Serbia

Homework 3

Data sources

- Official Gazete of Republic of Serbia
- Statistical Yearbooks
- Technical reports of EPS
- Energy strategy of Republic of Serbia (draft)

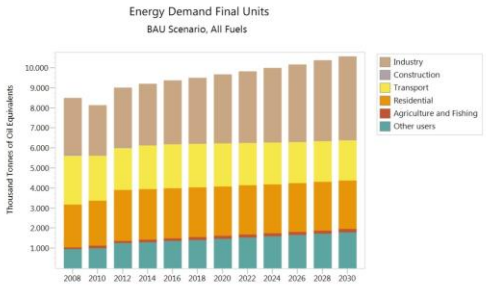
Scope of work

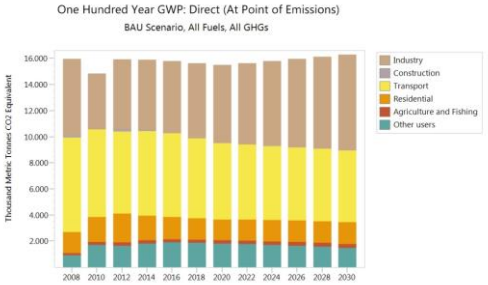
- Demand sector

  BAU and HAM scenario

- Transformation sector – HAM scenario

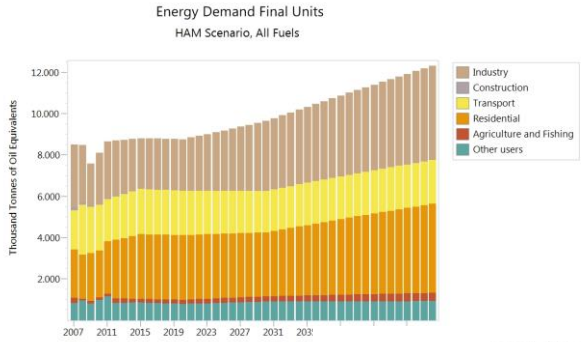
Demand sector - BAU

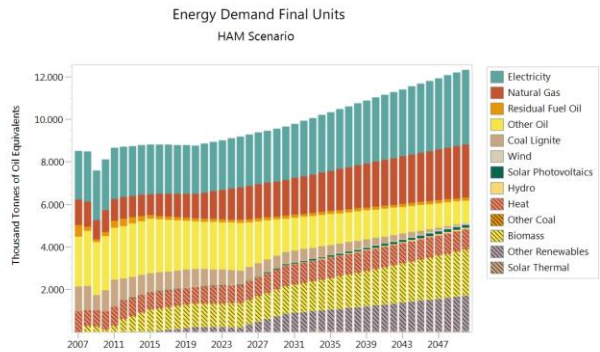


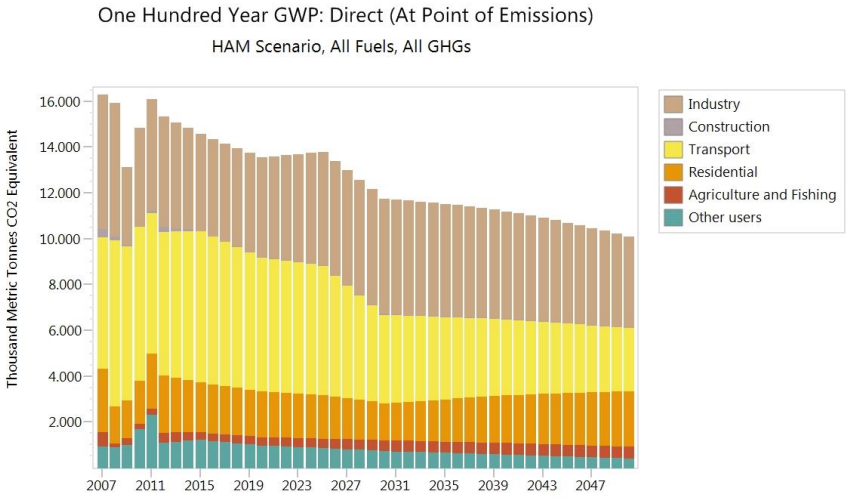


HAM scenario – demand sector

- Increase in energy demand from 2030. to 2050. by 20%
- Consumption of coal 0% in 2050.
- Decrease in consumption of oil products
- Increase in consumption of natural gas, biomass and renewable energy sources

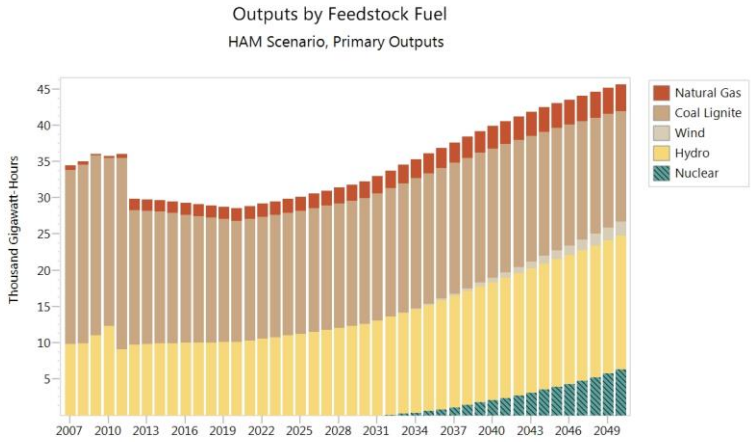


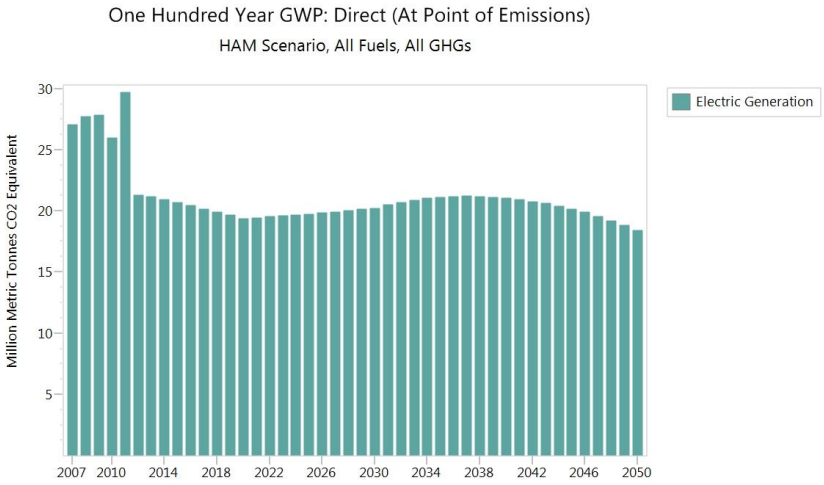




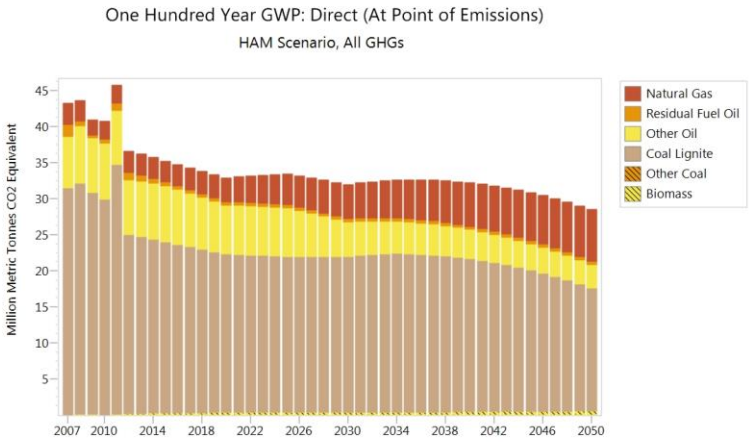
HAM scenario – transformation sector

- Decrease in coal power plants from 4500 MWel to 2000 MWel
- Increase in hydro power plants from 2835 to 3100 MWel
- Decrease in old gas power plants to 0 MWel
- Increase in wind capacities from 0 to 600 MWel
- New gas power plant 600 MWel
- Nuclear power plant capacities of 2000 MWel up to 2050.


Outputs by Feedstock Fuel
HAM Scenario, Primary Outputs
Thousand Gigawatt-Hours
45
40
35
30
25
20
15
10
5
2007 2010 2013 2016 2019 2022 2025 2028 2031 2034 2037 2040 2043 2046 2049
Natural Gas
Coal Lignite
Wind
Hydro
Nuclear


One Hundred Year GWP: Direct (At Point of Emissions)
HAM Scenario, All Fuels, All GHGs
Million Metric Tonnes CO2 Equivalent
30
25
20
15
10
5
2007 2010 2014 2018 2022 2026 2030 2034 2038 2042 2046 2050
Electric Generation

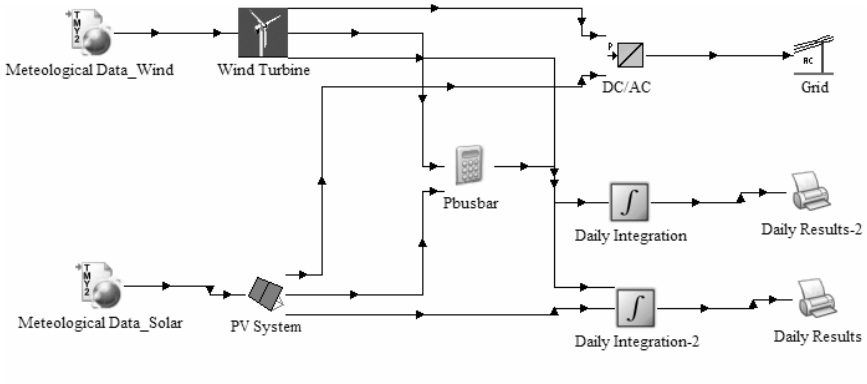
GHG emisions – demand and transformation sector



Cost benefit summary

Cumulative Costs & Benefits: 2007-2050. Relative to Scenario: BAU. Discounted at 5,0% to year 2009. Units: Million 2009 U.S. Dollar	HAM
Demand	-1.890,2
Industry	-
Construction	-
Transport	-
Residential	-1.890,2
Agriculture and Fishing	-
Other users	-
Transformation	-109,2
Distribution_Losses	-
Own Use	-
Electric Generation	-109,2
Resources	7.379,2
Production	7.379,2
Imports	-
Exports	-
Unmet Requirements	-
Environmental Externalities	-
Non Energy Sector Costs	-
Net Present Value	5.379,8
GHG Savings (Mill Tonnes CO2e)	384,8
Cost of Avoiding GHGs (US Dollar/Tonne CO2e)	14,0

Appendix


Meteological Data_Wind
Wind Turbine
DC/AC
Grid
Pbusbar
Daily Integration
Daily Results-2
Meteological Data_Solar
PV System
Daily Integration-2
Daily Results