

# The Changing Wealth of Nations 2021

Capturing Climate Risks

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Climate Change-Related Statistics 1 Oct. 2020



Wealth accounts available for 150 countries, 1995 to 2018

## Long Term Prosperity and Well-Being

National Income / GDP

Total Wealth

**Produced  
Capital**

**Extractive  
Natural  
Capital**

**Renewable Natural Capital**

**Human Capital**

**Net  
Foreign  
Assets**

Machinery,  
Equipment,  
Structures, Urban  
Land

FF and  
Minerals

Agricultural  
Land

Forests

Protected  
Areas

Fisheries,  
Mangroves

Male/Female,  
Employed/Self-employed

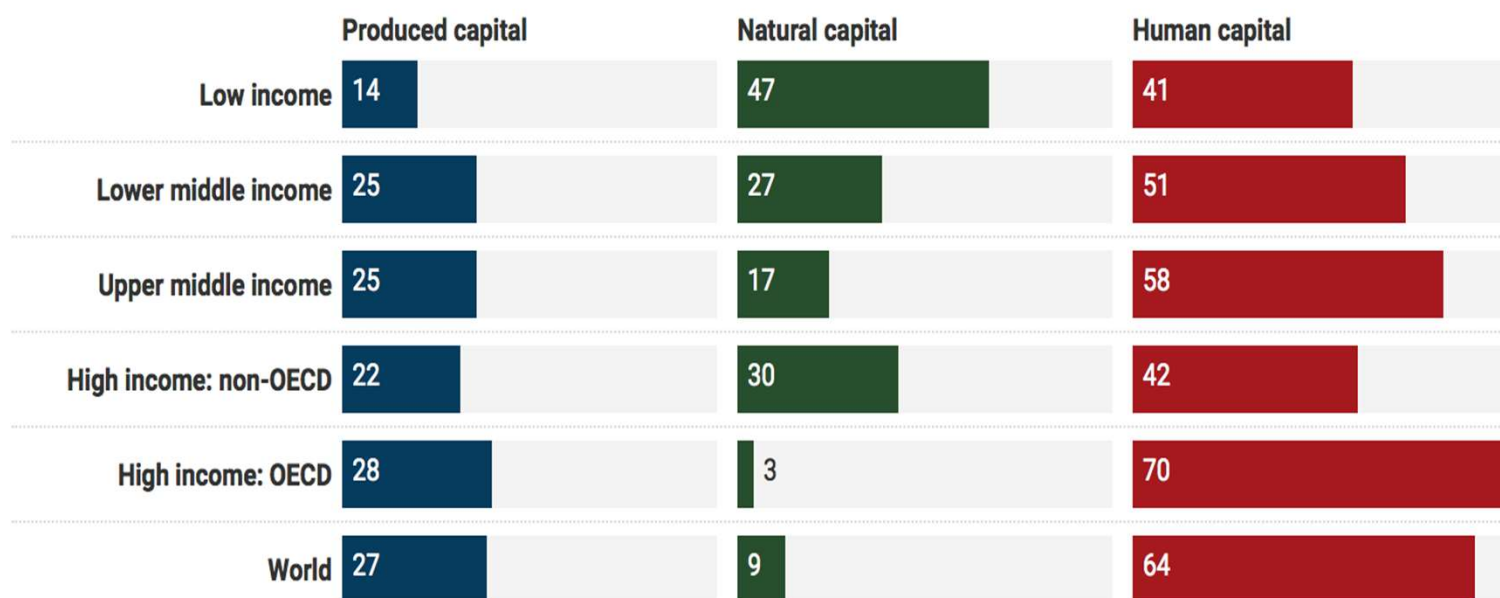
Assets-  
Liabilities

# Wealth Accounting 2014: Development as portfolio management

- Is current GDP sustainable, or are we liquidating capital?
- How much to save vs. consume?
- What assets to invest in?

Low- and middle-income countries: leverage natural capital to build infrastructure, human capital, etc.

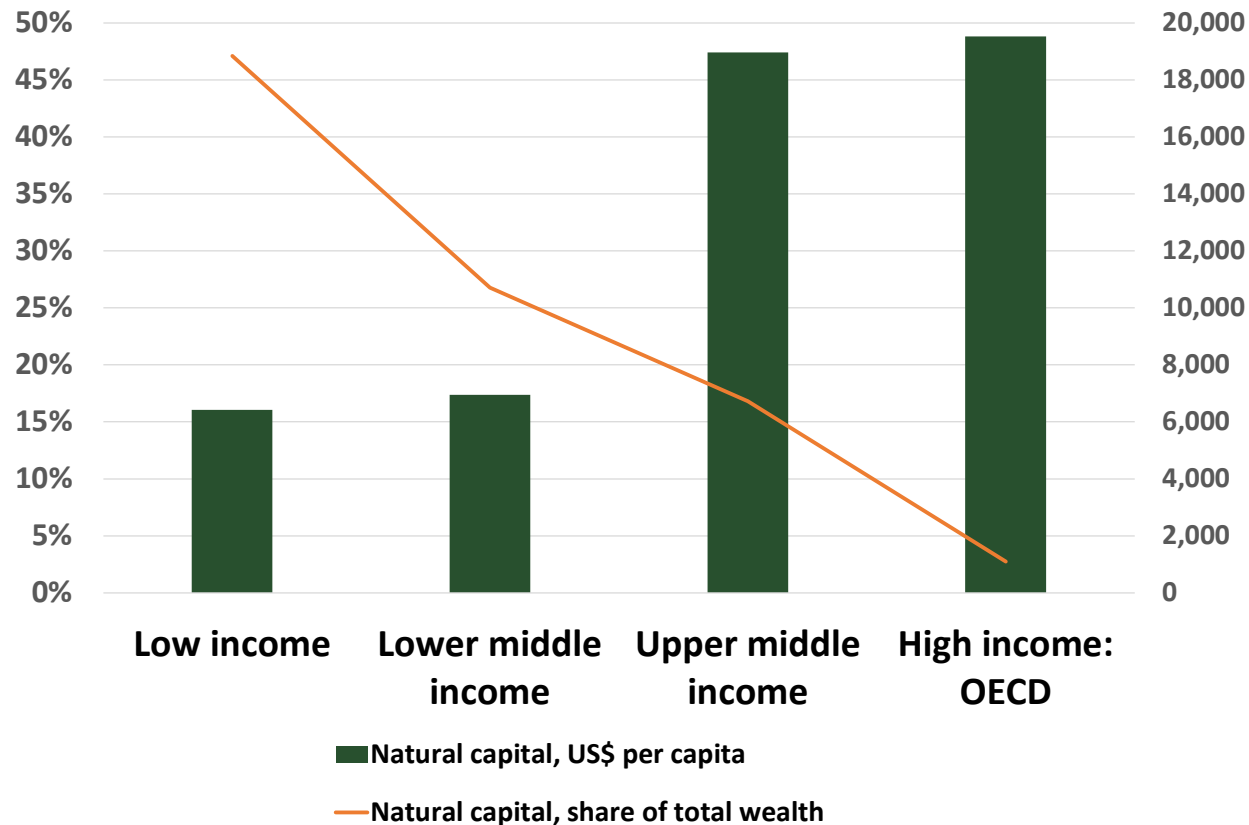
Percent Shares of Wealth by Asset Type in 2014



Note: Net foreign assets are small and negative, except for High-income non-OECD countries

# Natural capital remains important

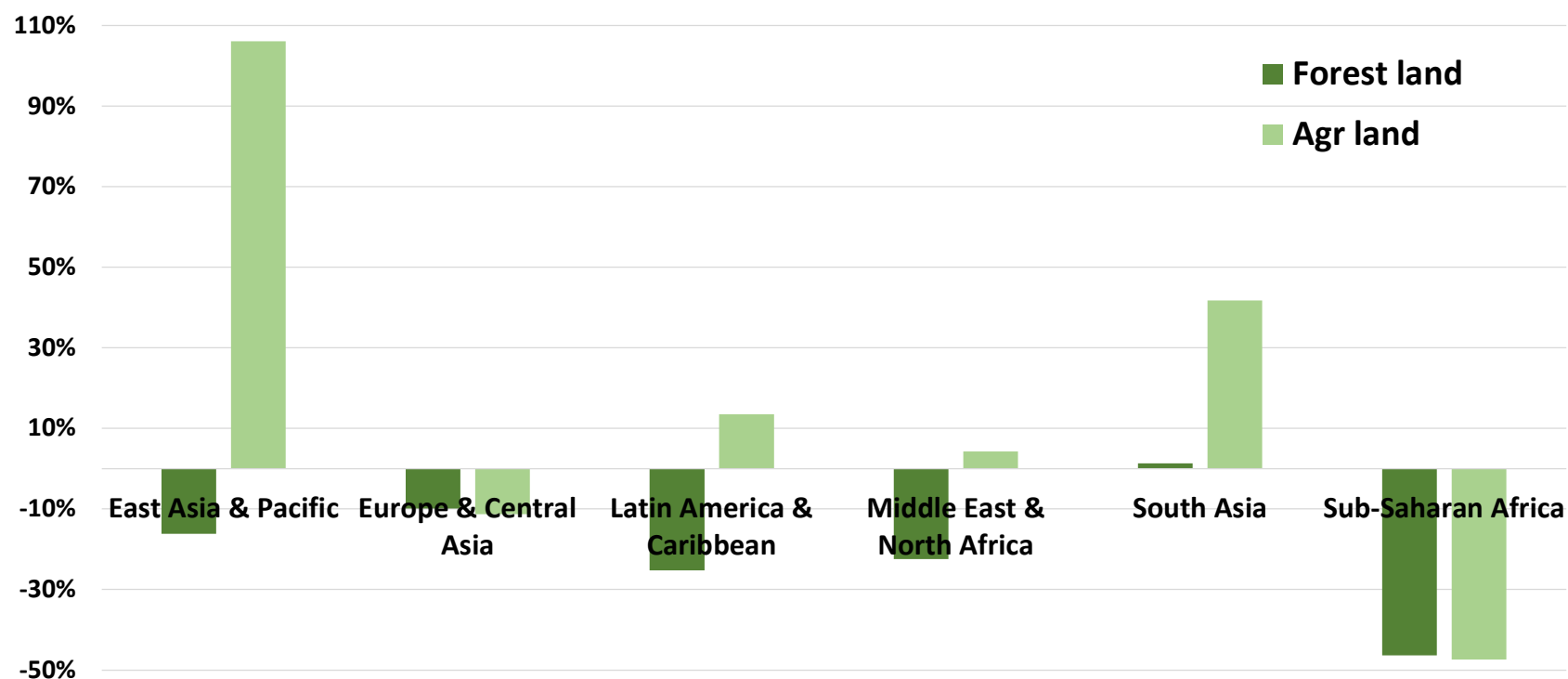
Natural Capital: Share vs Per Capita Value (US\$) in 2014



- Natural capital remains important even as countries grow and develop
- Growing an economy is not about liquidating natural capital to build other assets, but adding other assets
- Natural capital per capita is highest in upper middle and high income OECD countries

# Trading Forests for Agriculture?

Change in Per Capita Value of Forest and Agricultural Land,  
Low- and Middle-income countries 1995 to 2014 (percent)



Source: The Changing Wealth of Nations 2018

## CC risk to wealth – new in CWON 2021

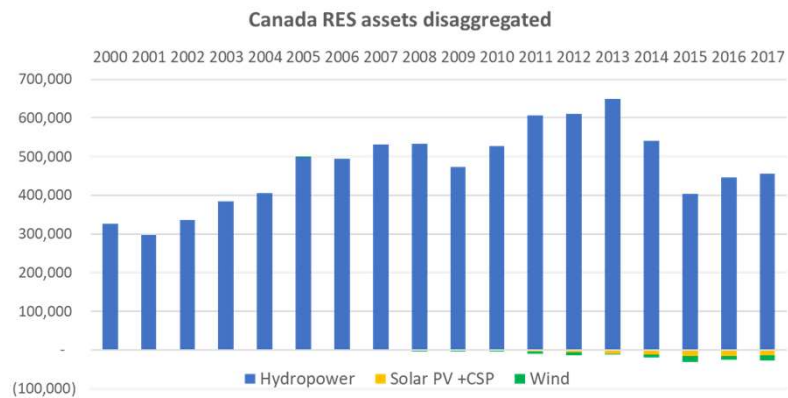
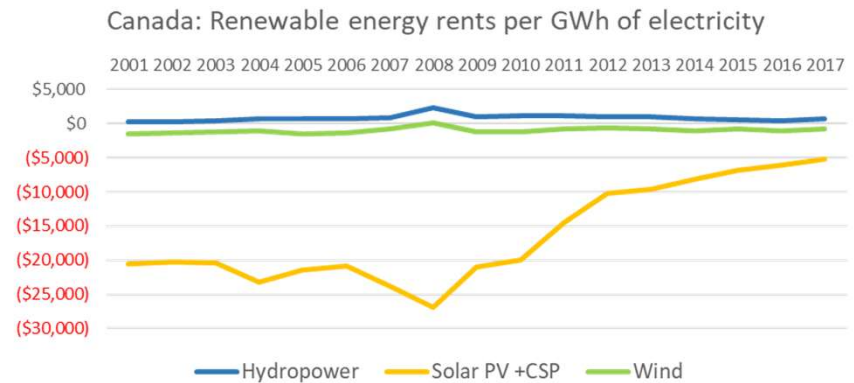
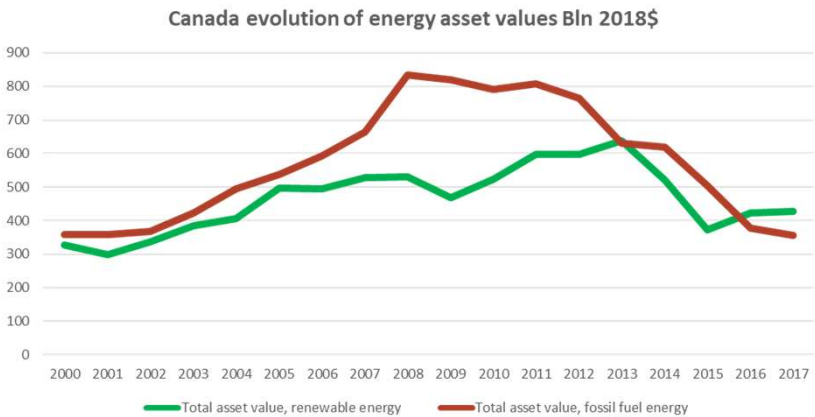
- **Cropland and Pastureland:** future crop yields and land value under scenarios of land degradation and climate change impacts (SSP/RCP)
- **Fisheries:** simulating CC impact (RCPs) scenarios on size and distribution of species and associated catch, with fishermen adapting to changing species distribution
- **Mangroves:** Impact of the gains/loss of mangroves on protection of produced capital from natural hazards;
- **Renewable energy resources** as assets and forward simulations of RES asset value under alternative climate policy scenarios
- **Fossil fuel reserves and produced capital** – impact of low-carbon transition scenarios

# Value of renewable energy assets: hydro, solar & wind

- Methodology consistent with SNA/SEEA CF (Rob Smith)
- Proposed revision to SNA & SEEA CF (Rob Smith)
- Pilot estimates for 15 countries (Rob Smith, Andrei Ilas)
- Scenarios of value of RES assets in 3 countries under policy scenarios, e.g. carbon prices



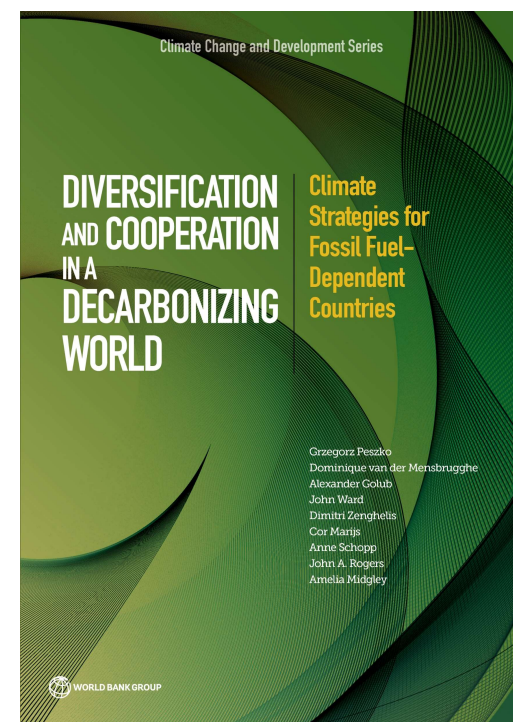
# Value of renewable energy and fossil fuel assets: preliminary examples





# Impact of low-carbon transition on fossil fuel dependent countries

- Methodology of extracting oil, gas and coal asset value from CGE outputs
- Simulations with the ENVISAGE10/GTAP10 model with inputs from Rystad Energy U-cube
- Results for 17 country groups
- Low-carbon transition scenarios with alternative assumptions about the climate policy (cooperative and unilateral between climate policy leaders and Fossil fuel-dependent countries), trade policies and technology change



Diversification and Cooperation in a Decarbonizing World: Climate Strategies for Fossil Fuel-Dependent Countries

<https://openknowledge.worldbank.org/handle/10986/34011>

Diversification and Cooperation in a Decarbonizing World: Macroeconomic Simulations Report:

<https://openknowledge.worldbank.org/handle/10986/34056>

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# Future plans for CC and wealth analytics in next CWON

1. More/refined scenarios of CC impacts under SSPs/RCPs for
  - Agricultural land
  - Pastureland,
  - Mangroves,
  - Forests (timber + ecosystem services);
2. Produced capital
  - “new normal” depreciation rates for produced capital in influence of CC?
  - Include catastrophic losses from natural hazards in Other Volume Changes of national balance sheets
3. Critical natural capital in biophysical terms – how close we are to catastrophic irreversible losses of critical ecosystem’s services

# Thank you!

## **The Changing Wealth of Nations 2018 : Building a Sustainable Future**

<https://openknowledge.worldbank.org/handle/10986/29001>

