

# ECONOMIC MODELLING FOR SCIENCE BASED POLICY DECISIONS



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# Economics and the energy transition

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- ▶ **Today's motto:**

- ⇒ **Making a success of the energy transition due to technological and procedural innovation**

- ▶ **But how do we know that it is a success?**

- ▶ **Moreover, how do we identify the success – and the success factors in terms of policy - for Algeria?**

# (Energy) Policy is successful if

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- ▶ Targets are reached (installation of renewables, share of electricity generation, decrease in energy consumption)
- ▶ Co-benefits are realized:
  - ⇒ Contribution to employment
  - ⇒ Positive growth stimulus
- ▶ Synergy with other policy targets
  - ⇒ Eg.: diversification
  - ⇒ Domestic content
  - ⇒ Wide range of regional and educational coverage

# Measurement is needed

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- ▶ There is a saying „if you cannot measure it, you cannot manage it“
- ▶ Therefore we have created an energy-economy model for Algeria:
  - ⇒ Analyze economic indicators under different scenarios
  - ⇒ Easy to use
  - ⇒ Consistent framework
  - ⇒ Includes all economic effects:
    - Direct employment from renewable energy and energy efficiency increase
    - Indirect employment
    - Induced employment
    - Additional returns from additional gas exports

# An energy economic model for Algeria – e3.dz

Energy economic model based upon previous modeling experience

- ⇒ Models for other countries
- ⇒ Experiences from tools to measure economic impacts of renewable energy and energy efficiency
- ⇒ Use national data, such as
  - Macroeconomic data
  - Input-Output tables
  - Times series from 1984 (or latest 2000)

ALL economic effects: direct (from additional investment), indirect (from second order effects) and induced (from additional income, additional employment)

# Advantage of full model

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Simplistic calculations only give the tip of the iceberg

e.g.: approx. 50 thousand direct jobs from renewables

Turn into 113 thousand direct AND indirect jobs

Turn into 210 thousand jobs including direct AND indirect AND induced jobs.

# What can be done with it?

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- ▶ Simulate economic effects of selected energy economic policies and changes, such as:
  - ⇒ Changes in global prices for energy carriers
  - ⇒ Investment in new energy carriers
  - ⇒ Different support policies
  - ⇒ Changes in domestic prices for energy carriers
  
  - ⇒ And so on.
- ▶ Results will be differences to the baseline values for GDP, Jobs, Growth
- ▶ As of today, energy transition scenarios were analyzed.

# Conclusions so far

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- ▶ Simulation results positive for renewable energy and energy efficiency scenarios
- ▶ The most important gain from having the full economic model e3.dz lies in the feedback loop from the energy system to the economy via additional hydrocarbon revenues.
- ▶ For the environment, the full model also shows how additional economic activity tends to cannibalize on efficiency gains. Any production increase leads to – ceteris paribus – an additional demand for energy.
- ▶ All in all : Energy transition seems to be a win-win situation and should be pursued with vigor.



# Merci beaucoup pour votre attention!



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