## **`Towards An Integrated Green Transformation Strategy: Report for Türkiye`**

for

UNCTAD Project on Resilient, Green and Transformative Development

Ebru Voyvoda Middle East Technical University

Jan. 29, 2025, Ankara

'Towards An Integrated Green Transformation Strategy: Report for Türkiye'

# 1. <u>Global Context</u>

- Multi-dimensional crisis: difficulty of meeting critical needs such as food security, energy security, social protection, climate adaptation/mitigation. Inflation and debt stress, esp. in developing economies (UNCTAD, TDR 2023)...
- High uncertainties and risks
- Geo-strategic policy making, multi-polar order
  - Re-thinking of the energy security, energy supply pathways...
  - Re-shaping and geographical concentration of the value chains...
  - Trade restrictions...
  - (unfair) competition from China, Re-thinking state's role, Innovation drought
  - Revival of Industrial Policy



Mercenier, J., E. Voyvoda and A. E. Yeldan "A Dynamic, Multi-Region General Equilibrium Model of the Carbon Border Adjustment Mechanism"



## Discussion on: `Towards An Integrated Green Transformation Strategy: Report for Türkiye`

# 2. Re-thinking (Green) Industrial Policy for Developing Economies:

- Continuing vulnerability of many developing countries to external shocks and the culmination of such vulnerabilities with the new set of constraints and challenges brought about by the Covid-19 pandemic, energy conflicts.. etc.
- Developmental discourse: link b/w economic growth and structural transformation recognition that climate change crisis, and the necessary de-carbonization pathways will imply transformation of energy and production structures of the economies, and that such transformation will force taking into account sectoral dependencies with respect to energy as well as other critical inputs.

dependencies and linkages in the context of regional (South-South) cooperation

• Hence a need for re-thinking industrial policy, gaining insights from past debates, long-term perspectives & extending the debate in line with current challenges, constraints and opportunities...

## Discussion on: `Towards An Integrated Green Transformation Strategy: Report for Türkiye`

# ✓ Structural Transformation

#### • Transformation towards clean energy sources (energy efficiency, renewable energy)

(1) energy sector as the primary cause of GHG emissions (IEA: emerging markets and developing economies will account for almost 80% of the global growth in electricity demand in future scenarios)

(2) cost advantages of clean energy: strong economic maturity, investment momentum high

(3) mature, available technologies (IEA definition)

(4) potential for developing economies (ex. meeting diverse national energy and climate targets for Sub-Saharan Africa, 85% of new power generation plants to 2030 should be based on renewables)

(5) energy-security [particularly for fuel-importing countries, extreme price volatility in energy markets]

(6) SME oriented - "manufactured" technologies, basis for developing a manufacturing capacity

(7) clean employment opportunities?

(8) Co-benefits: linkages to other sectors of the economy

(9) Ample global manufacturing capacity offers considerable upside for solar PV, albeit concentrated: China, India, Malaysia, Thailand, Korea, Cambodia and Turkiye Şahin, Ü., Tör, O. B., Kat, B., Teimourzadeh, S., Demirkol, K., Künar, A., Voyvoda, E., & Yeldan, E. (2021). *Decarbonization Pathway for Türkiye: Net Zero in 2050,* A Cost-Benefit Analysis 2020-30



Changes in installed capacity in the electricity sector in Net-Zero Scenario w,r,t Baseline Scenario (GW)



Şahin, Ü., Tör, O. B., Kat, B., Teimourzadeh, S., Demirkol, K., Künar, A., Voyvoda, E., & Yeldan, E. (2021). *Decarbonization Pathway for Türkiye: Net Zero in 2050,* A Cost-Benefit Analysis 2020-30

#### • Additional Costs (Under Net Zero Scen. w.r.t Baseline Scen.)

- Investment Cost for additional capacity installments
- Operation and Maintenance Costs
- Fuel Cost



# ELECTRICITY PRODUCTION

Şahin, Ü., Tör, O. B., Kat, B., Teimourzadeh, S., Demirkol, K., Künar, A., Voyvoda, E., & Yeldan, E. (2021). *Decarbonization Pathway for Türkiye: Net Zero in 2050,* A Cost-Benefit Analysis 2020-30

# ELECTRICITY PRODUCTION

	Costs (Billion Dolars)	Co <sub>2</sub> Emissions (Million Ton
ELECTRICITY SECTOR		
Additional Capacity and Storage Investment Cost	+35,04	-587,66
Operation and Maintenance Cost	-1,02	
Fuel Cost	-6,38	
Grid Operation Costs (Re-prod. and Renewab. Curtailment)	+0,18	
Grid Investment Cost	+1,32	
TOTAL ELECTRICTY - PRODUCTION AND GRID	+29,1	

`Towards An Integrated Green Transformation Strategy: Report for Türkiye`

## 3. State Capacity, The need for comprehensive policy making environment

UNCTAD (2021, Ch. 4), Andreoni and Chang (2019), Chang and Andreoni (2019)

- Strategic coordination of interdependencies: through variety of institutions and policies

- Management of dualities and conflicts (across the dynamic sectors and the sectors of lock-in)

- Build institutional capacity, manage structural transformation and institutional change, avoid conflicts

- Develop functions of conflict resolution and entrepreneurship

- Monitor interdependence between investment and production decisions, identify constraints on Investments, design policy tools to effectively channel public and private investments, monitor performance... etc.

Ex. Transformation to low-carbon economy demands large state capacity for policy design, council of climate change, coordination among ministries, business organizations, environmental groups etc.

'Towards An Integrated Green Transformation Strategy: Report for Türkiye'

## 4. Linkages: Interdependencies and cooperation

- Identify industrial policy as a means to generate productivity and income spreading throughout the economy through production, investment and income linkages (UNCTAD 2021, Ch. 4)
- Identify new sectors/activities/ technologies linkages in production (backward and forward linkages), comprehending the potential knowledge and learning linkages associated with green technologies

## Discussion on: `Towards An Integrated Green Transformation Strategy: Report for Türkiye`

• Key areas that need urgent attention (IEA, WEO, 2023)

(1) Scaling up clean energy and infrastructure investments in developing economies

- enabling financial and fiscal policy space
- government indebtedness
- high cost of capital for many developing economies
- (2) Make transitions resilient, inclusive and affordable
  - large geographical concentration of critical minerals
- (3) Importance of re-distributional policies
  - fossil fuel subsidies
- (4) Find ways for cooperation