Implementing a Long-term Energy Policy Planning Process for Azerbaijan: A Roadmap

Explore how Azerbaijan can integrate modelling into its energy policy planning process to take advantage of its strong potential for both renewable energy development and increased fossil fuel exports.

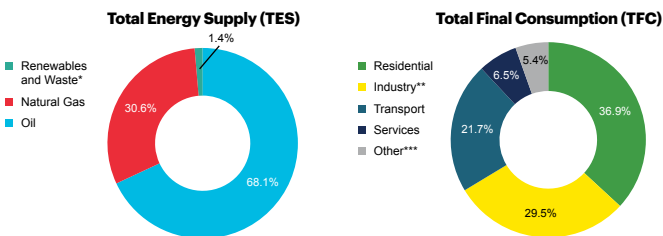Experience the full roadmap at iea.org/ programmes/eu4energy

Azerbaijan's Energy Context

Azerbaijan produces approximately **four times** the energy it consumes resulting in one of the highest levels of **energy self-sufficiency** in the world. The nation's economy is driven by the **oil and gas sector**, which accounts for **90% of the country's exports** and **30-50% of its GDP**, depending on oil prices.

Oil and Natural Gas

In 2020, **natural gas made up 68% of Azerbaijan's total energy supply** (TES), while **oil accounted for 31%**. That same year, natural gas was used to generate more than 90% of the nation's electricity and heat.

Energy Snapshot in Azerbaijan, 2020

Total Energy Supply (TES)

- Renewables and Waste*
- Natural Gas
- Oil

1.4%
30.6%
68.1%

Total Final Consumption (TFC)

- Residential
- Industry**
- Transport
- Services
- Other***

36.9%
29.5%
21.7%
6.5%
5.4%

*Includes electricity generated with hydro, municipal waste, wind, and solar PV.
**Includes non-energy use.
***Includes agriculture, fishing, and unspecified energy consumption.

Source: IEA (2022), World Energy Statistics and Balances (database), https://www.iea.org/data-and-statistics.

Renewable Energy

The share of **renewable energy sources** (RES) in Azerbaijan's TES is low. However, the country has strong potential for renewable energy development through **existing solar and wind resources**, and future prospects for **biomass, geothermal** and **hydropower**. Practical deployment has historically been limited, but new government legislation aims to have renewable energy provide **30% of electricity generating capacity by 2030**, roughly twice the current share.

Renewables in Total Energy Supply: 2000 - 2020

- Solar
- Wind
- Bioenergy*
- Hydro
- Renewables share (right axis)
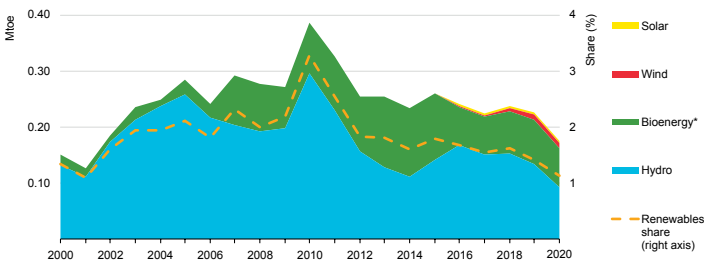
*Includes solid biofuels and renewable municipal waste.
Source: IEA (2022), World Energy Statistics and Balances (database), https://www.iea.org/data-and-statistics.

Importance of Long-Term Energy Planning

Long-term energy policy planning and target-setting are evolving processes that equip nations to overcome the myriad challenges they may face. These processes help further **energy sector development** and can increase the share of renewables in the energy mix, thereby providing **environmental benefits, stronger energy security**, and **reduced costs**.

Proof of Success

Similar to Azerbaijan, the Netherlands and the United Kingdom are two major gas-producers. Each country has enacted a number of policies to meet their targets, which have been adjusted and streamlined as the policy context has shifted. They have experienced significant success, with renewable energy generation having grown by 60% in the past four years.
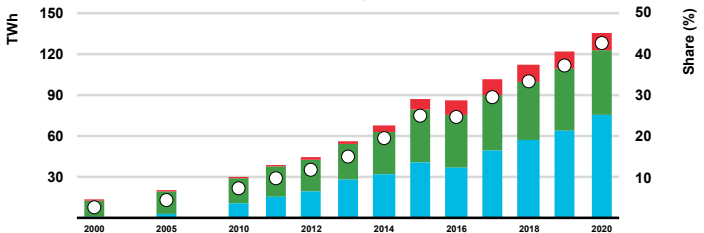
Evolution of Renewable Energy in the Netherlands and the United Kingdom

■ Solar PV   ■ Other renewables*   ■ Wind   ○ Renewable share (right axis)
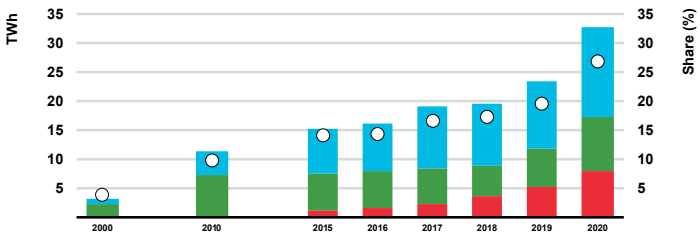
TWh = terrawatt-hours
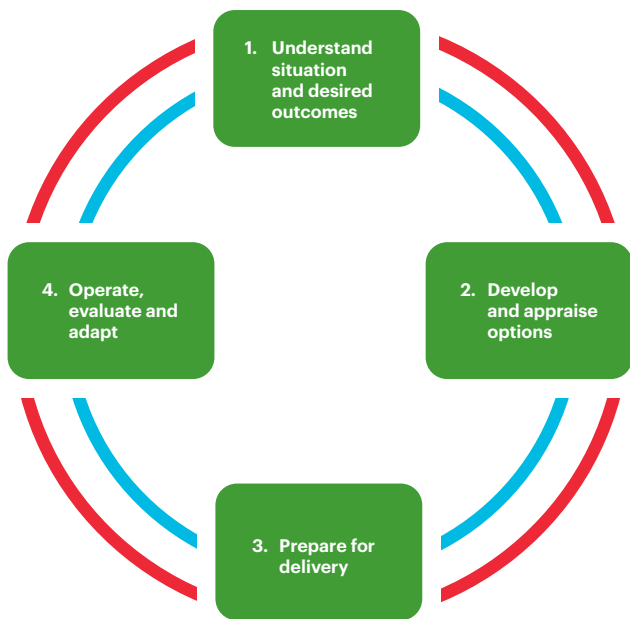*Includes hydro, solid and liquid biofuels, biogases, and renewable municipal waste.
Source: IEA (2022), World Energy Statistics and Balances (database), https://www.iea.org/data-and-statistics.

Energy Policy Planning & Priorities

Policy Planning

At its core, **policy planning is a cycle** – moving from the initial need for a policy to the design and planning process to implementation, and finally monitoring and evaluating the policy's success and redesigning if necessary. **Collaboration** is vital throughout this cycle, especially between **policymakers** and **statisticians**.

The Policy Delivery Cycle

1. **Understand situation and desired outcomes**
2. **Develop and appraise options**
3. **Prepare for delivery**
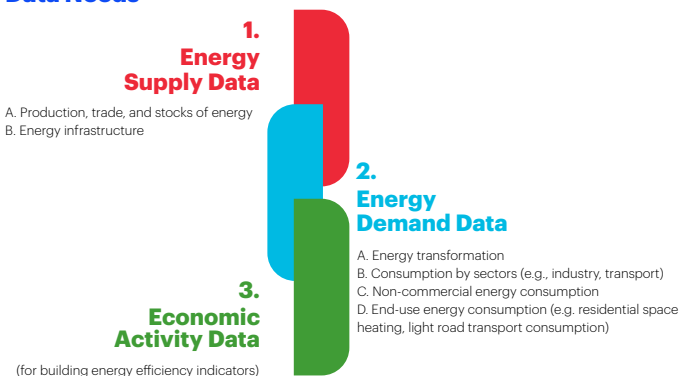4. **Operate, evaluate and adapt**

Priorities

While each country has its own energy policy priorities, the **effects of global warming** are pushing many to transition their energy systems towards **increased sustainability**. As a result, **tracking energy transitions** has become a priority for many governments as they work to both set and meet targets.

Importance of Data

Sustainable Development Goals (SDG7), Greenhouse Gas (GHG) emissions inventory, and long-term planning all build upon the same source data, so **collecting data is crucial** regardless of a country's energy policy priorities.
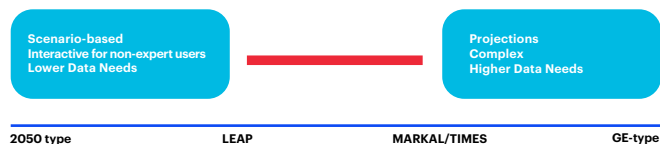
Data Needs

1.
Energy Supply Data

A. Production, trade, and stocks of energy
B. Energy infrastructure

2.
Energy Demand Data

A. Energy transformation
B. Consumption by sectors (e.g., industry, transport)
C. Non-commercial energy consumption
D. End-use energy consumption (e.g. residential space heating, light road transport consumption)

3.
Economic Activity Data

(for building energy efficiency indicators)

Models

Energy modeling, which can be used to **provide projections** and **explore both normative and explorative scenarios**, is an important part of the policy development process. Generally, the more data that is available, the better the model. However, the accuracy of the data and understanding of its uncertainties may be even more important.

Interactive Energy Model Types and Differences

Scenario-based
Interactive for non-expert users
Lower Data Needs

Projections
Complex
Higher Data Needs
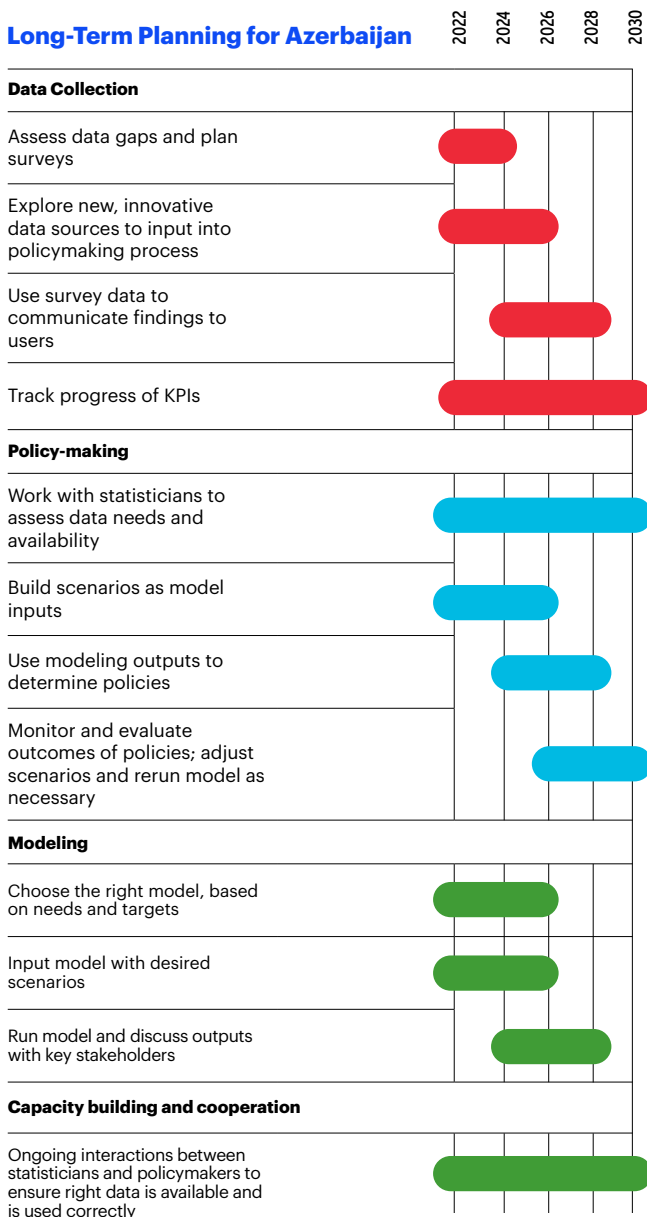
| 2050 type | LEAP | MARKAL/TIMES | GE-type |

Monitoring & Evaluation

A critical role for statisticians in the policy-making process is to effectively monitor and evaluate the policy outcome, not only at its conclusion, but continuously throughout the policy-making and implementation process.

Key questions include:

1. How will the policy work, and will it be worth it?

2. What baseline data is needed to monitor impact?

3. Were objectives met?

Attaining the Vision

Long-Term Planning for Azerbaijan

	2022	2024	2026	2028	2030

Data Collection

	2022	2024	2026	2028	2030
Assess data gaps and plan surveys	●				
Explore new, innovative data sources to input into policymaking process	●●●				
Use survey data to communicate findings to users		●●●			
Track progress of KPIs	●●●●●●●●				

Policy-making

	2022	2024	2026	2028	2030
Work with statisticians to assess data needs and availability	●●●●●●●●				
Build scenarios as model inputs	●●●●				
Use modeling outputs to determine policies		●●●●			
Monitor and evaluate outcomes of policies; adjust scenarios and rerun model as necessary			●●●●		

Modeling

	2022	2024	2026	2028	2030
Choose the right model, based on needs and targets	●●●				
Input model with desired scenarios	●●●				
Run model and discuss outputs with key stakeholders		●●●●			

Capacity building and cooperation

	2022	2024	2026	2028	2030
Ongoing interactions between statisticians and policymakers to ensure right data is available and is used correctly	●●●●●●●				

An extended set of policy recommendations is included in the full roadmap