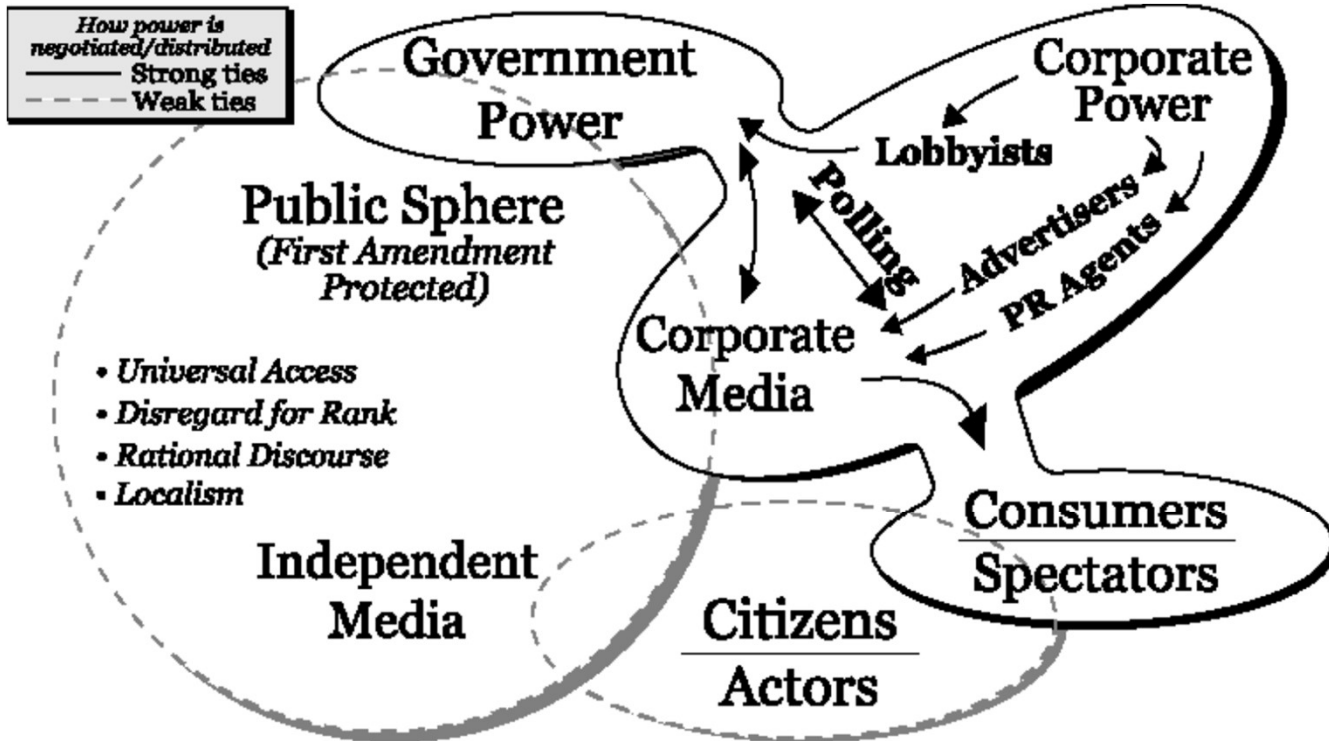




# ECO ENERGY SECURITY

Abbas Maleki  
*Economic Cooperation Organization*  
April 27, 2021

*How power is negotiated/distributed*  
 — Strong ties  
 - - - Weak ties



**Public Sphere**  
*(First Amendment Protected)*

- *Universal Access*
- *Disregard for Rank*
- *Rational Discourse*
- *Localism*

**Independent Media**

**Citizens Actors**

**Consumers Spectators**

• ***Elements of the Public Sphere*** •

**Voluntary Associations:**

- *Citizen Action Orgs.*
- *Nonprofits*
- *Civic Organizations*
- *Political Parties*

**Public Spaces:**

- *Coffeehouses*
- *Taverns*
- *Town Squares*
- *Parks*

**Public Media**

**Infrastructure:**

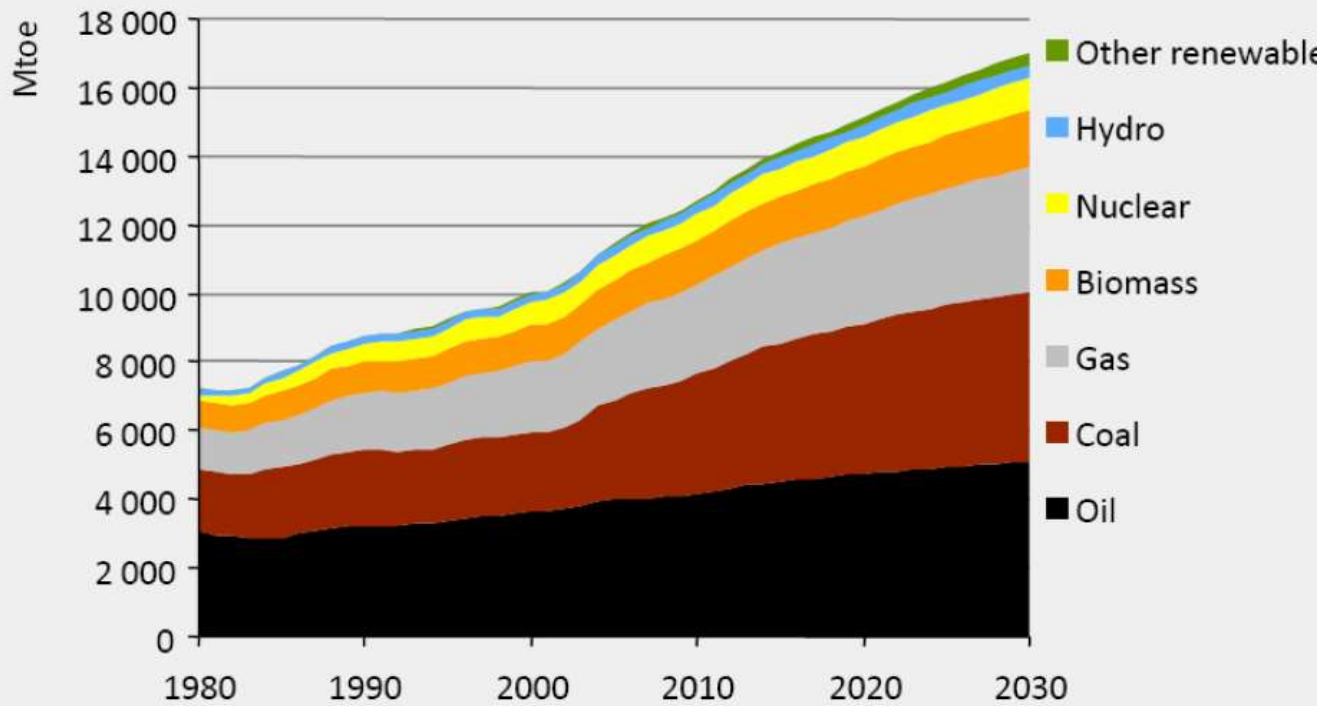
- *Internet*
- *LPFM • PATV*
- *Open Source Technology*

**Expression:**

- *Newspapers*
- *Journals • Books*
- *Lectures • Debates*
- *Forums • Music • Art*

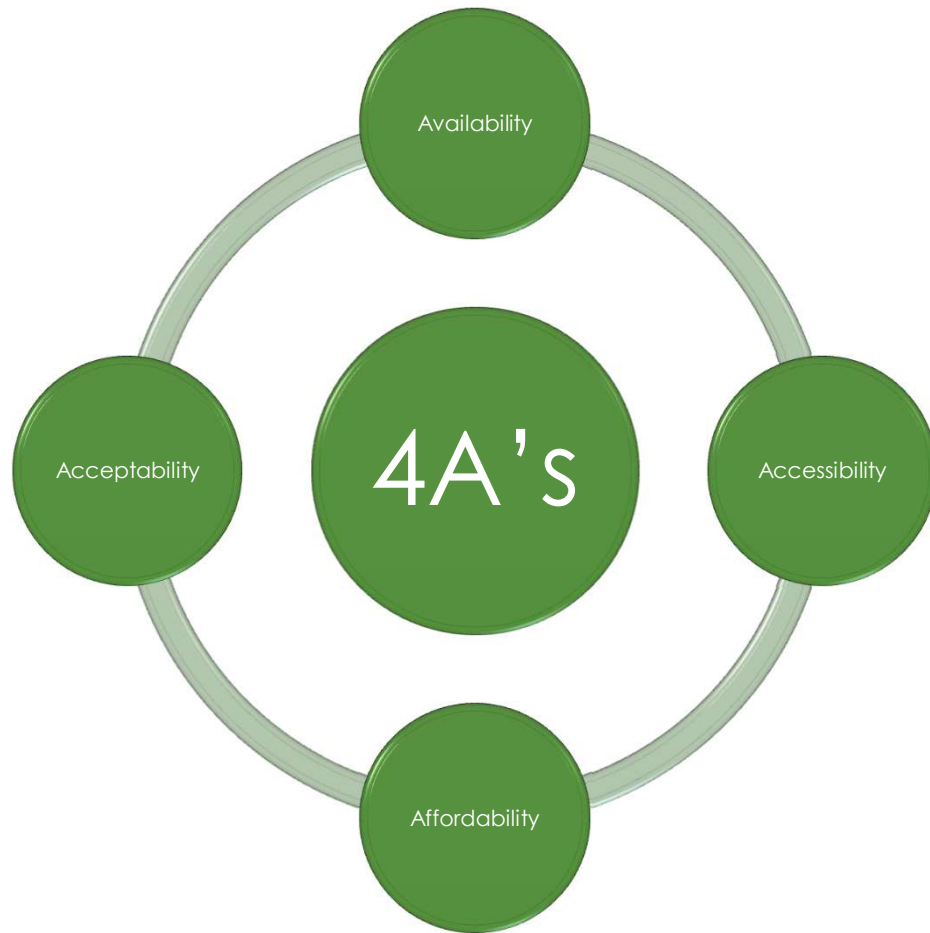
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Discourse of Energy Security is in Public Sphere



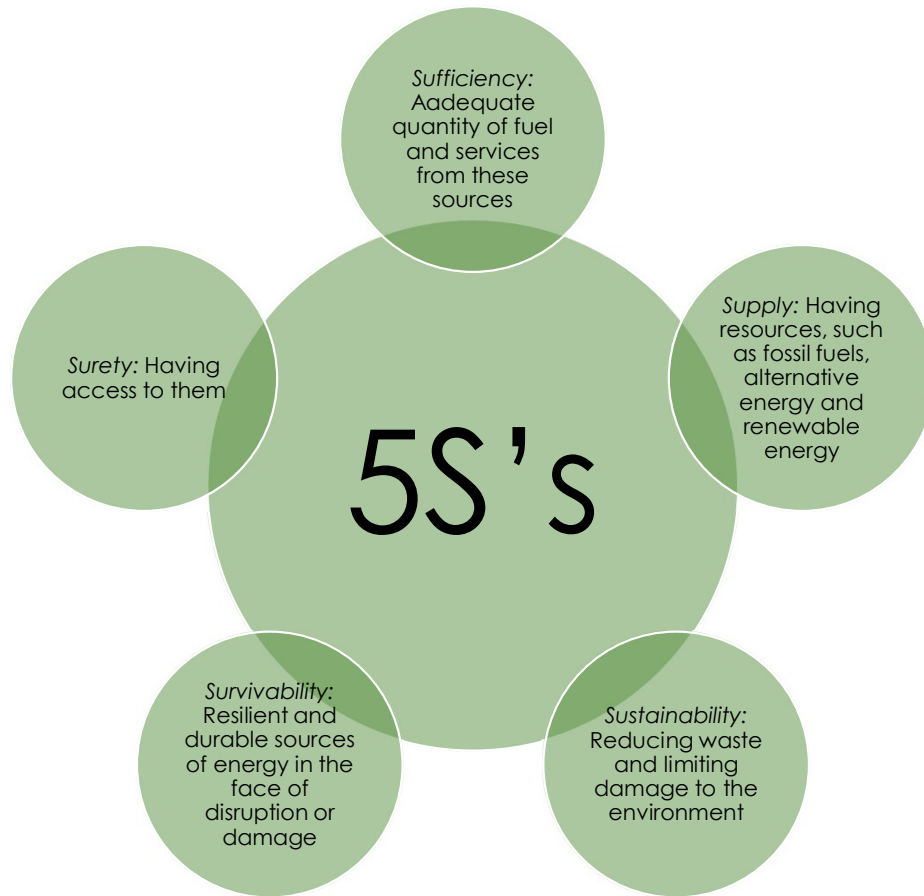
## Energy Demand Projection 1980-2030

- 45% from now to 2030
- 1.6% per year)



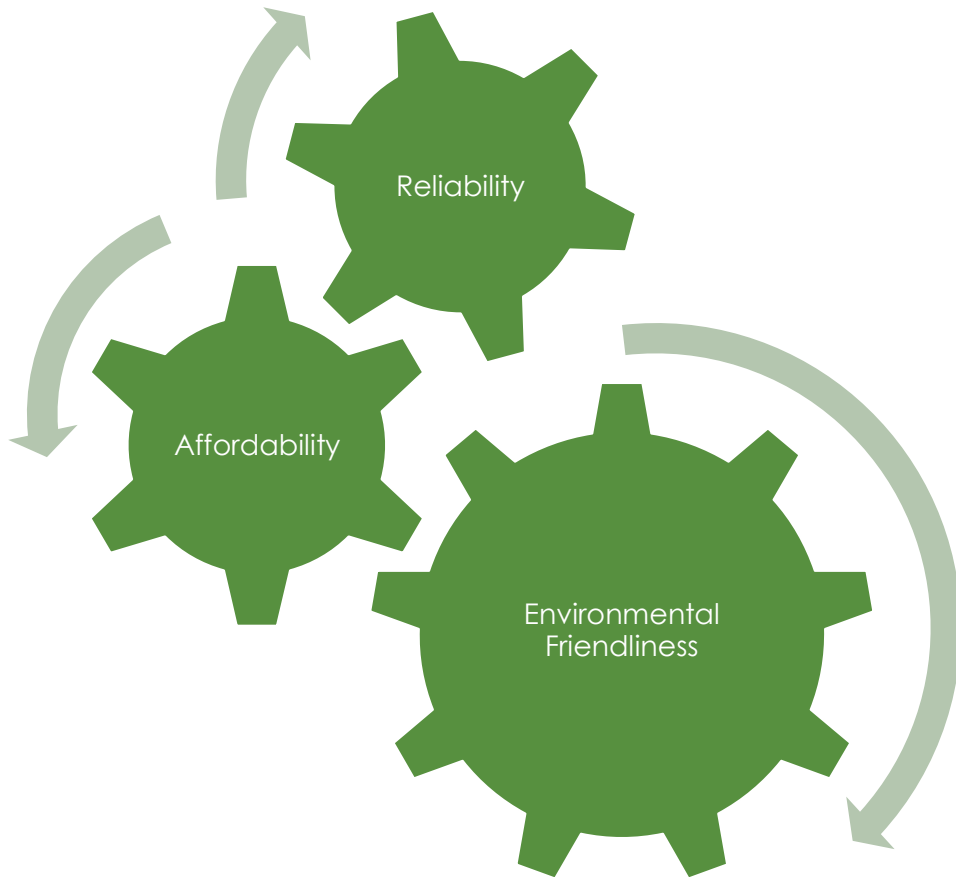
# Energy Security 1

Different definitions



# Energy Security 2

Different Definition



## Energy Security 3

Different perspectives of the consumer, supplier and transit country

# Conceptualizing Energy Security

- Threats to energy infrastructure and delivery of energy services are becoming more pronounced
  - Attacks and disruptions
  - Interstate rivalries
  - Mounting costs of climate change
- Concentration of energy resources
- Energy demand is expected to grow dramatically
- Climate change

# Energy security (Demand Side)

- Perspective of the consumer
- How to achieve energy security?
- Diversity of energy resources
- Diversity of suppliers
- Storage of energy and strategic petroleum reserves
- Redundant energy infrastructure
- Flexibility to shift fuels



# Energy security (Supply Side)

- Producers and resource exporters
- Economic characteristics
  - Danger of Dutch Disease?
  - Political regimes:
    - rentier effect
    - repression effect
    - modernization effect

# Energy security – Transit Side

- Role of transit states
- Could they use „energy weapon“?
- Direct linkages
  - Kazakhstan-China pipeline
  - Baku-Tbilisi-Ceyhan
  - Central Asia-China Gas Pipeline
  - Iran-Pakistan-India Gas Pipeline
- Landlocked states-producers: rise of the importance of that phenomenon after USSR disintegration
- Role of transit states: Georgia, Turkey



### THE RUSSIA-CHINA-IRAN ENERGY NEXUS

- |            |                               |                               |
|------------|-------------------------------|-------------------------------|
| Oil        | <b>1</b> Kazakhstan-Russia    | <b>6</b> Russia-Europe        |
| New routes | <b>2</b> Kazakhstan-China     | <b>7</b> Caspian Coastal      |
| Proposed   | <b>3</b> South Stream         | <b>8</b> Turkmenistan-China   |
| Gas        | <b>4</b> East Siberia-Pacific | <b>9</b> Dauletabad-Khangiran |
| New routes | <b>5</b> Blue Stream          | <b>10</b> North Stream        |
| Proposed   |                               |                               |



# Energy resources – conflict potential

- Energy – potential both for interstate conflict and cooperation
- Border-delimitation conflicts
- Border hotspots: Iran-Qatar (South Pars field)
- potential of pipelines?
- Potential conflict areas?
- Arctic Circle
- Caspian Sea



# ARCTIC REGION

Climate Change supports Russian access to the big markets

# Energy security – vulnerability of transport routes

- Vulnerable energy transport chokepoints
  - Strait of Hormuz
  - Strait of Malacca
  - Bosphorus Strait
- Terrorism
- Vulnerability of energy infrastructure



# Energy security and climate changes

- World's continuing dependence on fossil fuels
- 2007 UN Security Council – climate change as an international security threat
- Climate change no longer considered only an issue relating to quality of life and the environment, but also directly affecting human and global security
- Energy consumption patterns and policies have become international security issue
- $\frac{3}{4}$  of world's CO<sub>2</sub> emissions produced by burning fossil fuels



# Energy security and climate changes

- The future – rather the consensus of top emitters than wide encompassing agreement?
- Biofuels? (Danger of deforestation)
- Climate change policy requires current populations to make material sacrifices to avert danger to future generations
- Ethical problem of emissions-trade mechanisms
- Responsibility of developing countries, access to new technologies
- Addressing climate changes create a significant challenge to the sovereignty of the state in international system –
- State security can become dependent on the actions of other states; demands to radically change organization of states' economies and lifestyles

# Energy and climate changes

The future – rather the consensus of top emitters than wide encompassing agreement?

Biofuels? (Danger of deforestation)

„Climate change policy requires current populations to make material sacrifices to avert danger to future generations“

Ethical problem of emissions-trade mechanisms

Responsibility of developing countries, access to new technologies

Addressing climate changes create a significant challenge to the sovereignty of the state in international system – state security can become dependent on the actions of other states; demands to radically change organization of states' economies and lifestyles

Country	Oil Total Proved Reserves Billion barrels		Natural Gas Total Proved Reserves Trillion cubic meters	
	2018	2019	2018	2019
Iran	155.6	155.6	32	32
Turkmenistan	0.6	0.6	19.5	19.5
Uzbekistan	0.6	0.6	1.2	1.2
Azerbaijan	7	7	2.1	2.8
Kazakhstan	30	30	2.7	2.7
Turkey	0.3	0.3	0.2	0.2
Afghanistan	0	0	1.8	1.8
Tajikistan	0.012	0.012	0.2	0.2
Kyrgyzstan	0.04	0.04	0.2	0.2
Pakistan	0.3	0.3	21	14

Proven Oil  
and  
Natural  
Gas of  
ECO  
members

Country	Oil Production Thousand barrels per day									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Iran	4421	4452	3810	3609	3714	3853	4578	5007	4801	3535
Turkmenistan	226	234	244	256	263	271	270	271	261	264
Uzbekistan	78	77	68	63	61	59	58	61	64	62
Azerbaijan	1037	932	882	888	861	851	838	793	796	779
Kazakhstan	1676	1684	1664	1737	1710	1695	1655	1838	1927	1931
Turkey	48.34	45.65	44.76	46.24	47.67	48.51	49.5	41.17	54.93	57.52
Afghanistan	0	0	0	0	0	0	0	0	0	0
Tajikistan	0.22	0.22	0.21	0.21	0.21	0.18	0.18	0.18	0.18	0.18
Kyrgyzstan	0.96	0.955	0.961	0.953	1.007	0.972	-	-	-	-
Pakistan	65	66	71	81	94	90.21	85.5	89.72	89.57	84.98

## Oil Production of ECO Members

Country	Oil Consumption Thousand barrels per day									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Iran	1788	1823	1859	2020	1901	1713	1764	1808	1835	2018
Turkmenistan	118	125	129	137	143	145	143	144	149	162
Uzbekistan	76	71	63	60	57	53	49	47	45	44
Azerbaijan	72	89	92	101	99	100	98	99	104	108
Kazakhstan	211	243	245	260	262	295	305	317	340	353
Turkey	694	672	702	748	771	915	973	1022	987	1005
Afghanistan	42.76	55.82	49.06	35.08	27.68	35	-	-	-	-
Tajikistan	11	12	12	13	14	-	-	-	-	-
Kyrgyzstan	26.678	28.34	36.295	36.246	32.161	40	-	-	-	-
Pakistan	416	413	425	442	450	-	-	-	-	-

## Oil Consumption of ECO Members

Country	Natural Gas Production Billion cubic meters									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Iran	143.9	151	156.9	157.5	175.5	183.5	199.3	219.5	238.3	244.2
Turkmenistan	40.1	56.3	59	59	63.5	65.9	63.2	58.7	61.5	63.2
Uzbekistan	57.1	56.6	56.5	55.9	56.3	53.6	53.1	53.4	57.2	56.3
Azerbaijan	16.3	16	16.8	17.4	18.4	18.8	18.3	17.8	19	24.3
Kazakhstan	20.4	20.1	19.8	21.4	21.7	22	22.9	23.4	23.9	23.4
Turkey	0.68	0.76	0.63	0.54	0.48	0.38	0.37	0.35	0.44	0.4
Afghanistan	0.14	0.14	0.16	0.16	0.16	0.189	-	-	-	-
Tajikistan	0.041	0.019	0.015	0.013	0.012	0.02	-	-	-	-
Kyrgyzstan	0.012	0.01	0.006	0.032	0.034	0.03	-	-	-	-
Pakistan	42.83	41.67	46.1	41.8	41.17	41.2	-	-	-	-

## Natural Gas Production of ECO Members

Country	Natural Gas Consumption Billion cubic meters									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Iran	144.4	153.2	152.5	153.8	173.4	184	196.3	209.1	224.1	223.6
Turkmenistan	18.3	20.7	22.9	19.3	20	25.4	25.1	24.8	28.4	31.5
Uzbekistan	44	47.4	46.2	46.2	48.5	46.3	43.3	43.1	44.4	43.4
Azerbaijan	8.1	8.9	9.4	9.4	9.9	11.1	10.9	10.6	10.8	11.8
Kazakhstan	11	12.2	13	13.6	15	15.3	15.8	16.8	19	17.9
Turkey	35.8	41.8	43.3	44	46.6	46	44.5	51.6	47.2	43.2
Afghanistan	0.142	0.161	0.16	0.154	0.142	0.146	0.165	0.165	-	-
Tajikistan	0.226	0.199	0.203	0.211	0.224	0.02	0.19	0.19	-	-
Kyrgyzstan	0.462	0.4	0.426	0.406	0.429	0.18	0.188	0.188	-	-
Pakistan	39.63	39.15	43.8	39.4	39.07	40.67	43.51	45.05	-	-

## Natural Gas Consumption

Country	Oil Net Imports Kt									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Iran	-132486	-110724	-56431	-50925	-53415	-56240	-104500	-105061	-91446	-
Turkmenistan	-1300	-2300	-3100	-3600	-3200	-3450	-2480	-1700	-1050	-
Uzbekistan	-601	-1046	-723	-769	-608	-788	-1061	-1065	-1179	-
Azerbaijan	-42596	-37205	-34665	-34197	-32840	-32780	-32416	-30425	-30078	-27638
Kazakhstan	-63307	-64172	-63539	-61552	-64126	-62697	-60267	-69189	-69780	-69973
Turkey	16954	18092	19488	18556	17480	25067	24958	25767	20972	31075
Afghanistan	0	0	0	0	0	0	0	0	0	0
Tajikistan	-5	-5	-5	-4	-4	-4	-4	-4	-4	-4
Kyrgyzstan	12	12	4.5	34	57	219	243	277	340	-
Pakistan	6633	6088	7377	8012	8307	8110	8470	9918	9542	-

## Oil Net Imports



Country	Natural Gas Net Imports TJ-gross									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Iran	19965	91934	-182935	-153848	-85403	-19650	-125956	-368604	-548947	-659029
Turkmenistan	-909668	-1620430	-1700147	-2031466	-2078710	-2178107	-2029204	-2056863	-2206145	-1980079
Uzbekistan	-491660	-342461	-571969	-465915	-402298	-451261	-439691	-384575	-560304	-638634
Azerbaijan	-141672	-171272	-168460	-235450	-286112	-303152	-302743	-263538	-316917	-413724
Kazakhstan	-106016	-60833	-248786	-197246	-620528	-586390	-587137	-791904	-683901	-752671
Turkey	1466993	1680569	1759024	1733986	1886840	1855031	1775476	2116077	1925967	1730096
Afghanistan	0	0	0	0	0	0	0	0	0	0
Tajikistan	6612	6840	5054	4800	4500	4200	3900	3500	2184	5602
Kyrgyzstan	10602	11905	15452	11433	9248	9522	10087	10866	12016	11714
Pakistan	-	-	-	-	20886	106271	196959	331198	452184	456709

Natural  
Gas  
imports

### Expected Outcomes:

Energy trade, production, consumption and transit patterns will be enhanced.

Enhanced policy coherence for mainstreaming objectives of the SDGs and 'UN sustainable energy for all' will be encouraged.

ECO Member Countries will be encouraged for deployment of environmentally friendly energy technologies in order to mitigate adverse environmental footprints of the energy transfer and trade.

More diverse and resilient energy architecture in the Region will be supported through transformation to renewable, as well as cleaner and sustainable energy sources. ECO Clean Energy Centre will be established.

Promotion of energy investments through advocating innovative incentives and close engagements with regional and global IFIs and development banks will be encouraged.

To the widest extent possible, relevant energy efficiency goals and objectives will be achieved at the ECO regional level.

Institutional advisory mechanism will be established for crafting policy linkages

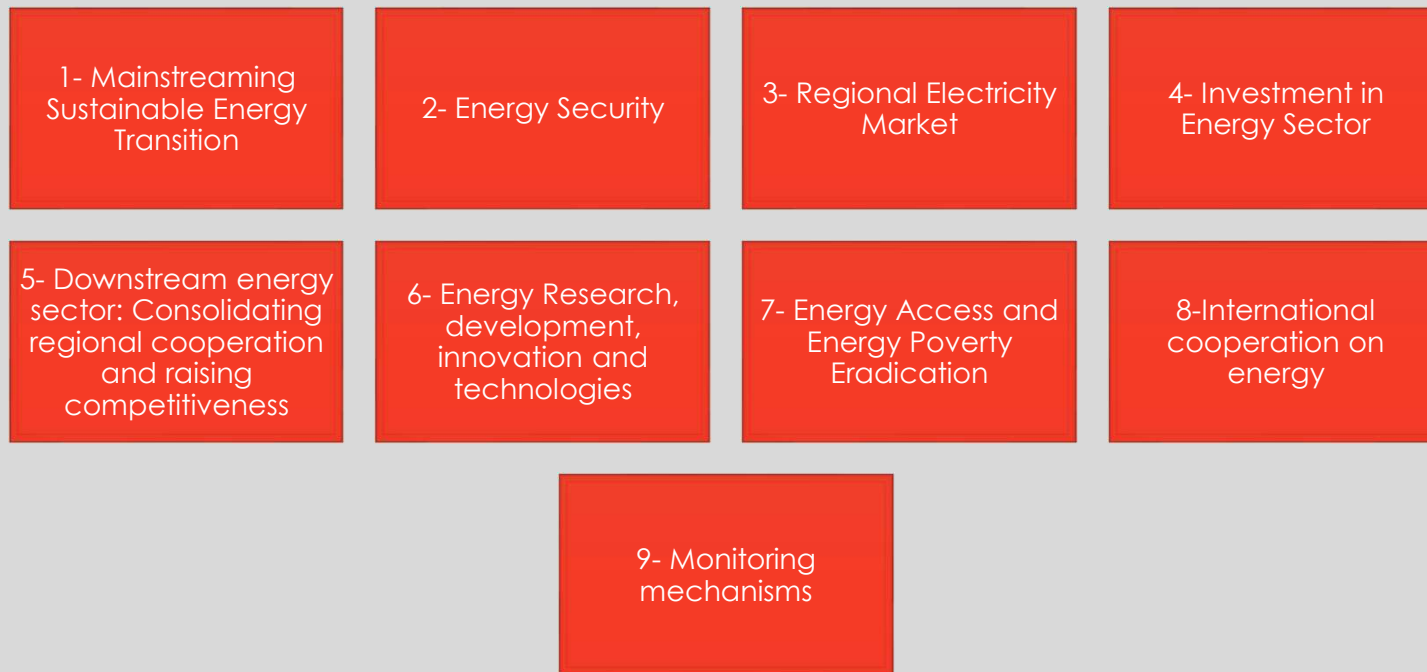
Efforts will be made for harmonization and alignment towards regional power electricity market within the ECO Region for harnessing benefits of larger integrated systems.

# ECO VISION 2025 Energy Sector

## **Strategic Objective**

To enhance energy security and sustainability through wider energy access and trade within the ECO Region and beyond.

# V. STRATEGIC COMPONENTS/PILLARS



# 5. DOWNSTREAM ENERGY SECTOR

- Energy demand will continue to increase in many parts of the world in the future.
- Population growth continues to rise at the global level.
- Debates on climate and global warming continue to gain momentum.
- From the global perspective of the downstream energy sector these issues will significantly affect the industry
  - Response of refiners to the need for capacity rationalization
  - Transformations in the future crude state quality
  - Regulations pertaining to the product quality specifications
  - Development of the additional routes for oil movements

# ECO needs for establishment of a network of downstream stakeholders

Line agencies

Downstream authorities

Businesses

Think-tanks

academia

Training/excellence centres

As well as other public and private sector stakeholders of our Member States

## CLOSING LOOPS

Using resources for the longest time possible could cut some nations' emissions by up to 70%, increase their workforces by 4% and greatly lessen waste.

### USE

Is controlled by buyer-owner-consumers of goods, or by fleet managers who retain ownership and sell goods as services.

### DISTRIBUTION

Ownership transfers from manufacturer to consumer at point of sale.



### INNOVATION

Research is needed to transform used goods into 'as-new' and to recycle atoms.

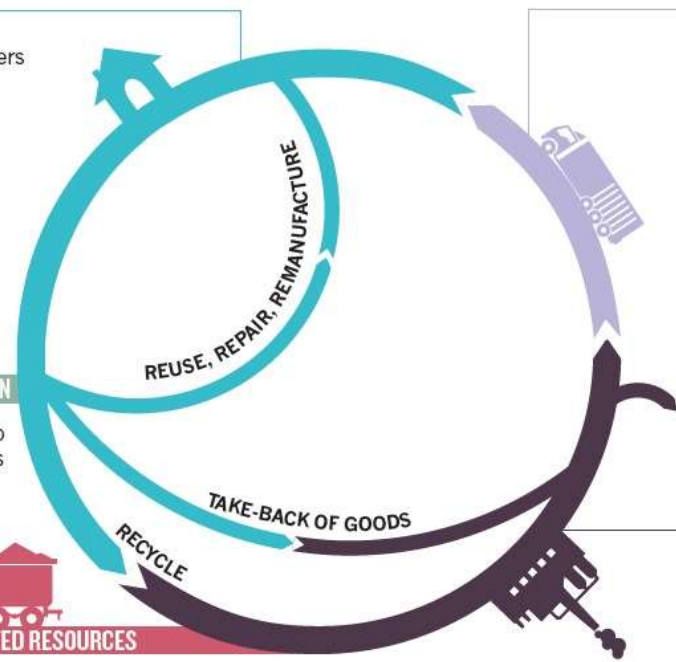


### EXTRACTED RESOURCES

Water, energy and natural resources enter the manufacturing process.

### MANUFACTURING

Renewing used products lessens the need to make originals from scratch.



# Circular Economy

Circular economy policy activities is envisaged to be driven from the bottom up, in terms of actions from cities, universities, and companies, as much as by national or international action

The role of oil and gas companies in the low carbon transition is to be selected the circular economy based on national agenda.

Opportunities for circular economy to leverage oil and gas companies include initiatives such as feedstock recycling from plastics and tires and using waste to generate heat energy.

End users in ECO area will also benefit from sustainability of downstream by focusing on more environmentally friendly products through

- information sharing,
- social promotion and
- central government's policy preferences..

The consolidation of regional cooperation will have a pillar to boost sub-regional trade in downstream products amongst ECO Member States.

Strategic vision of downstream agenda will be to ensure sustainability both for producer and consumer countries

Contributing for supporting of green economy agenda of ECO region

## Expected Outcomes

Promotion of energy investments through advocating innovative incentives and close engagements with regional and global IFIs and development banks will be encouraged.

ECO Member Countries will be encouraged for deployment of environmentally friendly energy technologies in order to mitigate adverse environmental footprints of the energy transfer and trade.

## 6. ENERGY RESEARCH, DEVELOPMENT, INNOVATION AND TECHNOLOGIES (RDI&T)

### **Strategic Objective**

To enhance energy security and sustainability through wider energy access and trade within the ECO Region and beyond.



- The transition towards climate neutrality by 2050 (SDG 13) gives energy a central role, as energy is today responsible for more than 75% of the ECO's greenhouse gas emissions.
- ECO Region is endowed with enormous energy resources, but mostly encompasses the land-locked developing countries in need of energy access, and innovations for energy transition and sustainable growth.
- The remaining but still significant policies benefiting oil, coal, and other carbon-intensive fuels, including subsidies by some Member States, should be seen as an obstacle to clean-energy innovation and technologies.
- The sustainable economic development in the ECO Region underpins increasing demand for more efficient, higher-quality energy industry and services in Member States.
- The ECO Region's energy markets are becoming increasingly international and evolve dynamically in line with the technological, economic and political changes.
- Therefore, driving innovation in energy sector plays a fundamental role for ensuring energy security and sustainability, notably efficient use of natural resources in the ECO Region.

## 6. ENERGY RESEARCH, DEVELOPMENT, INNOVATION AND TECHNOLOGIES (RDI&T)

- Prioritizing investments and reforms in energy research and innovation, to support the digital and green transition and ECO's recovery from the social and economic impact of the coronavirus crisis.
- Strengthen its resilience against future crises.
- Enhance access to excellent energy research and innovation for researchers across the ECO region; transfer results into the economy to ensure market uptake of energy research output and ECO's competitive leadership in technology.
- Making progress on the free circulation of knowledge, energy researchers and technology through stronger cooperation with ECO countries.

## 6. ENERGY RESEARCH, DEVELOPMENT, INNOVATION AND TECHNOLOGIES (RDI&T)

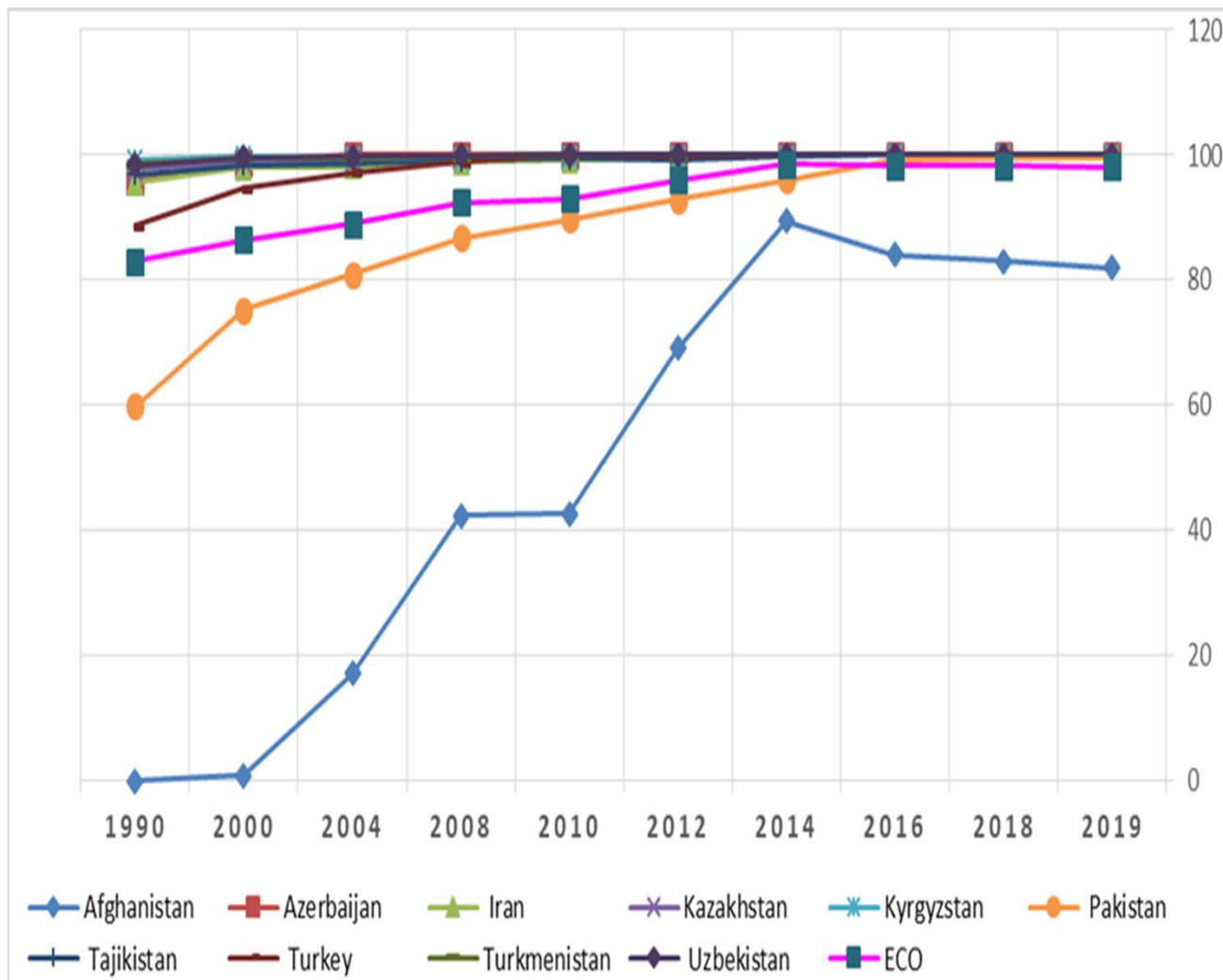
ECO's Strategic objectives  
on (RDI&T):

# 7. ENERGY ACCESS AND ENERGY POVERTY ERADICATION

- ECO Region will continue to ensure energy access via conventional energy sources in mid-term perspectives.
- Promoting energy access in ECO Member States requires leapfrogging the technologies and innovation in financing, regulation and business models with a view to extend the energy supply to remote areas and increase energy productivity potentials.
- Poverty reduction is a key to accomplish social development goals but indispensable for preserving environment, while the poor can adversely affect the environment by overusing natural resources.
- As regards energy poverty, it is widely recognized that energy poverty negatively impacts living conditions and health.
- Energy poverty can only be overcome or at least mitigated by a synergy of actions, notably within the social protection context under the competence of authorities on the national, regional or local levels.
- While lifting regulated prices, the Member States are required to set up a mechanism for protection of vulnerable consumers, which could preferably be provided through the general welfare system.
- Poverty is still persistent in the ECO Region and limits the opportunities for well-being for a large number of people.
- Beyond poverty challenges, inequality also threatens to disrupt efforts to achieve the goals of the Strategy.



Humanizing  
energy  
insecurity-  
political and  
justice

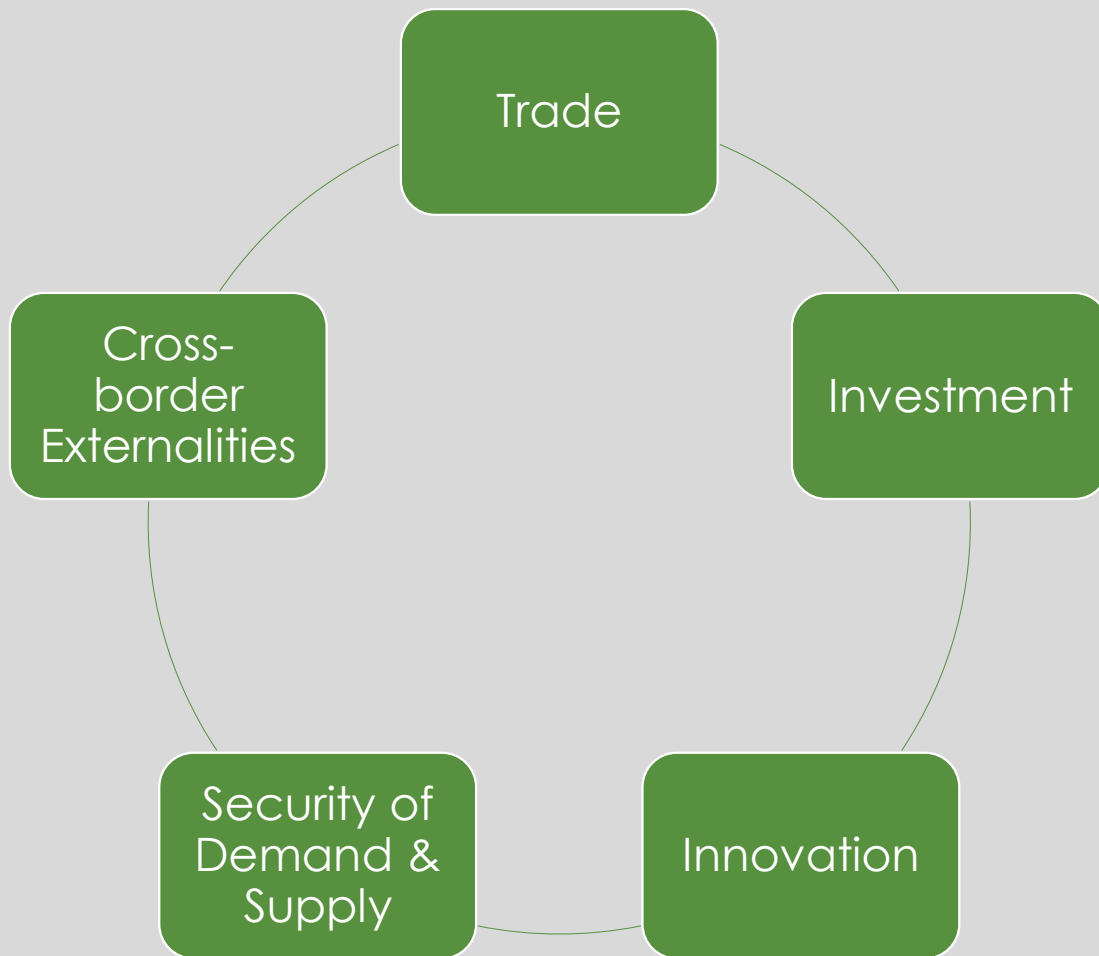


## 7. ENERGY ACCESS AND ENERGY POVERTY ERADICATION

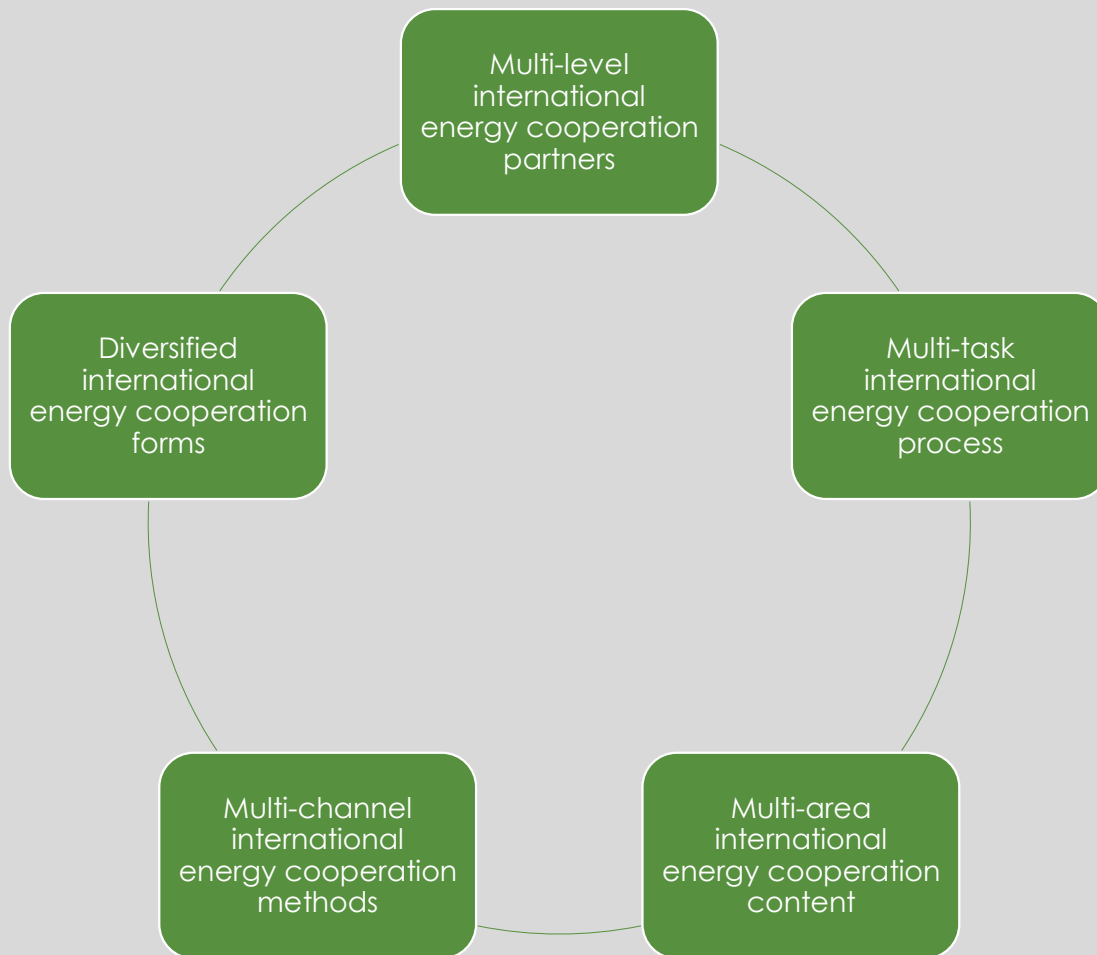
Electricity access - share of the population with access to electricity for ECO Member States, %.

## 8. INTERNATIONAL COOPERATION ON ENERGY

- It is neither viable nor necessitating for the ECO to carry out all the initiatives proposed in this strategy on its own.
- The comprehensive vision for ECO energy strategy brings new opportunities for partnerships between ECO and professional institutions.
- International organizations, particularly UN System play important role in assisting ECO Member States in formulating and implementation of energy policy and in development of intergovernmental cooperation on energy.



Five Pillars of International Cooperation



## 8- ECO's Strategic Vision of Future International Energy Cooperation



## 9. MONITORING MECHANISMS

- To achieve the actual implementation anticipated by the Strategy and to meet its expected targets/objectives, the feedback of the monitoring function is an energy system crucial component.
- Ultimate target of the monitoring process is to ensure the successful implementation of the Strategy provisions.
- The mid-term horizon of the Strategy provides a view of the necessary evolution of the ECO Member State's energy system within the context of a dynamic technological and international market.
- A key question looking forward will be how to deliver quality levels of governance in order to ensure that sufficient, large-scale investment continues to flow into innovative energy systems at the international level.
- Investment flows, particularly private foreign investment, will not likely materialize unless attractive signals are received by investors from both governments and markets.

ECO energy strategy objectives	KPI to monitor and evaluate
Building the necessary institutional capacity for promoting energy security and sustainable energy in ECO Region countries, enhancing energy efficiency and energy savings, renewable energy	<p>Monitor progress in the sphere of sustainable energy development made by other relevant international energy organizations, particularly UN Commissions, IEA, IRENA, G20, SE4ALL etc.</p> <p>Share of renewables (excluding big hydros) in overall primary energy supply of the country</p> <p>Energy efficiency increases as expressed via the indicators: final energy consumption per capita and energy intensity of total primary energy supply per GDP unit</p>
Improvement of energy infrastructure to enhance energy security in the ECO region, realization of new oil, gas and electricity transportation initiatives, aimed at strengthening cooperation among the ECO Member States, promotion of already existing infrastructure projects in the region.	<p>Organizing workshops, seminars and expert meetings concerning the exchange of information in the field of energy infrastructure development.</p> <p>Preparing reports and/or detailed information concerning new energy projects in the ECO region.</p>
Economic operation of energy markets	<p>Diversifying the firm presence in the energy market to protect economic competitiveness by calculating Herfindahl-Hirschman Index (HHI).</p> <p>Providing Antitrust Law that regulates and prohibits certain kinds of market behavior, such as monopoly and monopolistic practices.</p>
Decarbonization of energy sector	<p>Climate Change Performance Index (CCPI)</p> <p>Emissions reduction in the energy sector compared to 1990 base year (%)</p>

# MONITORING MECHANISMS



# Dostluk Joint Exploration

- Azerbaijan and Turkmenistan have signed a landmark agreement to jointly develop a long-disputed Caspian gas field, a move that could pave the way for the transit of Turkmenistan's massive gas reserves to Europe. (Jan. 21, 2021)
- Azerbaijan President Ilham Aliyev and Turkmenistan President Gurbanguly Berdimukhamedov signed a memorandum of understanding, via videoconference, on joint exploration of the hydrocarbon field now known as "Dostluk" or "Dostlug" – “friendship” in their respective languages.



# Iran-China Gas Pipeline



# Concluding Remarks

- Energy security remains a fascinating area of exploration, and despite growth in recent scholarship, much potential remains for future research
- Energy security is a multi-dimensional topic, one that cuts across typical binaries or dichotomies such as
  - Supply and demand
  - Consumers and prosumers
  - Importer and exporter
  - Security and insecurity
  - Independence and interdependence
  - Fossil fuels and renewables

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