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# Natural Resource Asset Accounts

## Quarterly estimation

**21<sup>st</sup> meeting of The London Group**

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The Hague

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**Statistics Canada**

# Overview

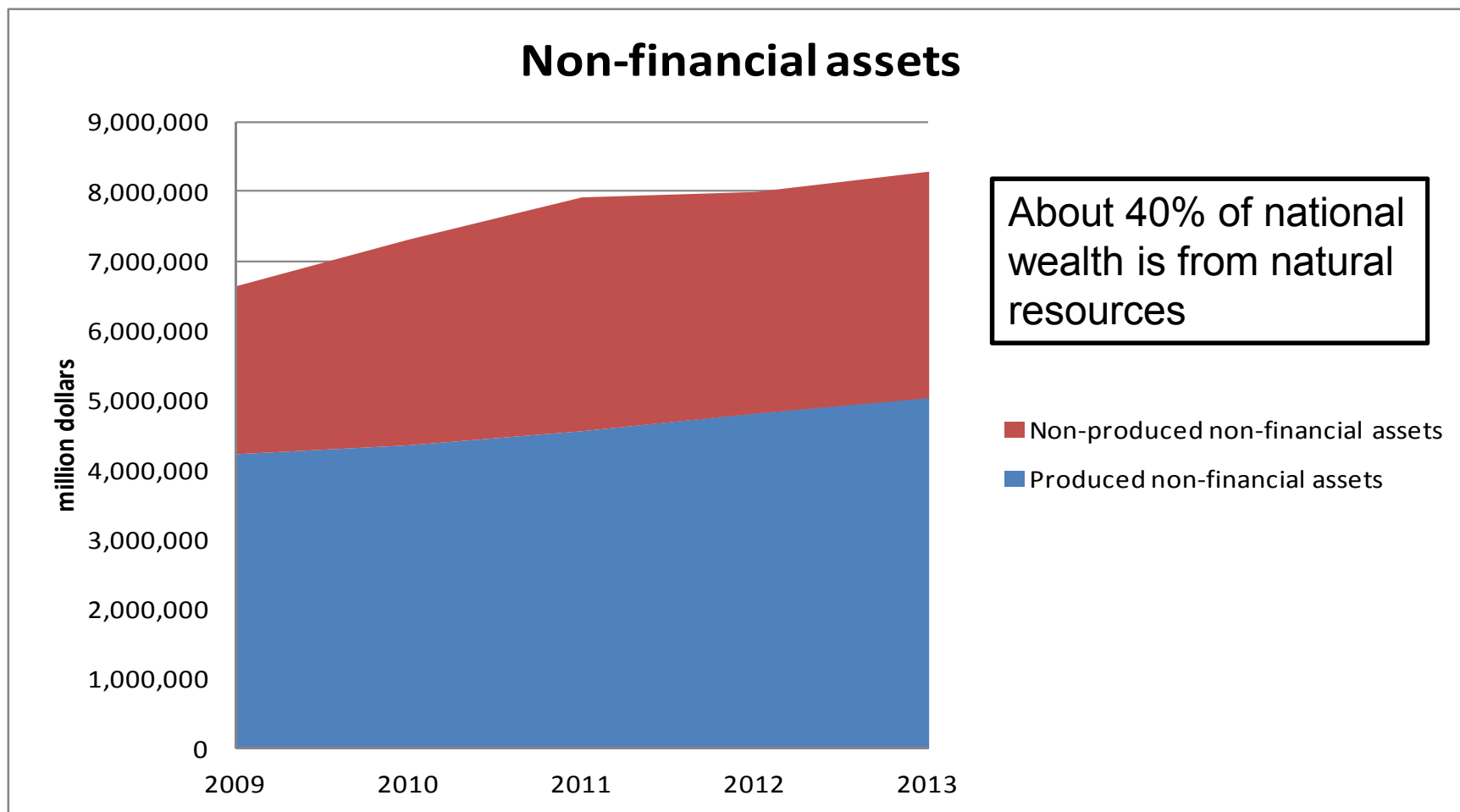
- **Balance Sheet Accounts in Canada**
  - *Quarterly, annual and the role of natural resource assets*
- **Issues related to Quarterly Resource Asset Accounts production**
  - *SNA 2008 and SEEA recommendations, corporate and government issues*
- **Proposed methodology for quarterly estimates**
  - *Quarterly stock value, sectoring*

# Balance Sheet Accounts in Canada

- **Quarterly National Balance Sheet Accounts (378-0121)**
  - Sectored
  - Coverage financial and non-financial assets: non financial assets are land and produced assets only
- **Annual Consolidated National Balance Sheet (378-0005)**
  - Not sectored
  - Coverage of non-financial assets includes natural resources

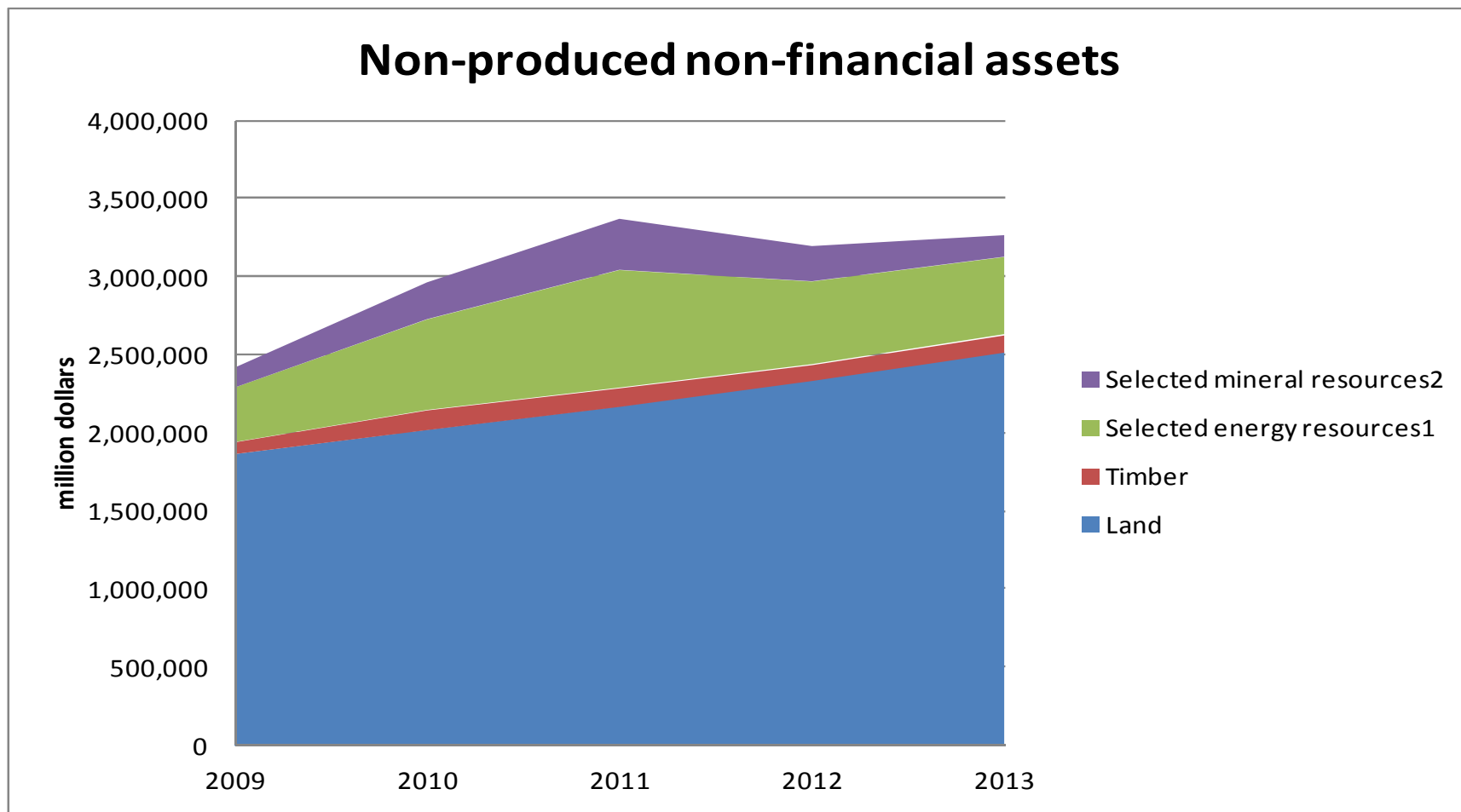
# Natural resource assets in context

378-0005 - Annual Consolidated National Balance Sheet



# Natural resource assets in context

378-0005



# Role of the natural resource assets

- This component of wealth plays a significant role in relation to production in the economy, generating exports, employment, and income
- Which explains why SNA2008 proposed its inclusion

# Issues related to this implementation

## SNA 2008 recommendation

- It suggests allocation of in situ resource value to the owner (government), with royalty payments of the extractor shown as rent for both natural timber and subsoil assets.
- Disadvantages:
  - Inconsistent with economic ownership
  - Does not explain the link between resource assets and resource leases as another type of asset
    - Does not reflect resource extraction in Canada (long-term transferrable rights)

# Issues related to this implementation

## SEEA 2012 recommendation

- It suggests splitting the value of mineral and energy resources between the two owners based on their share of the future stream of resource rent.
- Advantages:
  - Acknowledges sharing of asset based returns
  - Assets become tied to income flows
- Challenge:
  - Natural resources are tangible assets at the national level and can't be meaningfully split at the sectoral level in a sequence of accounts presentation



# Considerations: Government

- Governments **do not** account for natural resource stocks in their financial statements
  - Therefore, the SNA 2008 recommendation to allocate to government is at odds with IMF-based government financial statistics
- Governments **do** account for selected income flows resulting from economic activity associated with the use of natural resources
  - Not all benefits accrue to government, but the income they do receive implies an underlying asset

# Considerations: Corporations

- Corporations **do** account for natural resource stocks in their financial statements (intangible extraction rights)
- Since revenue accrues from harvest/extraction, they are economic owners
  - If the resources are allocated to government, there is no asset in the corporate sector to reflect this income flow
- Resource price changes will affect the value of corporate shares on markets: to better reflect this reality, we need a link to the asset in the corporate sector balance sheet in the SNA

# Quarterly Natural Resource Stocks

- Statistics Canada wants to put in application the SNA 2008 recommendations (get it in the balance sheet)
  - Using SEEA 2012 suggestions on the sectoring
- The proposed solution is to define sectoral claims on the physical resource stock as **intangible assets** (they are claims on the underlying resources)

# Integration challenges

- Natural Resource Asset Accounts (NRAA) data are annual and not as timely as the National Balance Sheet Accounts (quarterly)
- Therefore:
  - Need to allocate annual historical NRAA on a quarterly and sectoral basis (baseline time series) *previous years*
  - Need to produce forward estimates of NRAA *RY quarters*
  - Must reconcile forward estimates to annual benchmarks *when annual NRAA is release*

# Canada's two-steps methodology to value a resource stock (quarterly)



- Step 1: Estimate quarterly resource value
- Step 2: Partition the value between the corporate sector (principal economic owner) and the government sector (legal owner)

# Resource value: Net present value

Annual value (\$)

$$NPV = \sum_{t=1}^T \frac{RR_1}{(1 + r_i)^t}$$

To obtain Quarterly NPV, we need **projections of revenues and cost** to derive Quarterly Resource Rent

$$RR_1 = TR - C - (r_c K + \delta)$$

(Revenue) - (Cost)

where:

$RR$  = resource rent (annual)

$TR$  = total annual revenue

$C$  = annual non-capital extraction cost (excluding taxes)

$\delta$  = annual depreciation

$r_c K$  = return to produced capital

# Resource value: quarterly projectors

## Revenue

- Quarterly price and quantity data can be used to allocate annual historical sales revenues across quarters
- Forward projection of revenues are based on price and quantity indicators for the current and previous periods

# Resource value: quarterly projectors

## Costs

- Quarterly wage rate and output data can be used to allocate annual historical labour cost across quarters
- Forward projection of cost are based on wage rate and output indicators for the current and previous periods
  - A similar approach is used for other costs (e.g. raw materials, electricity)
  - Capital costs: depreciation allocated with quarterly investment data, return to capital based on bond rate



# Resource value: NPV modifications

- Quarterly Net Present Value
  - Requires a quarterly discount rate
  - Reserve live must be expressed in quarters rather than in years (and adjusted for trends in additions/depletions)

Benchmark when the annual data become available

# Sectoring: Net present value (\$)

- Government share
  - Based on expected revenue stream (i.e. royalties and special taxes)
    - quarterly detail not available by resource, so based on quarterly total
- Corporate share
  - Calculated as the residual

# In summary

NBSA sectors/assets	Households	Corporations	Government	Reclassification from sector accounts to National Wealth	Consolidated National balance sheet (CNBS)
<b>Total assets</b>	4500	6300	400		
Non-financial assets		4300	400		National Wealth: 4700
Produced assets		3300			3300
Non-produced assets			400		
Tangible natural resources NR				+1400	1400
Intangible assets related to NR		1000 (derived)	400 (calculated)	-1400	
Financial assets	4500	2000			
<b>Liabilities and net worth</b>	4500	6300			
Debt		3000			
Equity at market value		3500			
	4500	<b>-200</b>	<b>400</b>		<b>National Net Worth: 4700</b> (equals sum of domestic sectors' net worth)
Sectoral net worth (residual corporate net worth in the corporate sector)					
<b>MEMO ITEM</b>					
Corporate net worth as a net asset value		3300			

# Questions?

- Full paper available November 17<sup>th</sup>, 2015
- Quarterly data proposed for release December 2015
  - With historical revision of the balance sheet

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