

Scenario Comparison Plots – Live Script

This Live Script visualises key macro-economic and energy indicators for multiple policy scenarios. It reads pre-computed scenario output tables (CSV) and produces indexed or percentage plots for a 25-year horizon.

Christoph Schult

House-keeping

```
clearvars
close all
clc

addpath('C:\dynare\6.1\matlab') % -- adjust if necessary
load('structScenarioResultsssp185.mat')

% Scenario meta-data
casScenarios = {'Baseline', 'NZ', 'NZ_constInt', 'NZ_constEE', 'NZ_constEEInt'};
caslegendentries = {'PDP8', 'NZ', 'NZ with constant emission efficiency', 'NZ with
constant energy productivity', 'NZ with constant emission and energy efficiency'};
casLinetypes = {'-', '+-', '-.', '-o', '-^'};

% casScenarios      = {'Baseline', 'NZ'};                      % add more if available
% caslegendentries  = {'PDP8', 'NZ'};                         % legend labels
% casLinetypes       = {'-', '+'};                            % line styles / markers

% Read scenario CSV dumps -----
dsall = struct();
for iscen = 1:numel(casScenarios)
    sScen           = char(casScenarios(iscen));
    filename        = ['ExcelFiles/Output/ssp185' sScen '.csv'];
    dsall.(sScen)   = readtable(filename);
end

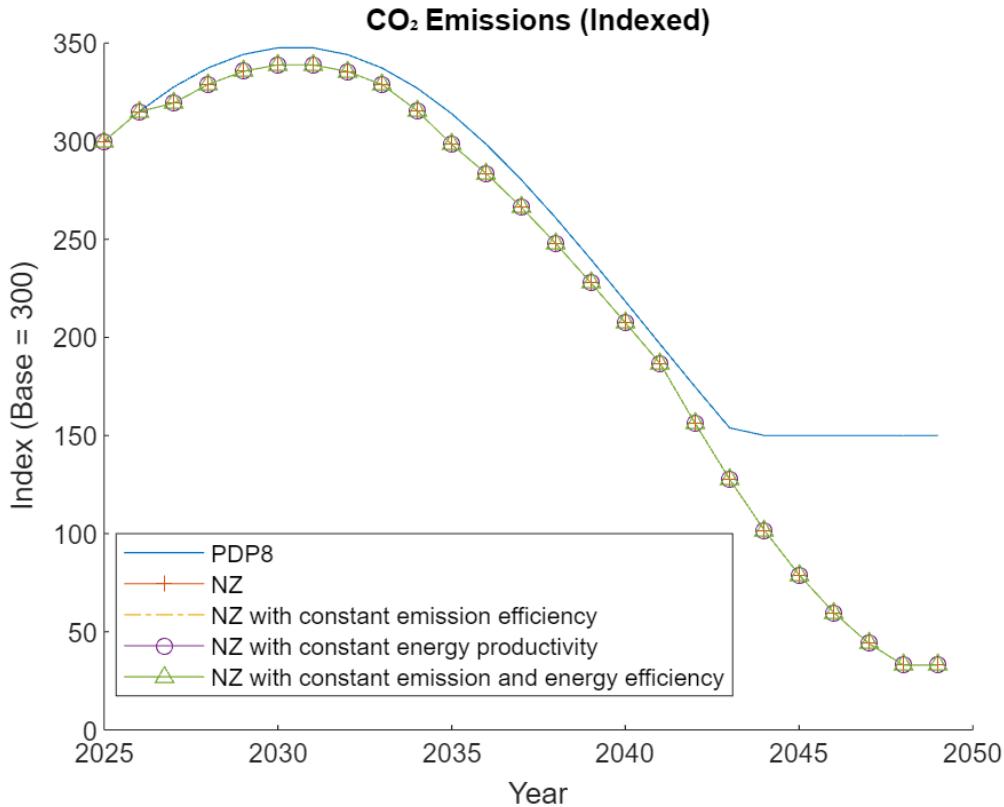
Tplot = 25;          % number of years to display (starting from first row)
```

Helper function (inline)

```
normalize = @(x) x ./ x(1) * 100; % index to 100 in first period
```

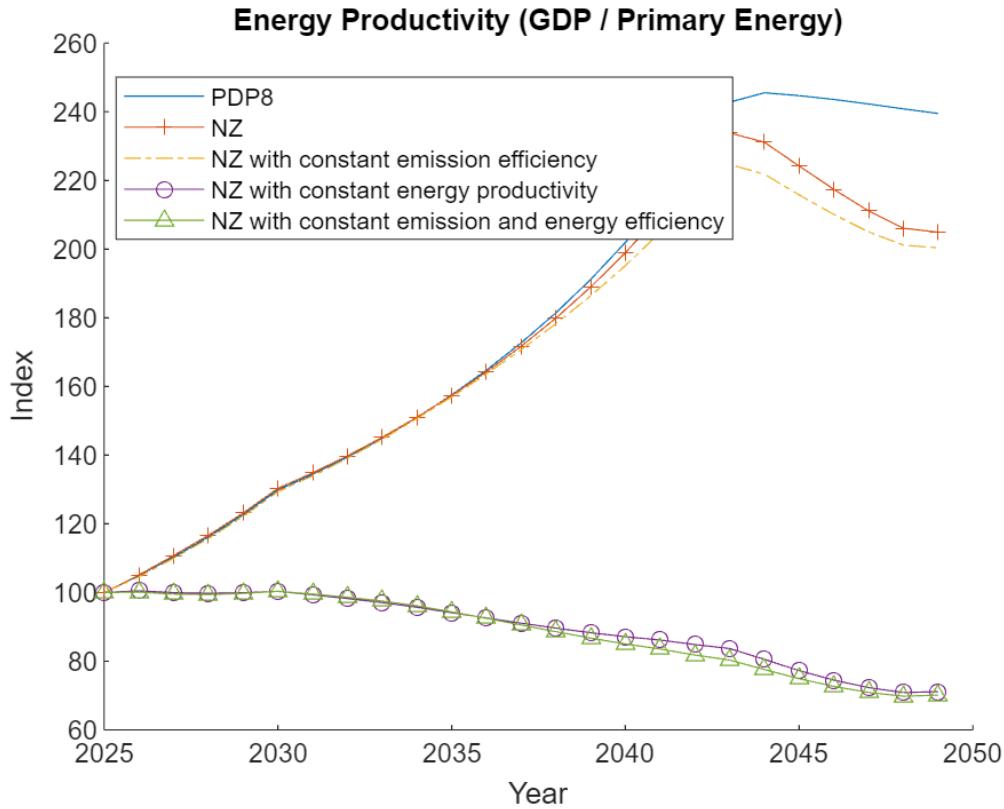
1. Emissions

```
figure('Name','Emissions'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), ds.E_1(1:Tplot) ./ ds.E_1(1) * 300, casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index (Base = 300)'); title('CO2 Emissions (Indexed)');
legend(caslegendentries, 'Location', 'best'); hold off
```



2. Energy Productivity

```
figure('Name','Energy productivity'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    prod = ds.Y_1 ./ (ds.Q_D_2_1 + ds.Q_D_3_1);
    plot(ds.Year(1:Tplot), normalize(prod(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Energy Productivity (GDP / Primary Energy)');
legend(casLegendEntries, 'Location', 'best'); hold off
```

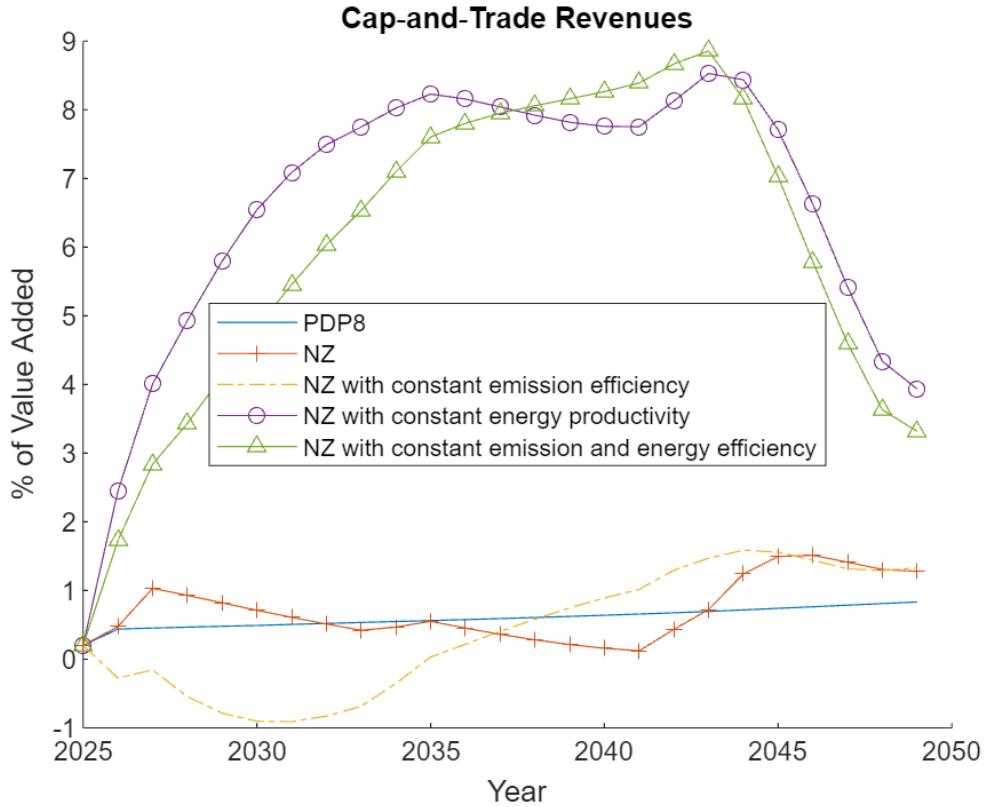


3. Cap-and-Trade Revenues

```

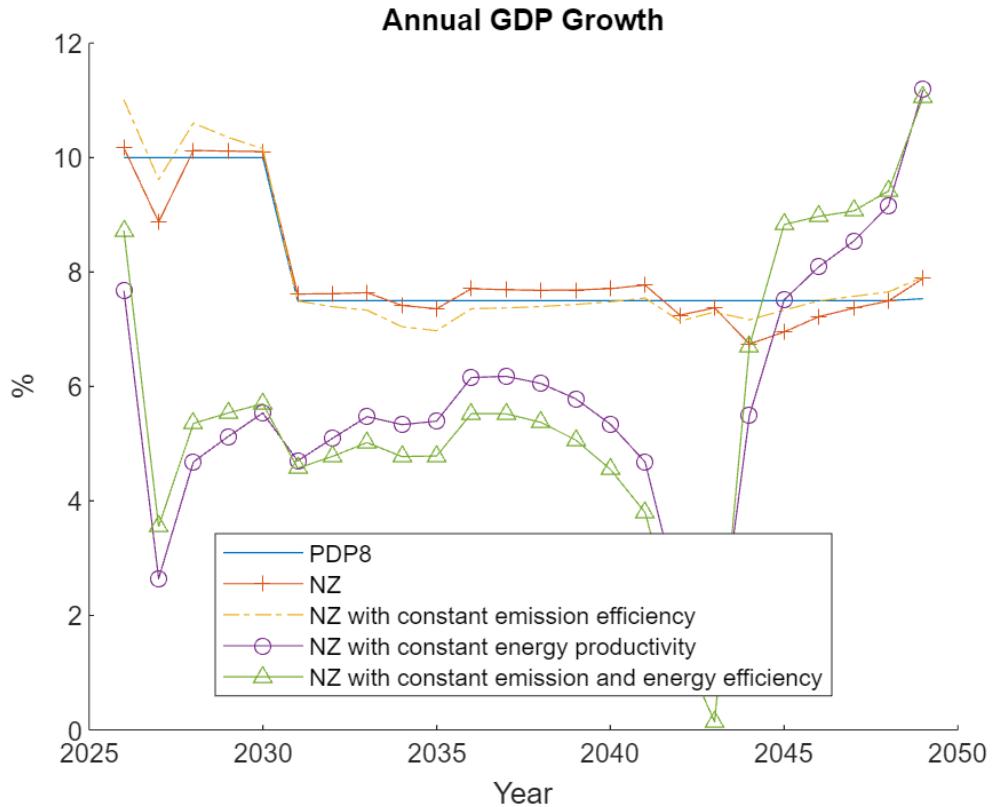
figure('Name','Cap and Trade Revenues'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    rev = ds.PE_1 .* ds.E_1 ./ (ds.Q_1 - ds.Q_I_1) * 100; % share of VA
    plot(ds.Year(1:Tplot), rev(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('% of Value Added'); title('Cap-and-Trade Revenues');
legend(casLegendEntries, 'Location', 'best'); hold off

```



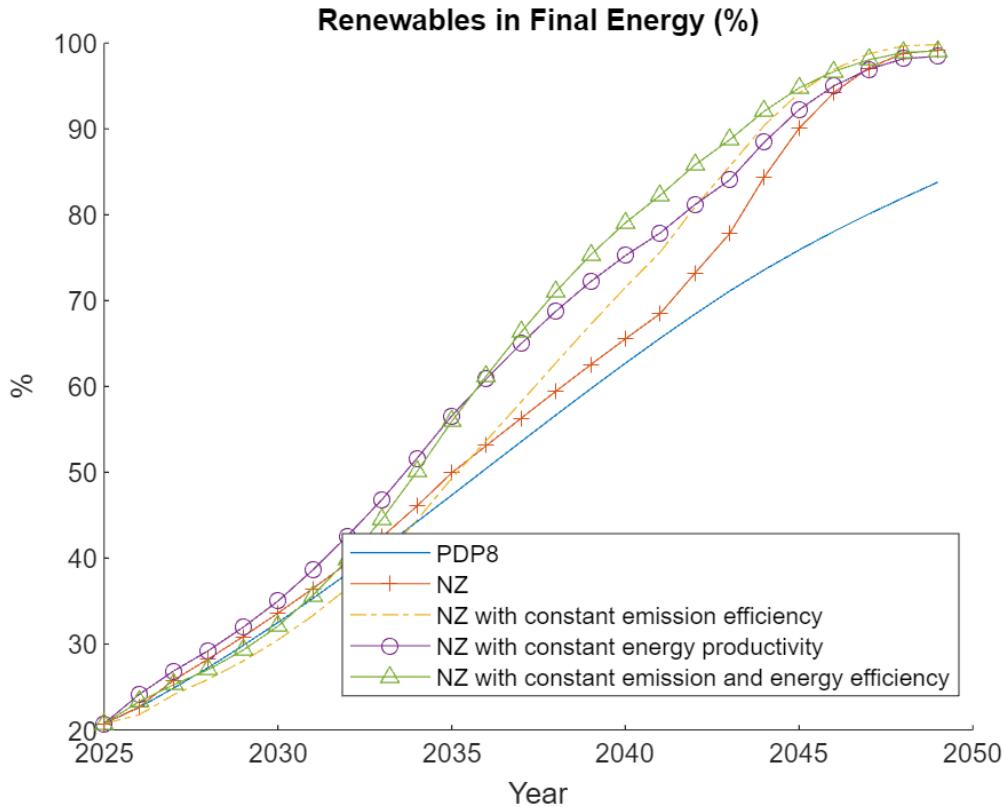
4. GDP Growth

```
figure('Name','GDP Growth'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    gdp_growth = (ds.Y_1(2:Tplot) ./ ds.Y_1(1:Tplot-1) - 1) * 100;
    plot(ds.Year(2:Tplot), gdp_growth, casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Annual GDP Growth'); legend(casLegendEntries,
'Location', 'best'); hold off
```



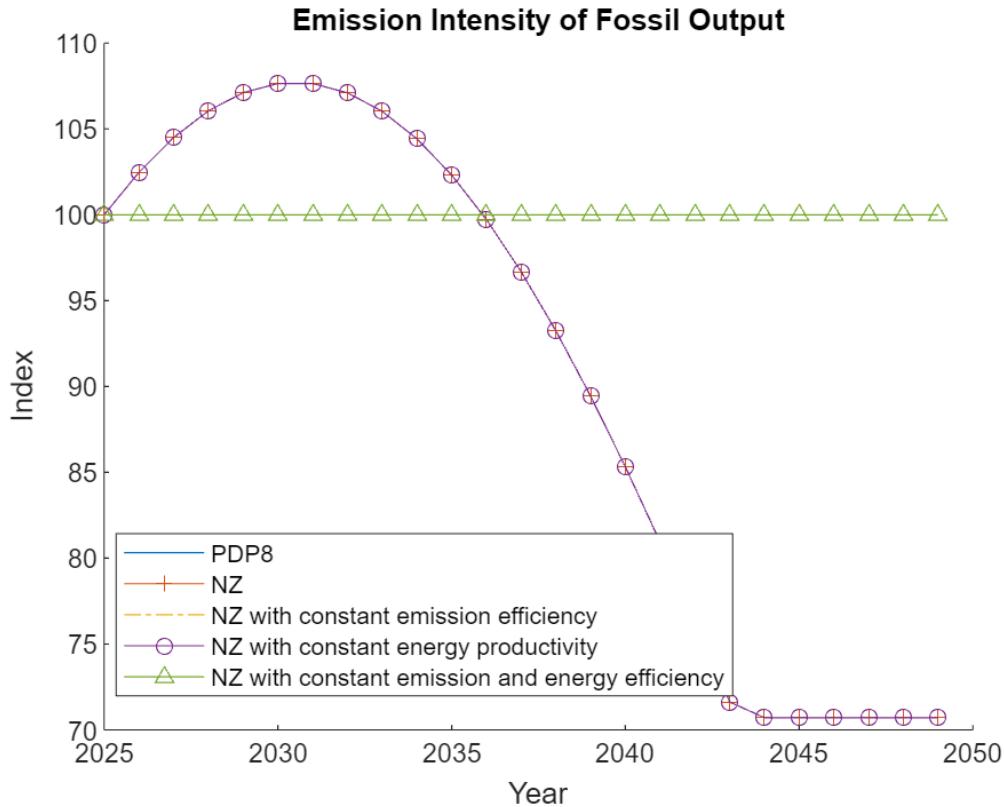
5. Renewable Energy Share

```
figure('Name','Renewable Energy Share'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    res_share = ds.Q_D_3_1 ./ (ds.Q_D_2_1 + ds.Q_D_3_1) * 100;
    plot(ds.Year(1:Tplot), res_share(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Renewables in Final Energy (%)');
legend(casLegendEntries, 'Location', 'best'); hold off
```



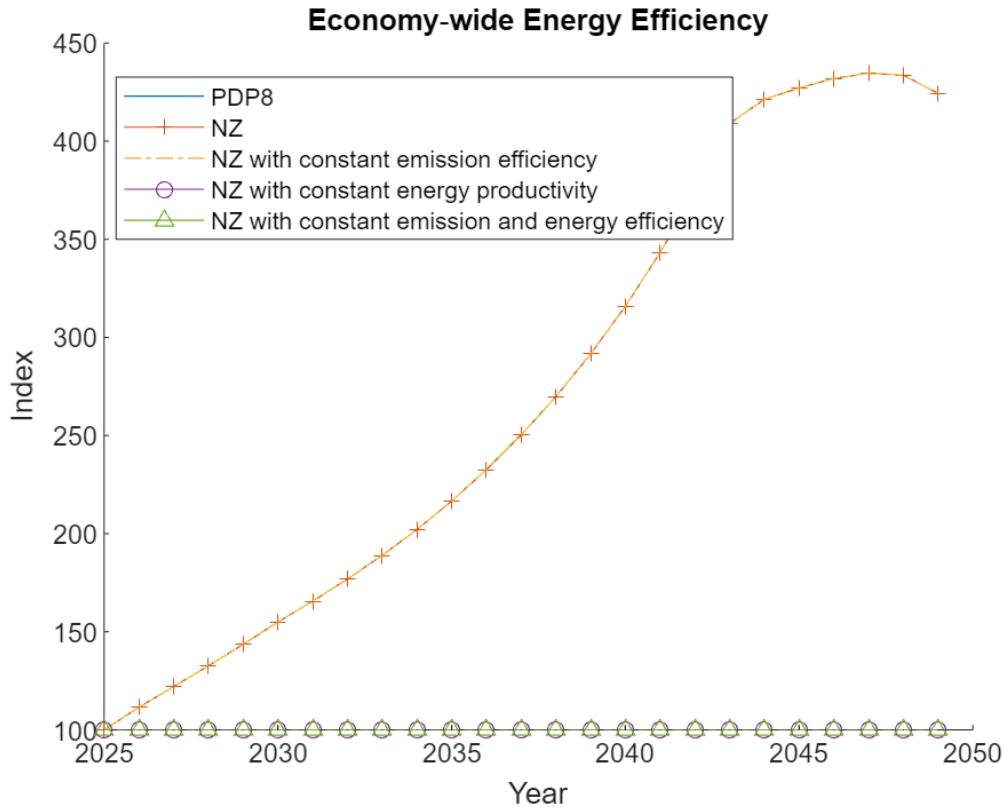
6. Emission Intensity

```
figure('Name','Emission Intensity'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.kappaE_2_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Emission Intensity of Fossil Output');
legend(caslegendentries, 'Location', 'best'); hold off
```



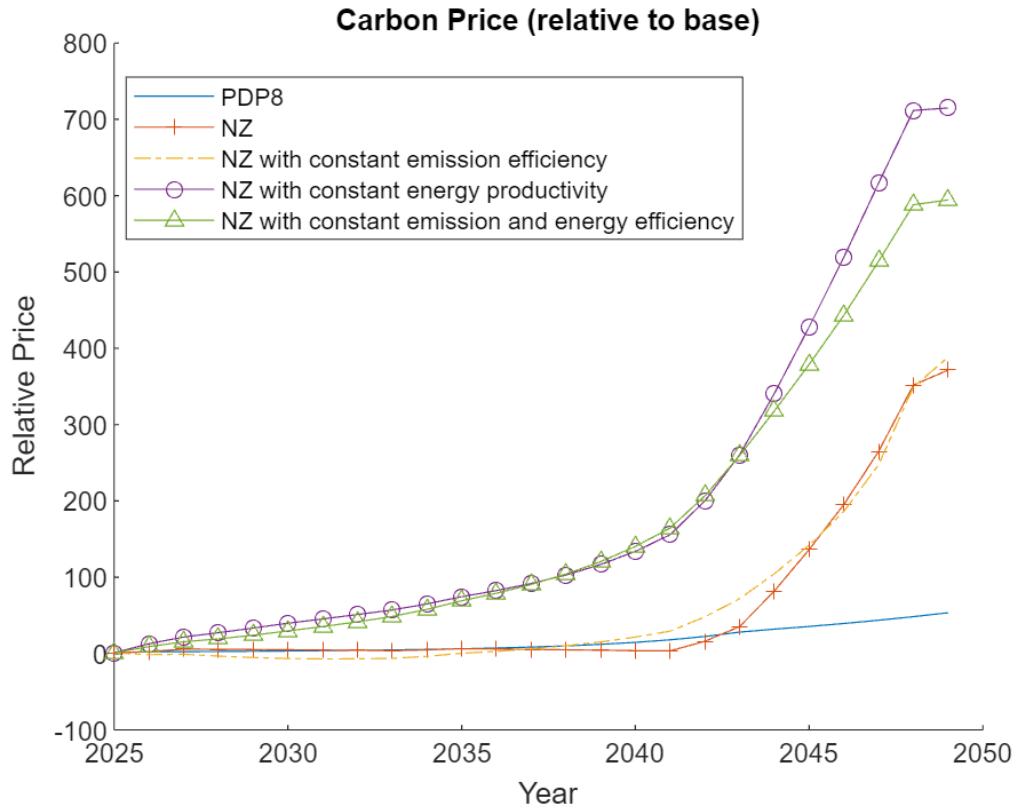
7. Energy Efficiency (Economy-wide)

```
figure('Name','Energy efficiency'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.EE_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Economy-wide Energy Efficiency');
legend(caslegendentries, 'Location', 'best'); hold off
```



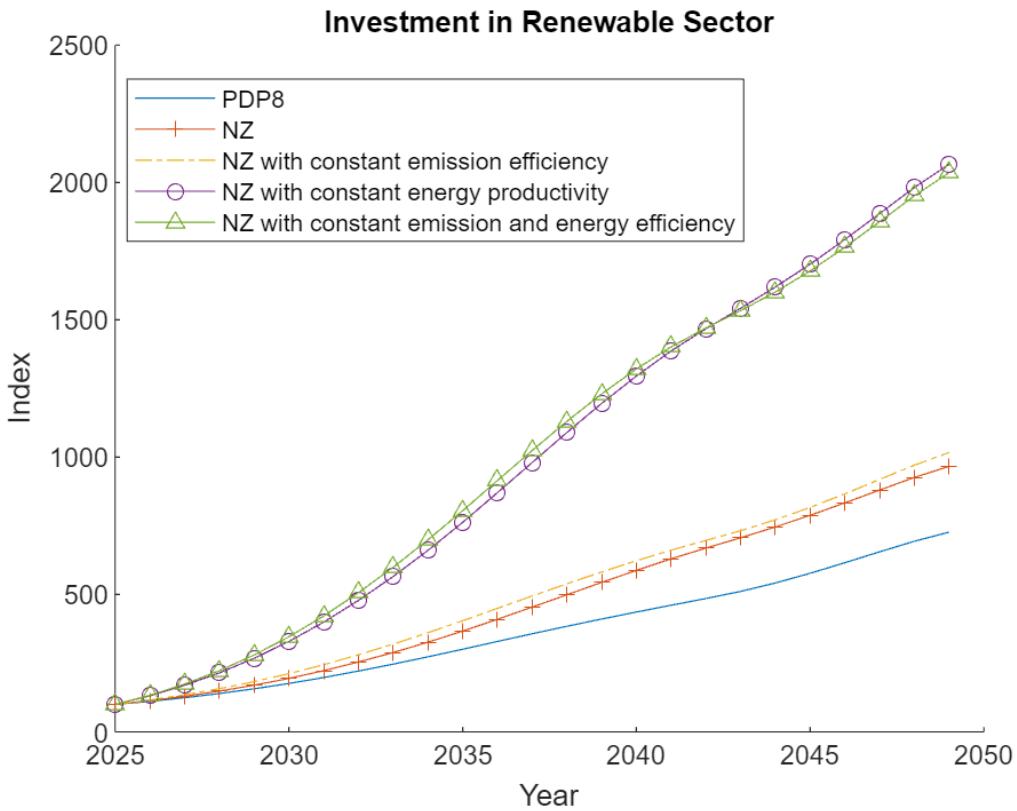
8. Emission Price

```
figure('Name','Emission price'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), ds.PE_1(1:Tplot) ./ ds.PE_1(1), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Relative Price'); title('Carbon Price (relative to base)');
legend(caslegendentries, 'Location', 'best'); hold off
```



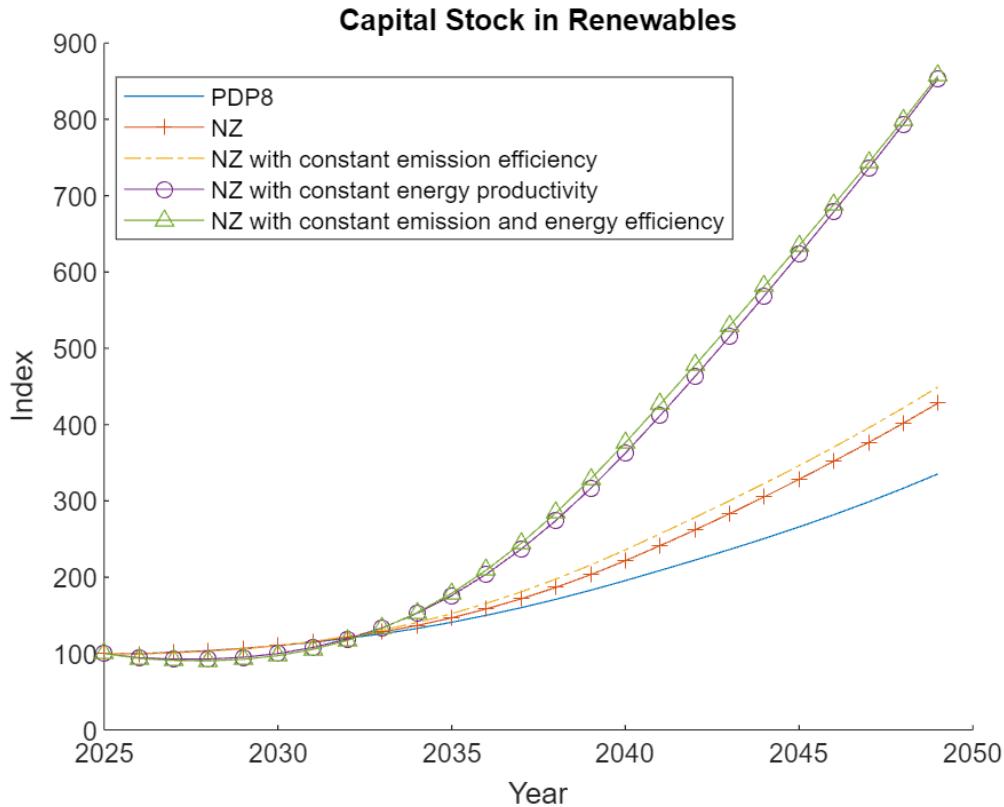
9. Investment in Renewables

```
figure('Name','Investments - Renewables'); hold on
for iscen = 1: numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.I_3_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Investment in Renewable Sector');
legend(caslegendentries, 'Location', 'best'); hold off
```



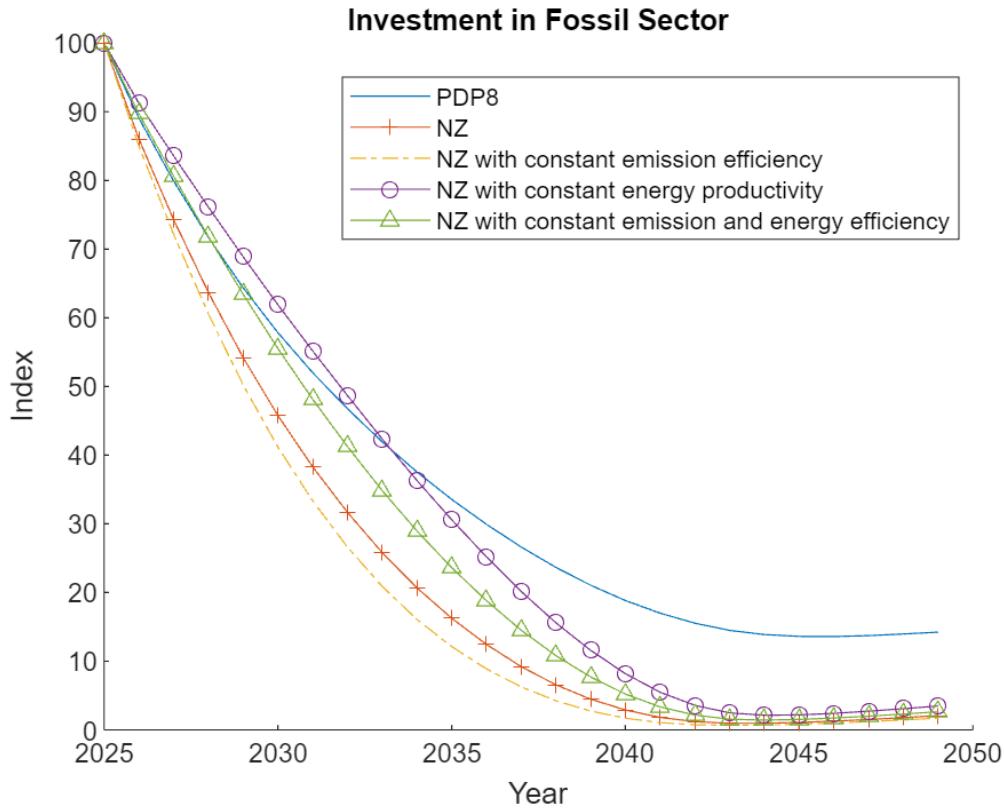
10. Capital Stock – Renewables

```
figure('Name','Capital - Renewables'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.K_3_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Capital Stock in Renewables');
legend(caslegendentries, 'Location', 'best'); hold off
```



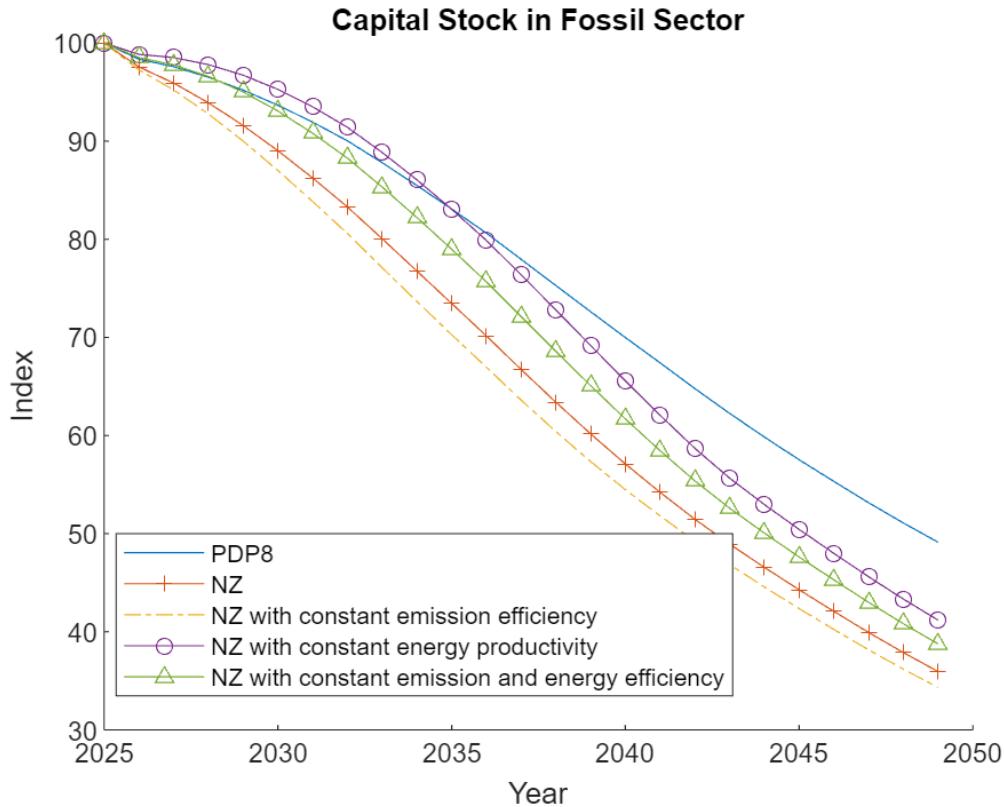
11. Investment in Fossil

```
figure('Name','Investments - Fossil'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.I_2_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Investment in Fossil Sector');
legend(caslegendentries, 'Location', 'best'); hold off
```



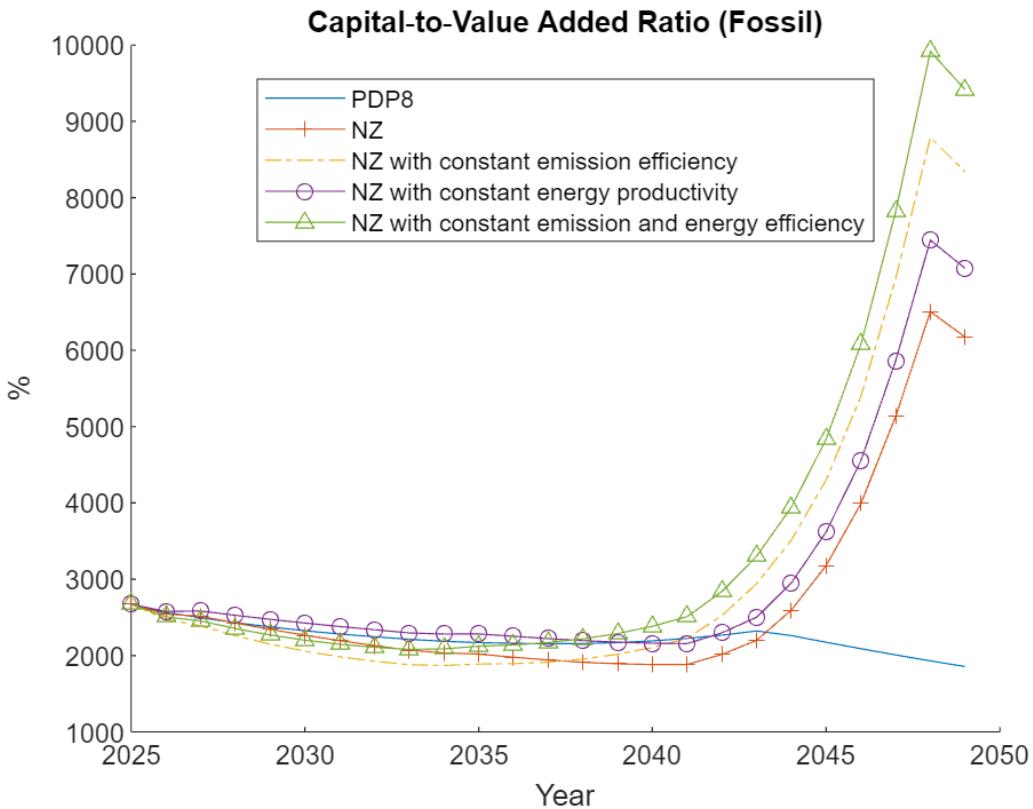
12. Capital Stock – Fossil

```
figure('Name','Capital - Fossil'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.K_2_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Capital Stock in Fossil Sector');
legend(caslegendentries, 'Location', 'best'); hold off
```



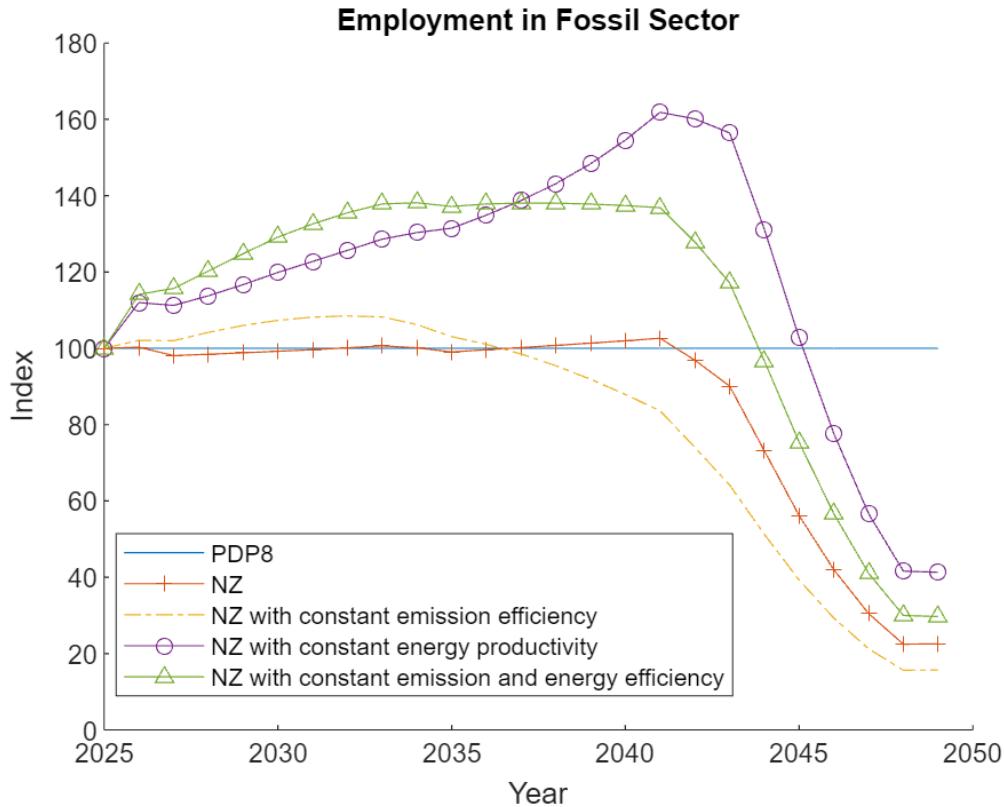
13. Capital / Value-Added Ratio (Fossil)

```
figure('Name','Capital-to-Value Added - Fossil'); hold on
for iscen = 1: numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    ratio = ds.K_2_1 ./ ds.Q_2_1 * 100; % % of VA
    plot(ds.Year(1:Tplot), ratio(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Capital-to-Value Added Ratio (Fossil)');
legend(casLegendEntries, 'Location', 'best'); hold off
```



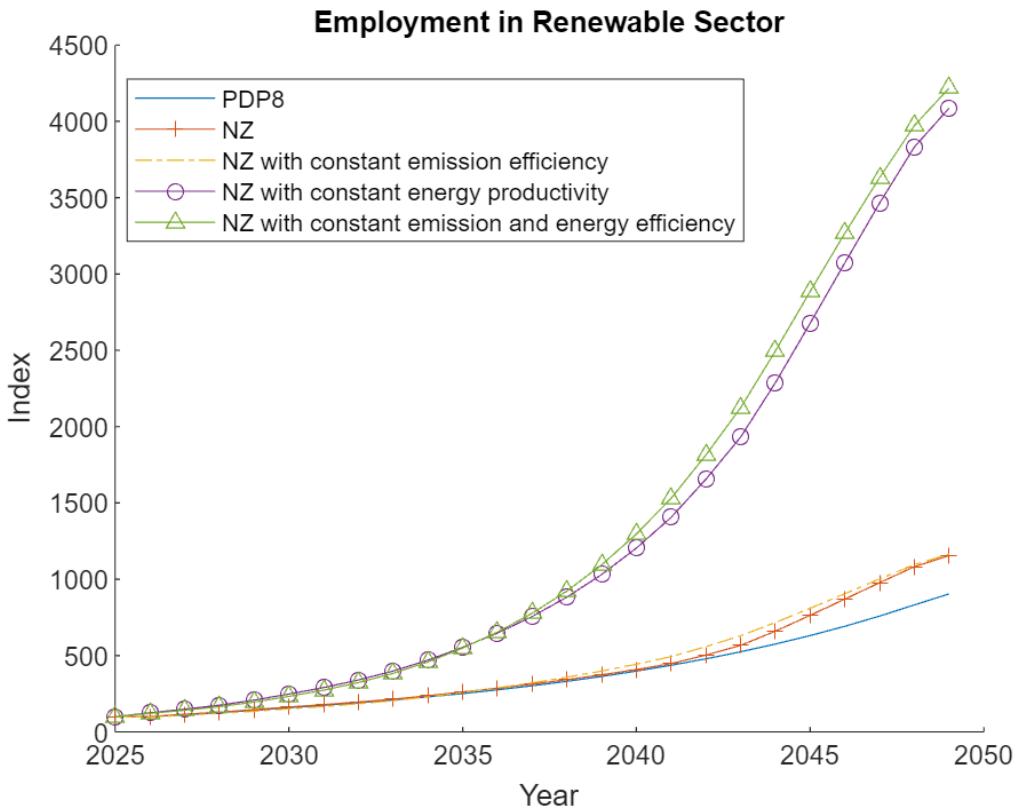
14. Employment – Fossil Sector

```
figure('Name','Employment - Fossil'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.N_2_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Employment in Fossil Sector');
legend(caslegendentries, 'Location', 'best'); hold off
```



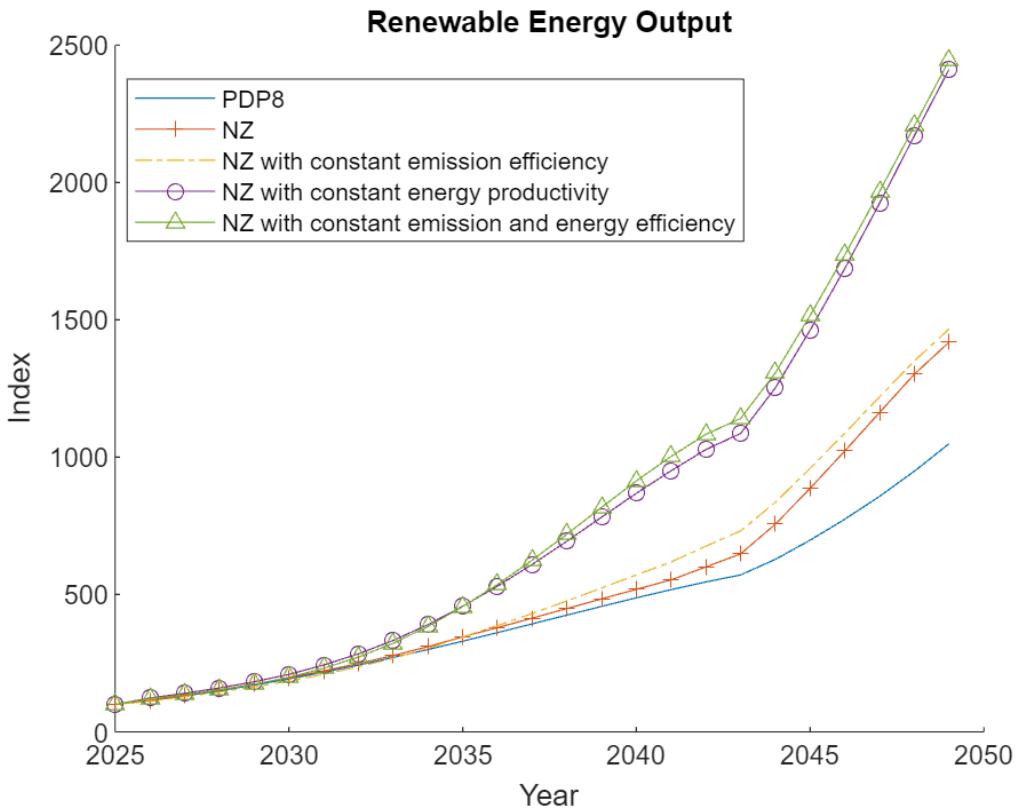
15. Employment – Renewable Sector

```
figure('Name','Employment - Renewables'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.N_3_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Employment in Renewable Sector');
legend(caslegendentries, 'Location', 'best'); hold off
```



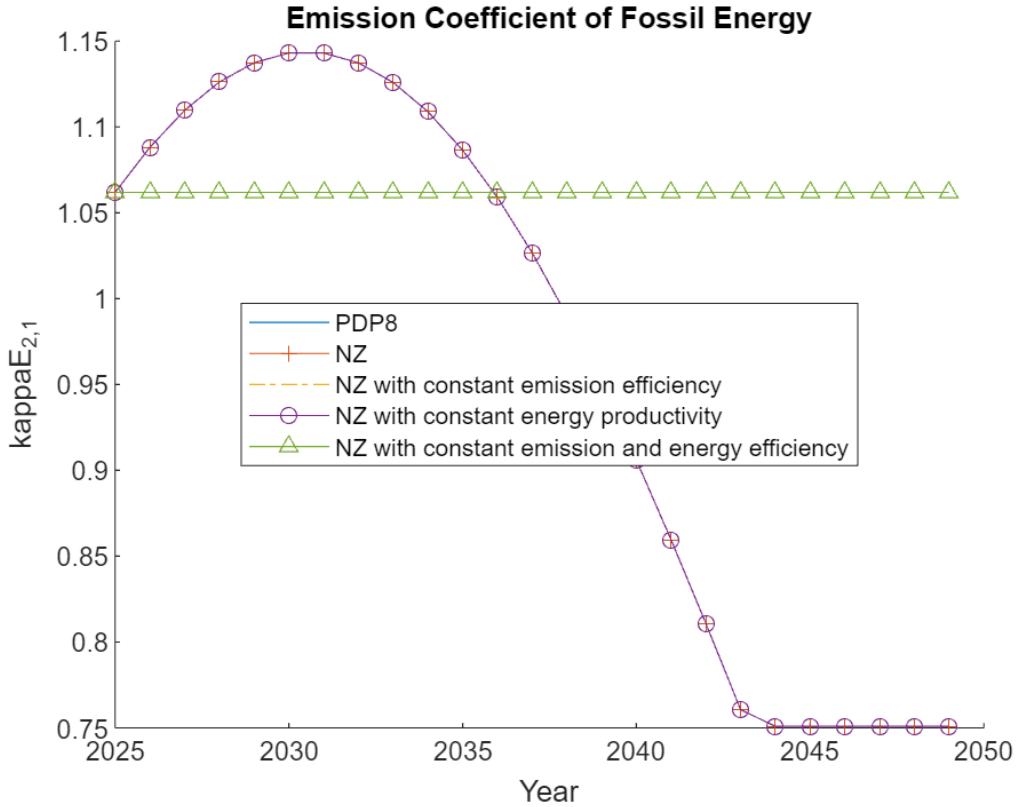
16. Energy Output – Renewables (Index)

```
figure('Name','Energy Output - Renewables'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.Q_3_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Renewable Energy Output');
legend(caslegendentries, 'Location', 'best'); hold off
```



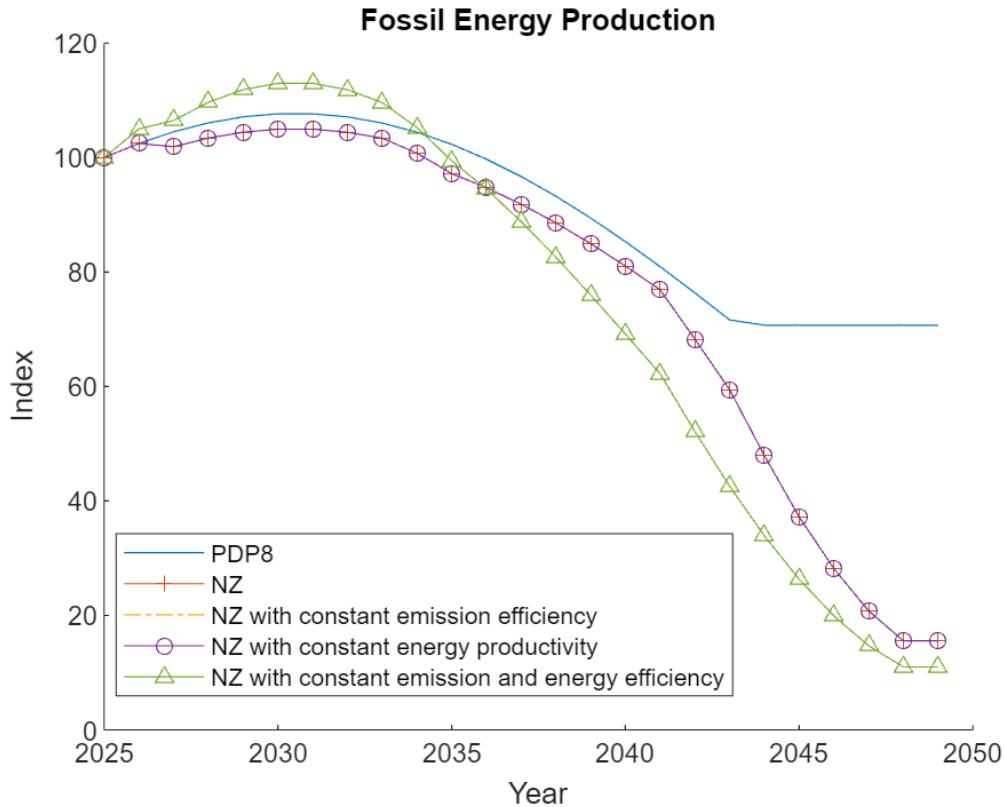
17. Energy Efficiency ($\kappa_{E_{21}}$ – absolute)

```
figure('Name','Energy Efficiency - kappaE'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), ds.kappaE_2_1(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('kappaE_{2,1}'); title('Emission Coefficient of Fossil
Energy'); legend(caslegendentries, 'Location', 'best'); hold off
```



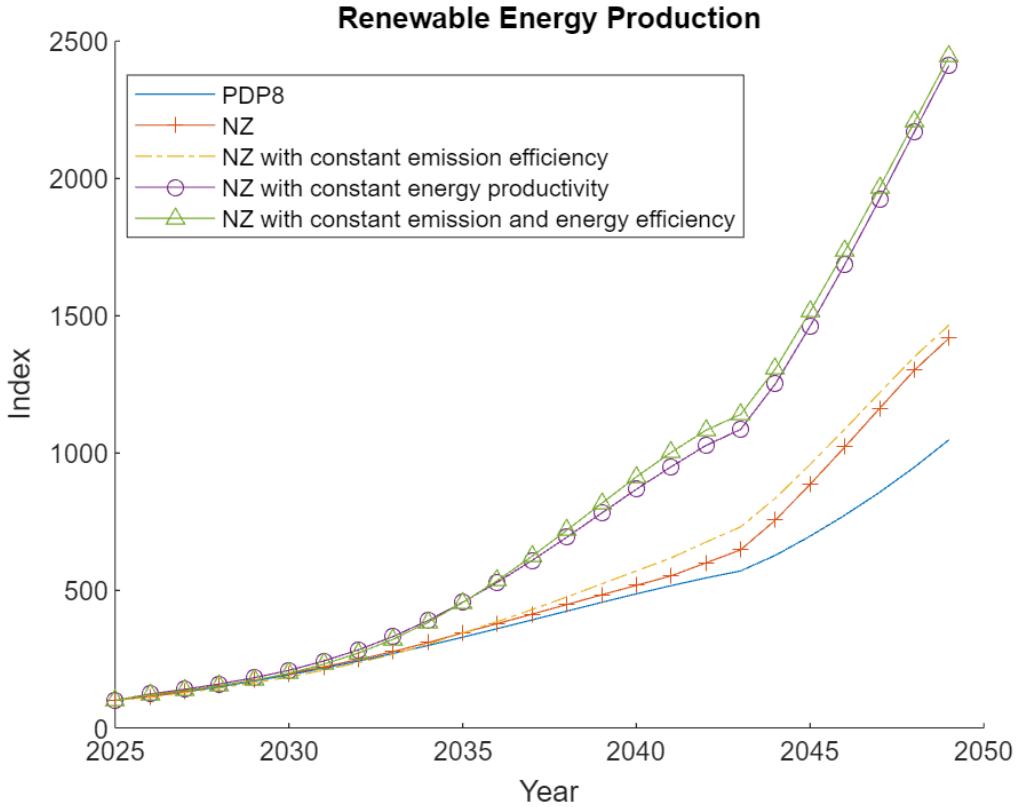
18. Fossil Energy Production

```
figure('Name','Fossil Energy Production'); hold on
for iscen = 1: numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.Q_2_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Fossil Energy Production');
legend(caslegendentries, 'Location', 'best'); hold off
```



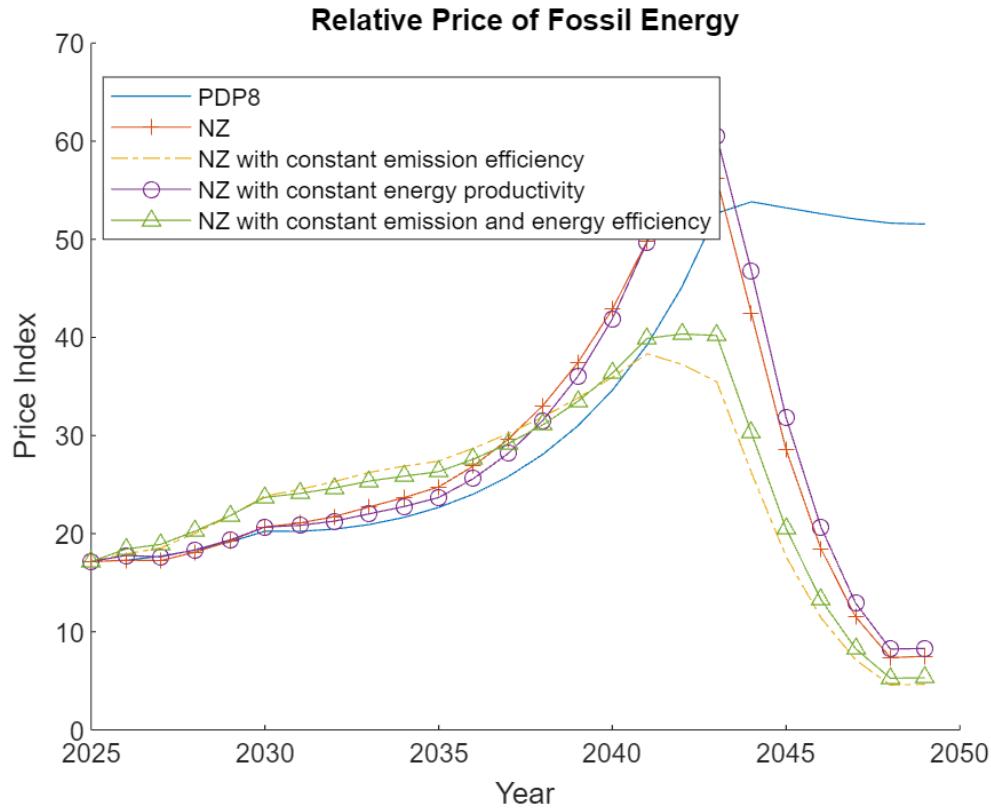
19. Renewable Energy Production

```
figure('Name','Renewable Energy Production'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), normalize(ds.Q_3_1(1:Tplot)), casLinetypes{iscen});
end
xlabel('Year'); ylabel('Index'); title('Renewable Energy Production');
legend(caslegendentries, 'Location', 'best'); hold off
```



20. Fossil Energy Price (Value Added)

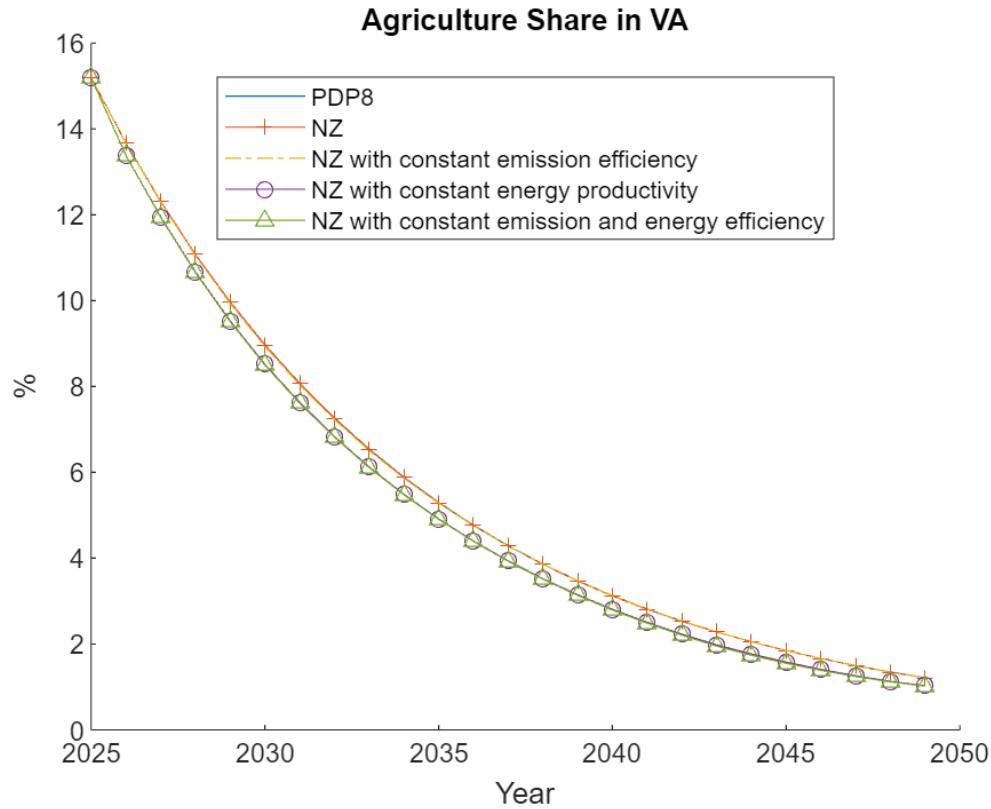
```
figure('Name','Fossil Energy Price - VA'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    plot(ds.Year(1:Tplot), ds.P_2_1(1:Tplot) * 100, casLinetypes{iscen});
end
xlabel('Year'); ylabel('Price Index'); title('Relative Price of Fossil Energy');
legend(caslegendentries, 'Location', 'best'); hold off
```



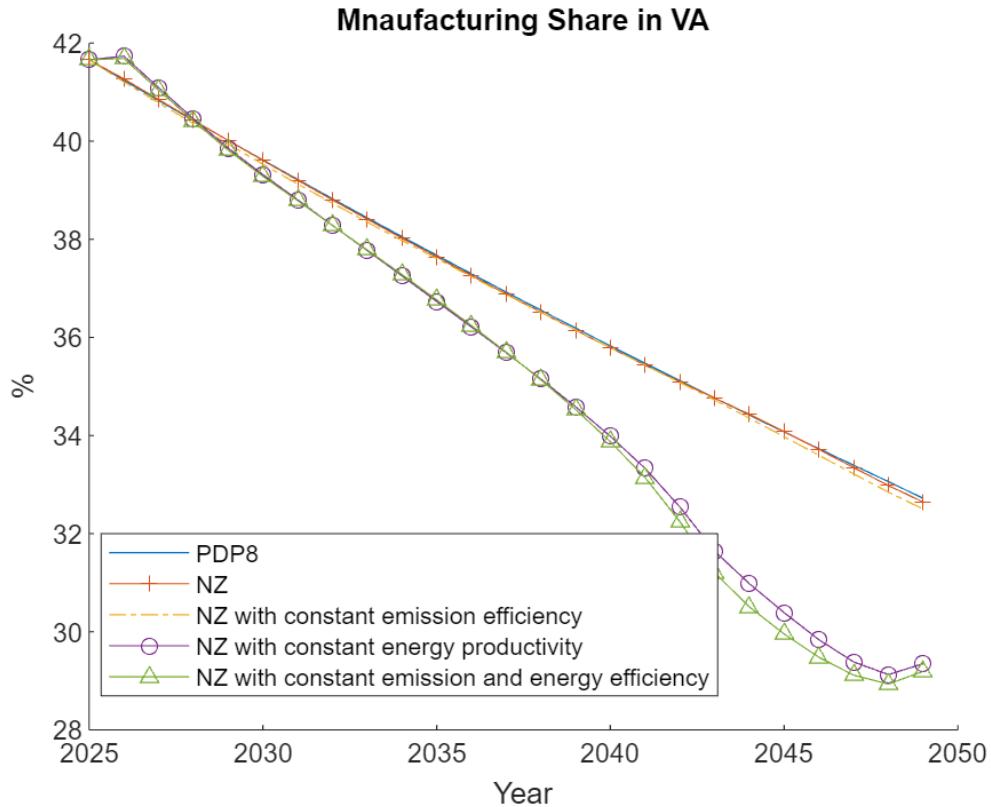
21. Sectoral Shares in Value Added

Agriculture

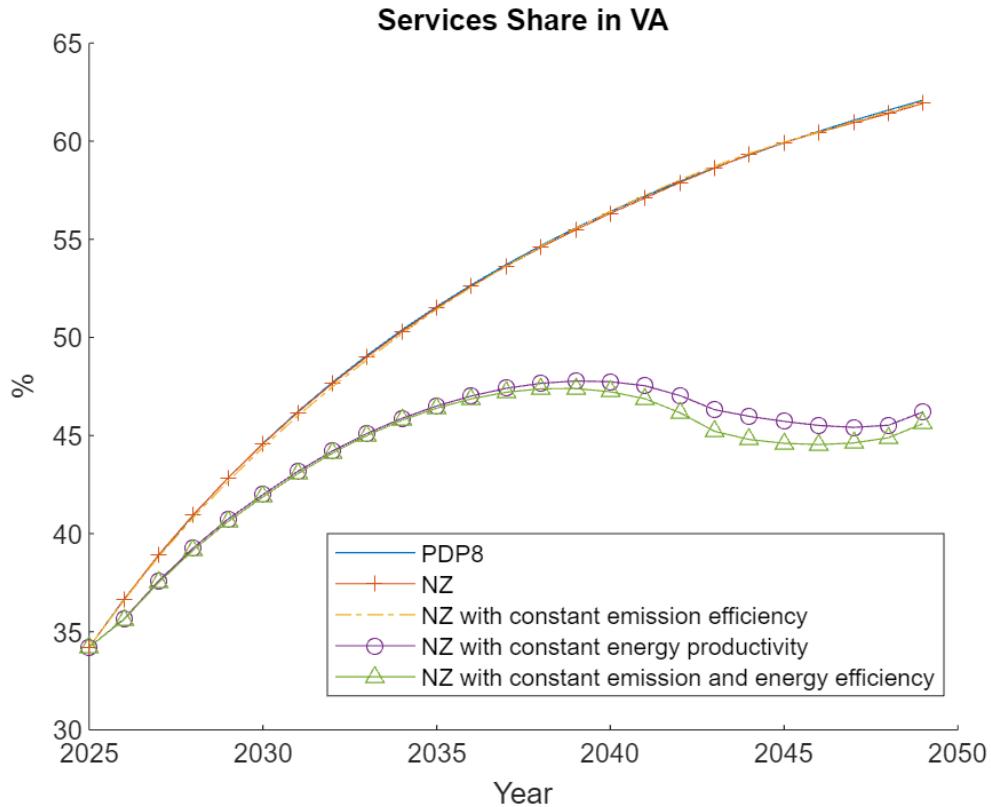
```
figure('Name','VA Share - Agriculture'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    shareAg = ds.P_1_1 .* ds.Y_1_1 ./ ds.Y_1 * 100;
    plot(ds.Year(1:Tplot), shareAg(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Agriculture Share in VA');
legend(caslegendentries, 'Location', 'best'); hold off
```



```
% Manufacturing
figure('Name','VA Share - Manufacturing'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    shareMan = ds.P_4_1 .* ds.Y_4_1 ./ ds.Y_1 * 100;
    plot(ds.Year(1:Tplot), shareMan(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Manufacturing Share in VA');
legend(caslegendentries, 'Location', 'best'); hold off
```



```
% Services
figure('Name','VA Share - Servies'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    shareMan = ds.P_5_1 .* ds.Y_5_1 ./ ds.Y_1 * 100;
    plot(ds.Year(1:Tplot), shareMan(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Services Share in VA');
legend(caslegendentries, 'Location', 'best'); hold off
```



```
% Energy
figure('Name','VA Share - Energy'); hold on
for iscen = 1:numel(casScenarios)
    ds = dsall.(casScenarios{iscen});
    shareMan = ds.P_3_1 .* ds.Y_3_1 ./ ds.Y_1 * 100;
    plot(ds.Year(1:Tplot), shareMan(1:Tplot), casLinetypes{iscen});
end
xlabel('Year'); ylabel('%'); title('Energy Share in VA'); legend(casLegendEntries,
'Location', 'best'); hold off
```

