

ECRANISTAN GHG EMISSION REDUCTION - DEMAND SECTOR 2017-2050



**El Ennis Ekranistanov
Omer Enissiyeu
Suwadda Numy**

Strategies for GHG reduction

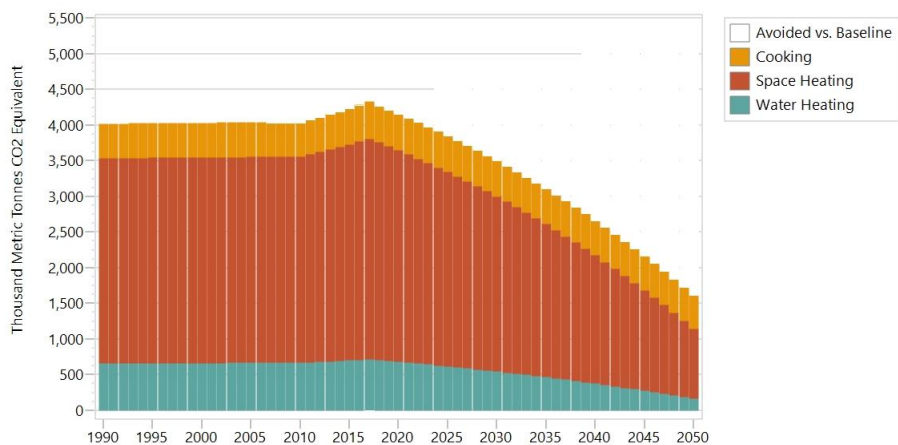
- Reduction of GHG in period 2017.-2050 by implementation of :
Energy efficiency strategy and
Fuel switch strategy
- Energy efficiency more significant in household subsector
- Fuel switch more dominant in transport and industry sectors
- Expecting that new technologies will replace old in housing,
- Expecting lower prices of new RES based vehicles and machinery
- Strengthening public, railway and air transport
- Investing in RES electricity production (hydro, solar and wind)
- Energy transformation change in 2017.-2050. period simultaneously

DEMAND SECTOR		
BRANCH	HOUSEHOLDS	
	Measures (2017-2050)	
	Fuel switch	Efficiency
LIGHTNING	-	Indascedent lightning deaceased from 68% (2017) to 10% (2050); Flouroscent lightning from 30 to 45% Led 2- 45%
COOKING	-Natural gas 30- 20 %, Lpg 30-20%	Electricity induction 0% -60 % , Electricity conduction 50 -0%
SPACE HEATING	Electricity direct 20%-30% Heat pumps 0% - 40% Natural gas 30%-5% LPG 30 -5 % Wood pellet 5% (no change) Biomass 15% (no change)	
AIR CONDITIONING	-	Existing 100% -20% Ideal 0 -80%
WATER HEATING	Solar 10% - 50% Natural gas 30-5% LPG 30-5% Electricity 30-40 %	
REFRIGERATION	-	Existing 100% -20% Ideal 0 -80%
OTHER	-	Existing 100% -35% Ideal 0 -65%

HOUSEHOLDS

One_Hundred Year GWP Direct At Point of Emissions

Demand Scenario Avoided vs. Baseline, All Fuels, All GHGs

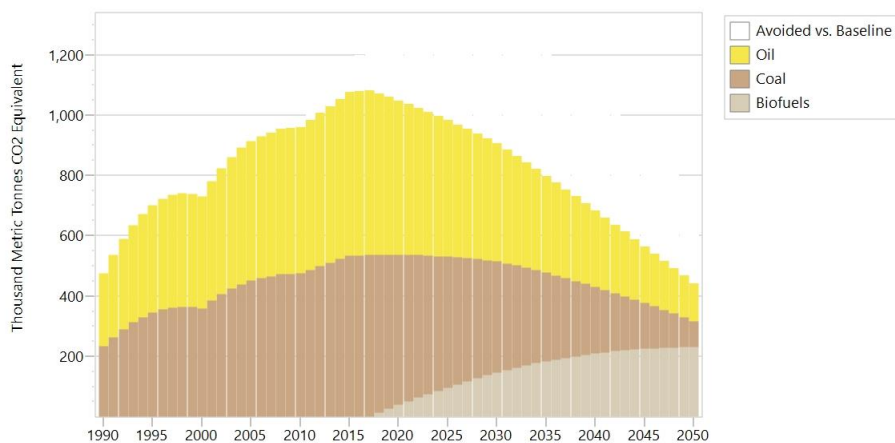


DEMAND SECTOR		
BRANCH	AGRICULTURE	
	Measures (2017-2050)	
	Fuel switch	Efficiency
All	Coal 28% - 5% Oil 39% -10% Biofuels 0-60% Electricity 33-25%	-
	Services	
All	Coal 11%-0% Oil 50-20% Natural gas 7-25% Electricity 32 -55%	
	Industries	
Petrochemical	Coal 36%-5%	-
Non-ferrous metals	Coal 30-5%	-
Machinery	Coal 32-5% Natural gas 5-15%	-
Food & Tobacco	Coal 57-7%	-
Pulp & Paper	Coal 52-10%	-
Other	Oil 40-25%	-

Agriculture

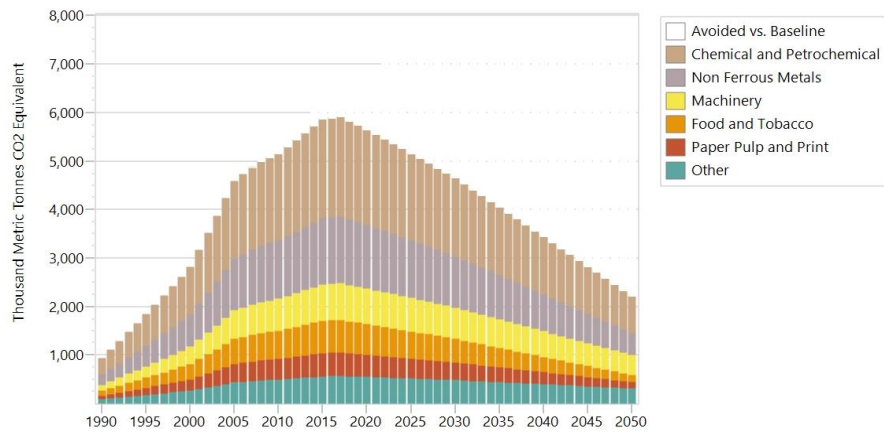
One_Hundred Year GWP Direct At Point of Emissions

Demand Scenario Avoided vs. Baseline, All GHGs



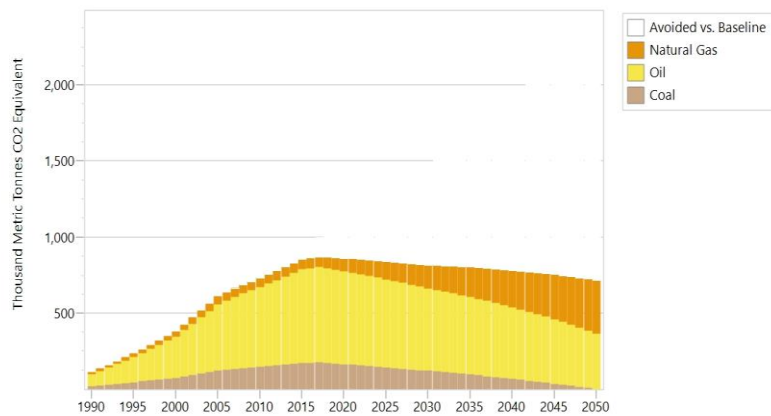
INDUSTRIES

One_Hundred Year GWP Direct At Point of Emissions
Demand Scenario Avoided vs. Baseline, All Fuels, All GHGs



Services

One_Hundred Year GWP Direct At Point of Emissions
Demand Scenario Avoided vs. Baseline, All GHGs

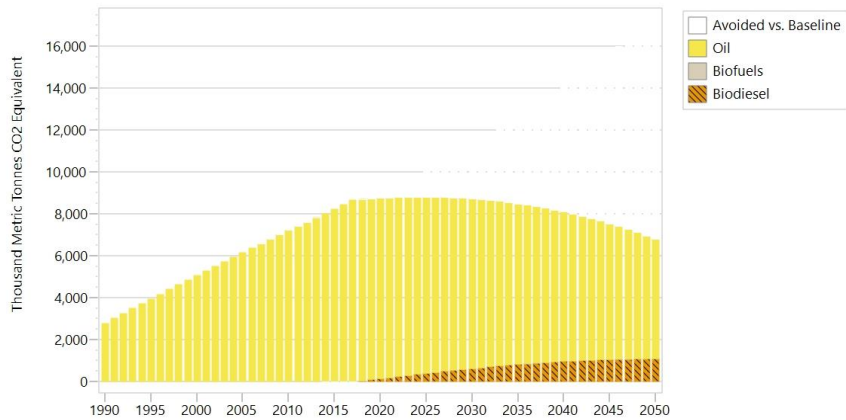


DEMAND SECTOR		
BRANCH	TRANSPORT	
	Measures (2017-2050)	
	Fuel switch	Efficiency
ROAD	<u>Passengers:</u> Hybrids 2-30%, Electric 0-15% <u>Freight:</u> Oil 100% -40% Biodiesel 0-60%	
RAIL	Oil 90%-0%, Electricity 10-100%	Passengers 35-50%, Freight 30-60%
AIR	-	Passengers 6-15%
WATER	Oil 100-60% Biofuels 0-40	
PIPELINE	Electricity 0-30%	



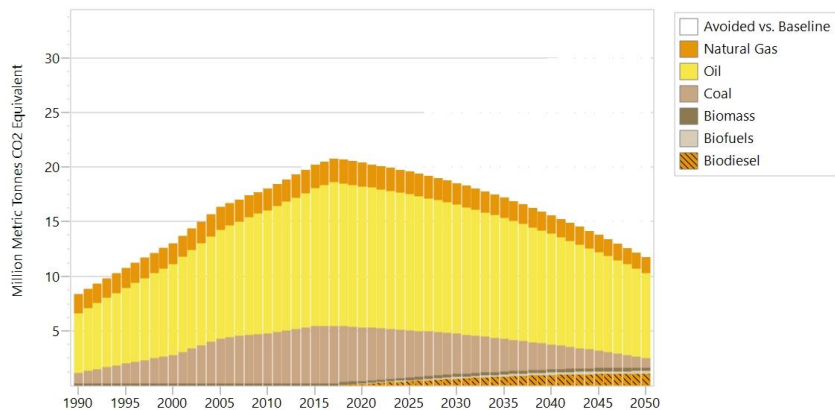
Transport

One_Hundred Year GWP Direct At Point of Emissions
Demand Scenario Avoided vs. Baseline, All GHGs



Total Demand CO2 emission change in period 2017-2050.

One_Hundred Year GWP Direct At Point of Emissions
Demand Scenario Avoided vs. Baseline, All GHGs

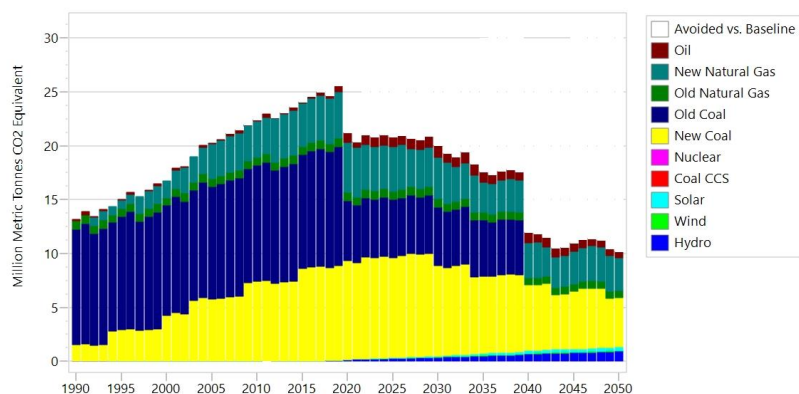


TRANSFORMATION:

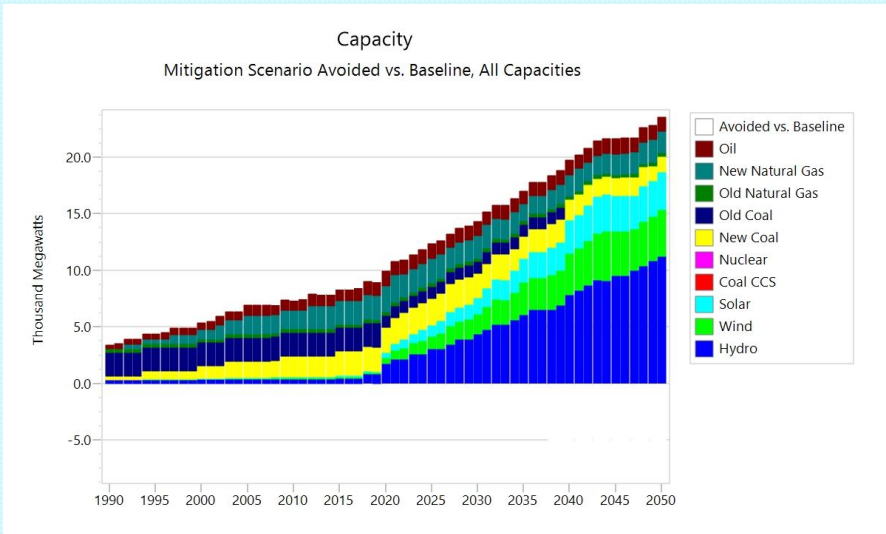
TRANSFORMATION	
TRANSFORMATION & DISTRIBUTION	
Losses - electricity	2017 18.7% - 2% 2050
ELECTRIC GENERATION – processes – importance factor:	
Solar	2017: 0.5 – 2050.: 4
Wind	2017: 0.5 – 2050.: 5
Hydro	2017: 0.5 – 2050.: 10
New coal	2017: 0.5 – 2050.: 4
New natural gas	2017: 8 – 2050.: 4
Oil	2017: 3– 2050.: 1

TRANSFORMATION – EMISSION CHANGES BY ENERGY SOURCES

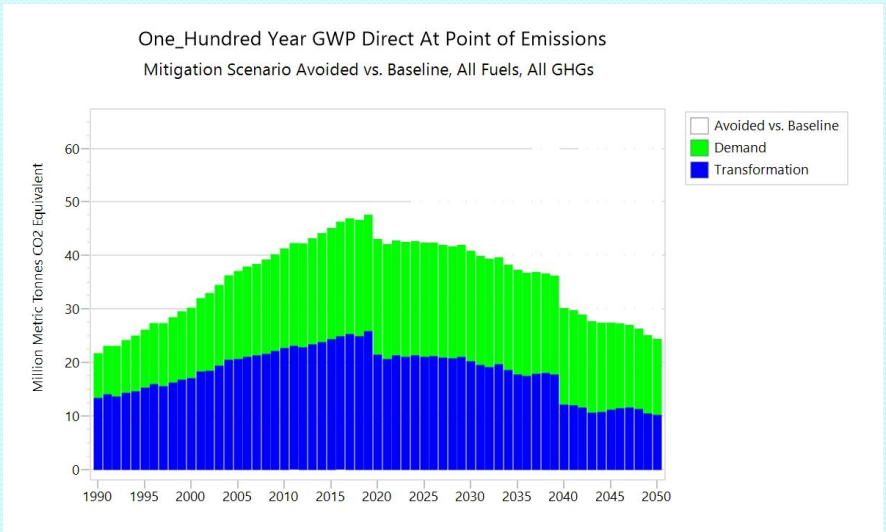
One_Hundred Year GWP Direct At Point of Emissions
Mitigation Scenario Avoided vs. Baseline, All Fuels, All GHGs



CAPACITY CHANGE 2017.-2050.



ECRANISTAN BASELINE TOTAL GHG EMISSION REDUCTION



Thank You for attention,



"Come and Visit Ecranistan where people are nice and GHG emissions are low"