IRENA FlexTool

TRAINING FOR MENA

OPENING SESSION: Projects and initiatives in the MENA Region
Power System Flexibility according to IRENA

Flexibility according to IRENA (2018):

“Flexibility is the capability of a power system to cope with the variability and uncertainty that VRE generation introduces into the system at different time scales, from very short to the long term, avoiding curtailment of VRE and reliably supplying all the demanded energy to customers”
A combination of solutions is needed

» **Main flexibility sources**
  
  » **Generation**
    » Hydro, gas
  
  » **Grid**
    » Variable rating lines, T&D enhancement
    » Smart Grids
  
  » **Storage**
    » Pumped Hydro
    » Batteries
    » V2G
  
  » **Demand Response**
    » Conventional: DSM, aggregation
    » Sector coupling: Heat pumps, boilers, H2
  
  » **Market/Institutional**
    » Unlock flexibility/remove barriers
    » Regulation needs to support flexibility

Source: based on Denholm et al., 2010
IRENA FlexTool: Present and Future

Present and Future Work

1. Assessing Regional Integration
   a) Central America (Panama, first country)
   b) ASEAN (Thailand, first country)

2. FlexTool Training
   a) Cuba (November 2019)
   b) Latin America (19 May 2020)
   c) ASEAN (2 June 2020)
   d) MENA (today)
Objectives of the flexibility assessments

The IRENA FlexTool performs both **capacity expansion** and **economic dispatch** of a power system with a focus on power system flexibility.

**Objectives of the FlexTool studies**

1. Analyze **power system flexibility** using a base year (e.g., 2017)
2. Analyze **power system flexibility in the future** using **REmap projections** and national expansion plans
3. Analyze the **value of regional integration**
4. Study if there could be **cost-efficient additional investments in more VRE or flexibility solutions** (e.g., sector coupling)
Results obtained from the AVRIL workshop that took place in Amman in April 2019

12 out of 15 countries in the region have as priority to validate the long-term capacity mix in terms of flexibility

IRENA FlexTool is a very suitable tool for this type of analysis