-LEDS Synthesis report, including the **crucial role of renewable energy, electrification, and energy efficiency as crucial for GHG neutrality targets**
- **Socio-economic elements** such as job impacts and health are usually not present in scenarios **but still feature in the majority of the LT-LEDS text**
- Aligned processes (through dedicated institutions, ministries, steering committees, etc.) can allow for aligned trustworthy scenarios that can **send an important signal to policymakers, investors, technology developer and open opportunities for cooperation**



## Recommendations for LT-LEDS development





# Energy planning dashboard

## ENERGY PLANNING DOCUMENTS AND MODELLING TOOLS

### DATA COLLECTED

34

Countries

39

Planning documents

This dashboard shows modelling tools used by governmental and technical institutions in developing their planning documents.

Filter by country

All

Filter by region

All

Filter by planning document scope

All

Country	Planning document	Responsible institution	Planning horizon	Year of publication	Planning document scope	Modelling tools used	Modelling scope			Verified by country
							Energy system	Power capacity expansion	Demand assessment	
Argentina	<a href="#">Escenarios Energéticos 2030</a>	Ministerio de Energía	2018-2030	2019	Energy system	MESSAGE, TIMES	●	●	●	
Benin	<a href="#">Plan Directeur de Développement du sous-secteur de l'Énergie Électrique au Bénin</a>	Ministère de l'Énergie, de l'Eau et des Mines (MEEM)	2014-2035	2016	Power system	WASP, NAP, GEOSIM		●	●	
Bolivia	<a href="#">Plan Eléctrico del Estado Plurinacional de Bolivia 2025</a>	Ministerio de Hidrocarburos y Energía	2013-2025	2014	Energy system	OPTGEN, SDDP		●		
Botswana	<a href="#">Integrated Resource Plan for Electricity for Botswana</a>	Republic of Botswana	2016-2040	2020	Power system			●	●	
Botswana	<a href="#">National Development Plan 11</a>	Government of Botswana	2017-2023	2016	Energy system	MESSAGE, MAED,	●			

To be updated with new features and data

**Contact us at:**

**[LTES@irena.org](mailto:LTES@irena.org)**