

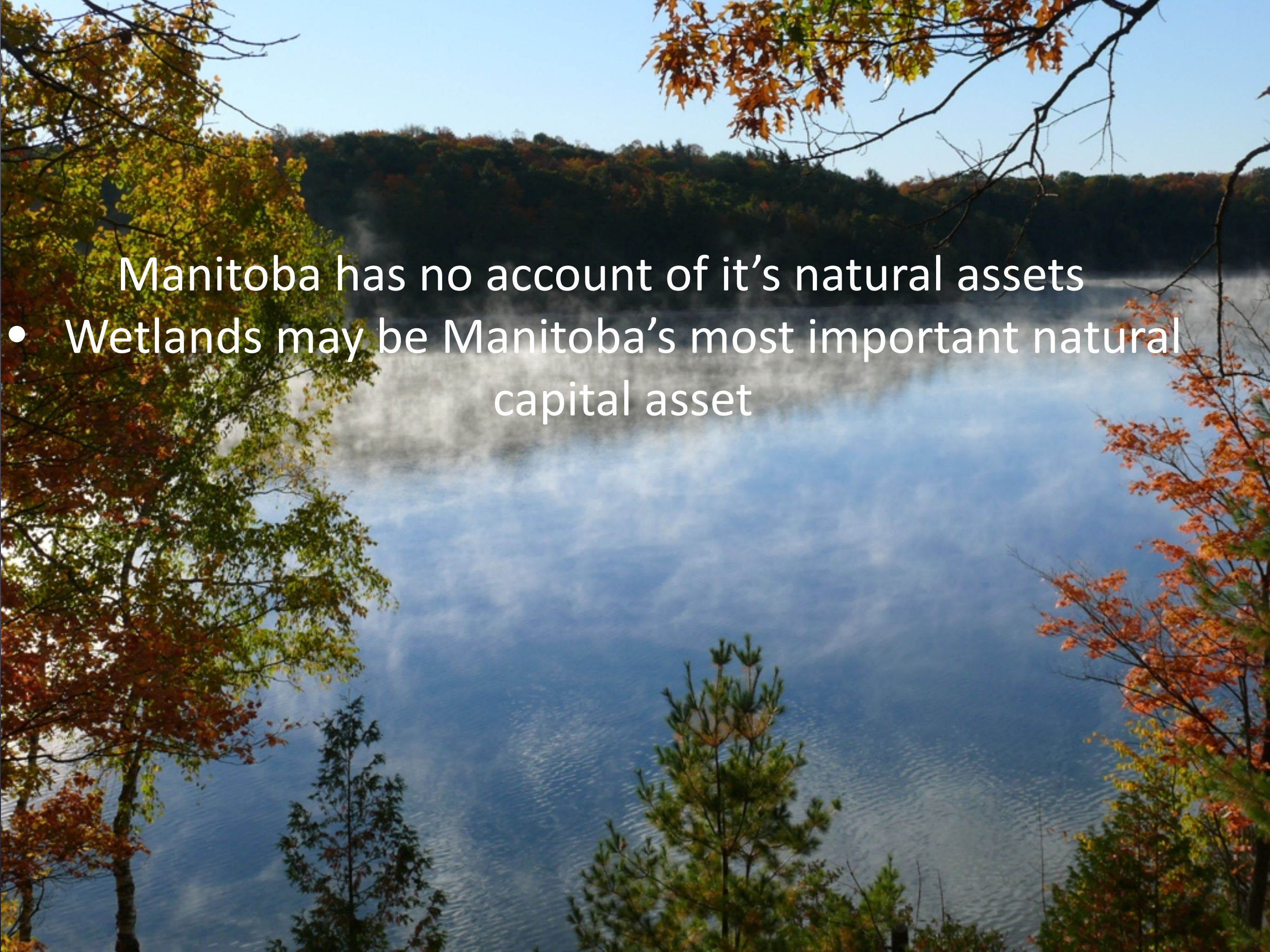


Securing Manitoba's Economic Future: Investing in Natural Capital Assets

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A scenic view of a lake with mist rising from the water, framed by trees with autumn foliage. The text is overlaid on the image.

Manitoba has no account of its natural assets

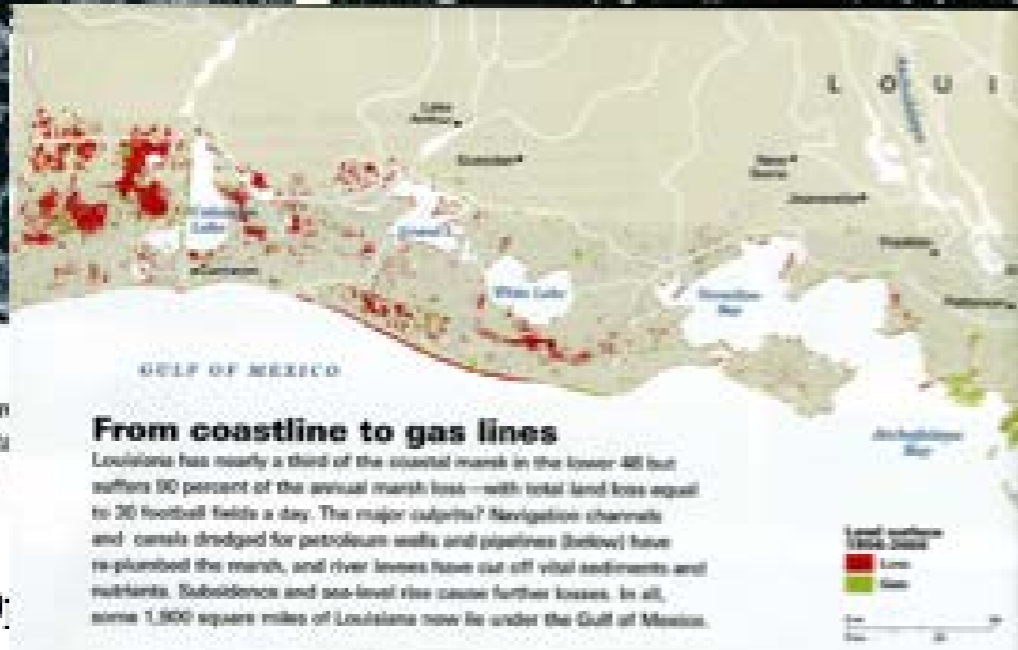
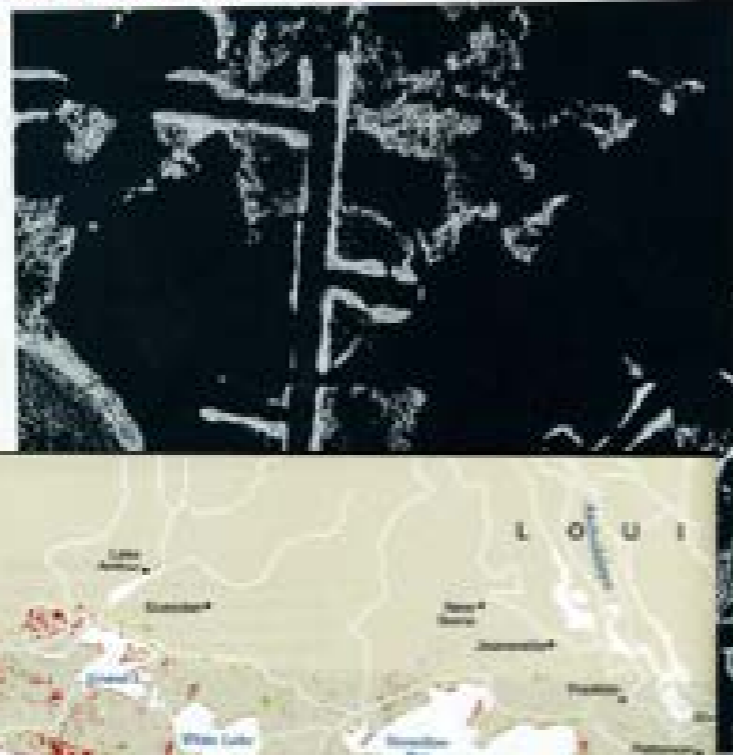
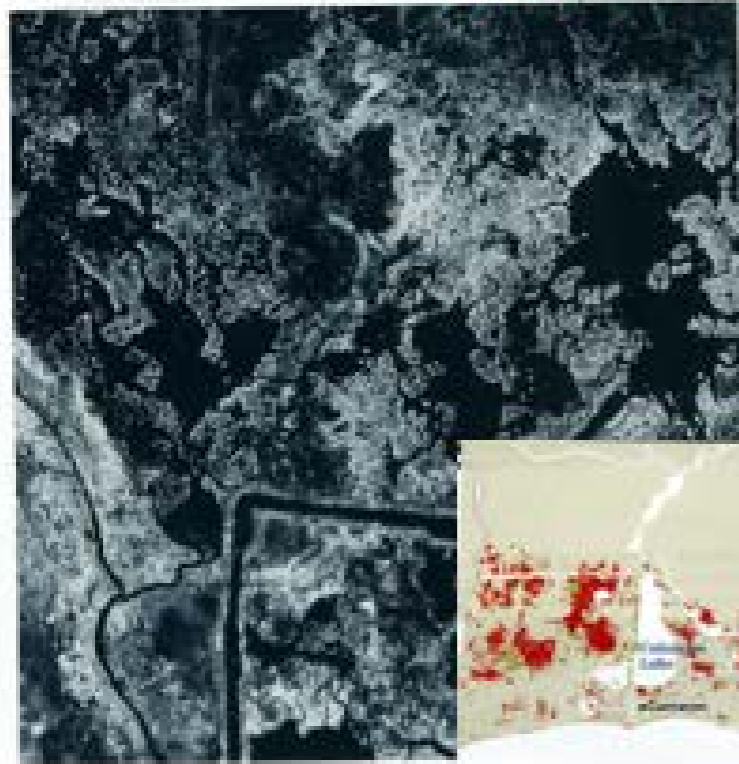
- Wetlands may be Manitoba's most important natural capital asset

Natural Capital

The environmental stocks and systems that provide us with the many natural materials and services upon which we rely to sustain economic activity. This includes natural resources, land, and ecosystem goods and services.



or pay for it's loss later.



1945
The impacts of oil and gas withdrawn before and after shots of the Barataria first canals were cut in the 1940s.

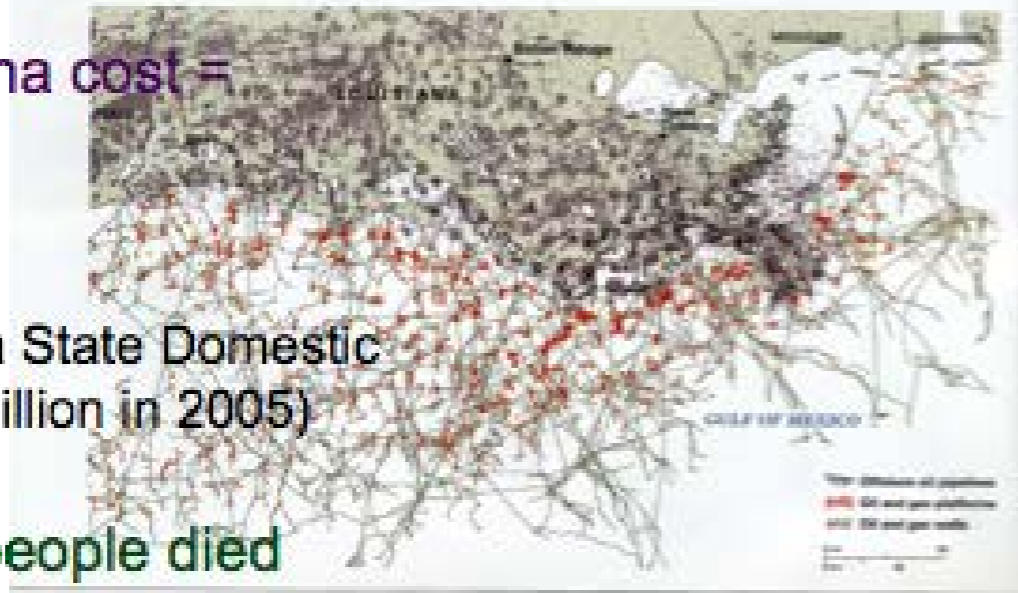
New Orleans

Hurricane Katrina cost =

\$81.6 billion

(50% of Louisiana State Domestic Product of \$166 billion in 2005)

At least 1,836 people died



Realize the genuine value now,



Canadian boreal wetlands, 2006

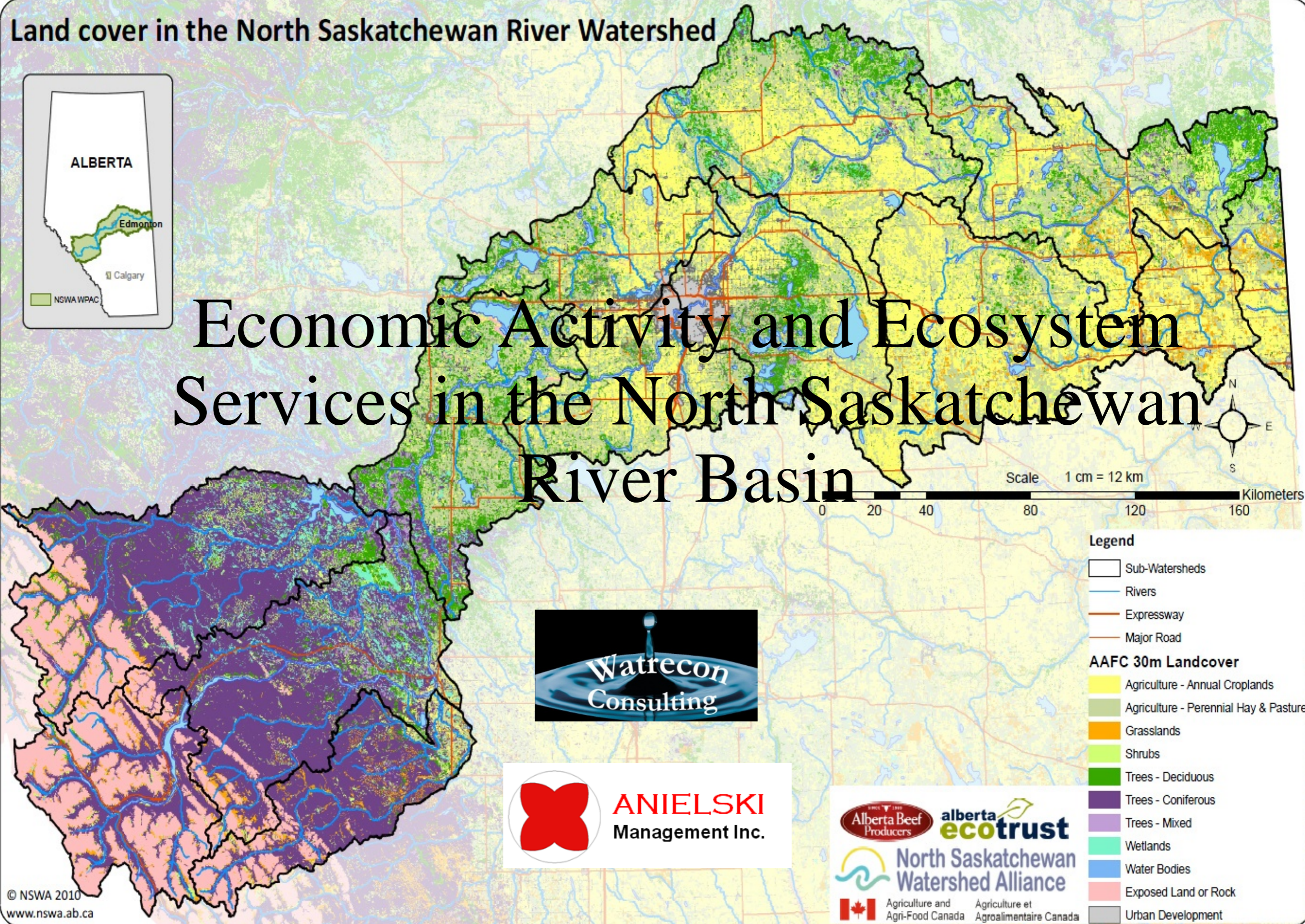
"When you look at the broadest perspective, short-term advantages can be gained by exploiting the environment. But in the long term you're going to pay for it."

Joe Suhayda, LSU coastal engineer

Land cover in the North Saskatchewan River Watershed



Economic Activity and Ecosystem Services in the North Saskatchewan River Basin



Scale 1 cm = 12 km
0 20 40 80 120 160 Kilometers

- Legend**
- Sub-Watersheds
 - Rivers
 - Expressway
 - Major Road
- AAFC 30m Landcover**
- Agriculture - Annual Croplands
 - Agriculture - Perennial Hay & Pasture
 - Grasslands
 - Shrubs
 - Trees - Deciduous
 - Trees - Coniferous
 - Trees - Mixed
 - Wetlands
 - Water Bodies
 - Exposed Land or Rock
 - Urban Development



Natural Capital Account Balance Sheet

Assets

Liabilities

Land

Farm Land
Grassland
Forest Land
Wetlands
Other Lands

Water resources

Energy

Crude oil
Crude bitumen
Natural gas
Coal
Renewable energy capacity

Minerals (gold, copper, other minerals)

Timber

Ecological Goods and Services

Greenhouse gas emissions

Industrial, Household

Solid wastes

Toxic wastes

Loss of Ecological Integrity

Cost of pollution

Unsustainable renewable resource use

Depreciation of non-renewable energy resources

Shareholder's Equity

Returns on natural capital economic rents

Distribution of natural capital (domestic/export)

Natural Capital Account Income Statement

Income

Expenditures/Depreciation Costs

GDP by resource sector

Mining (oil, gas, minerals)

Forestry

Agriculture

Electricity

Other resource sectors

Greenhouse gas emissions

Industrial, Household

Solid wastes

Toxic wastes

Loss of Ecological Integrity

Cost of pollution

Unsustainable renewable resource use

Depreciation of non-renewable energy resources

A Genuine Return on Investment: The Economic and Societal Well-being Value of Land Conservation in Canada

Prepared by **Mark Anielski, John Thompson and Sara Wilson** | FEBRUARY 2014



Ducks Unlimited
Conserving Canada's Wetlands



Ducks Unlimited Canada
Conserving Canada's Wetlands

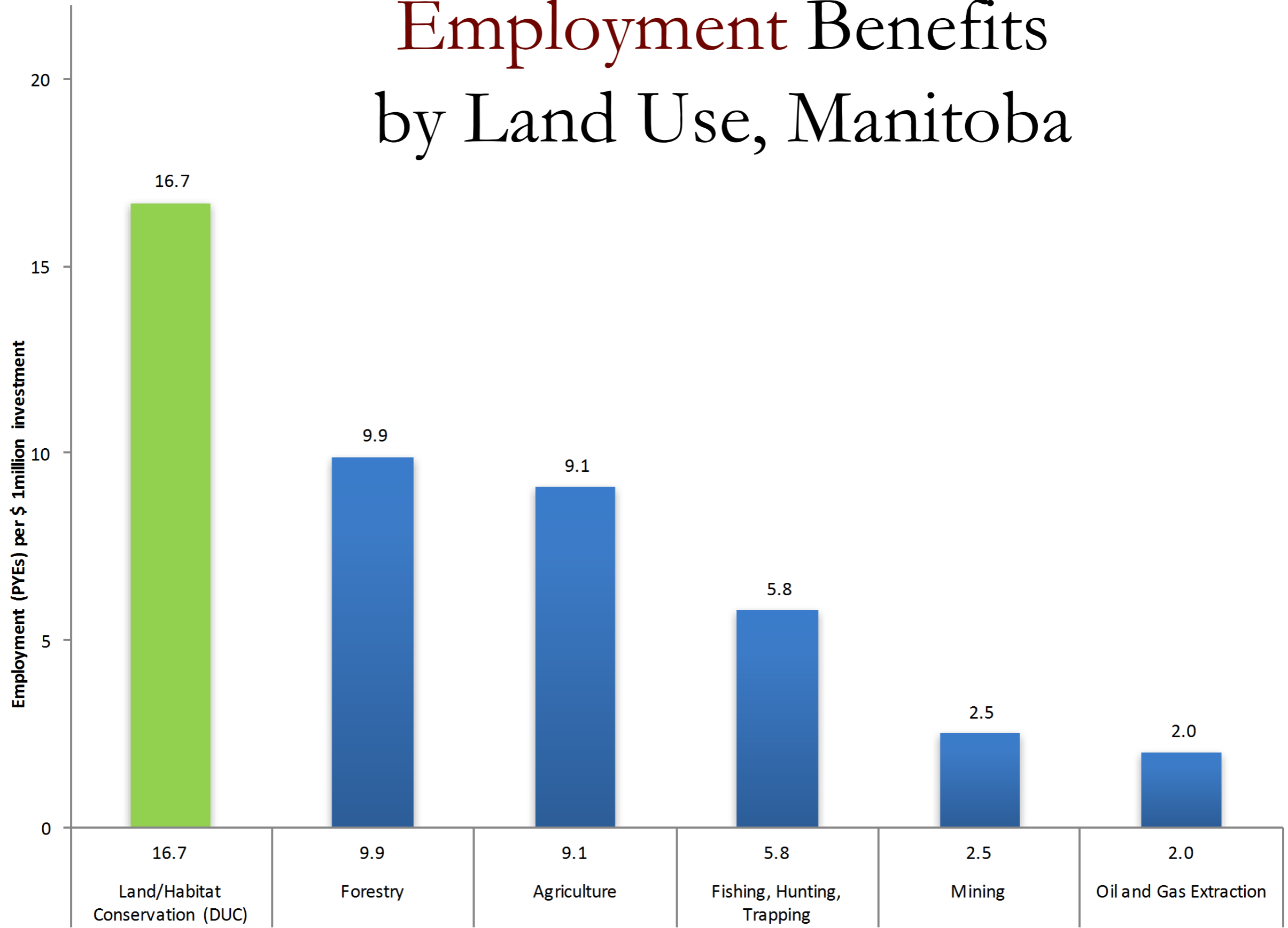
- Ducks Unlimited Canada had secured 231,064 hectares (570,79 acres of wetlands by end of 2012 in Manitoba + an additional 489,251 hectares (1,208,451 acres) of wetlands that were co-secured with others.
- Market value (purchase) of secured DUC wetlands = \$41.2 million
- Between 2008-2012 DUC secured 43,984 acres at an average purchase price \$178/hectare or \$72.30/acre.
- Average cost to restore an acre of wetland = \$89/ha or \$36/acre
- Average annual cost to maintain wetlands = \$7.06/ha/yr



- Manitoba's DUC wetlands contribute
 - \$7.0 million in economic (GDP, employment) benefits per annum or \$30.38 per hectare per year.
 - \$18.9 million in recreation and tourism benefits
 - \$336 million per annum in ecosystem service benefits or \$1,445 per acre per year.
 - \$362 million in total economic and ecological value
- The Net Present Value of Manitoba's wetlands secured by DUC are estimated at over \$9 billion + value of influenced lands.
- The societal return on investment (GDP, employment, taxes, ecosystem services) of \$1.00 in wetland conservation in Manitoba is 31.2 to 1.

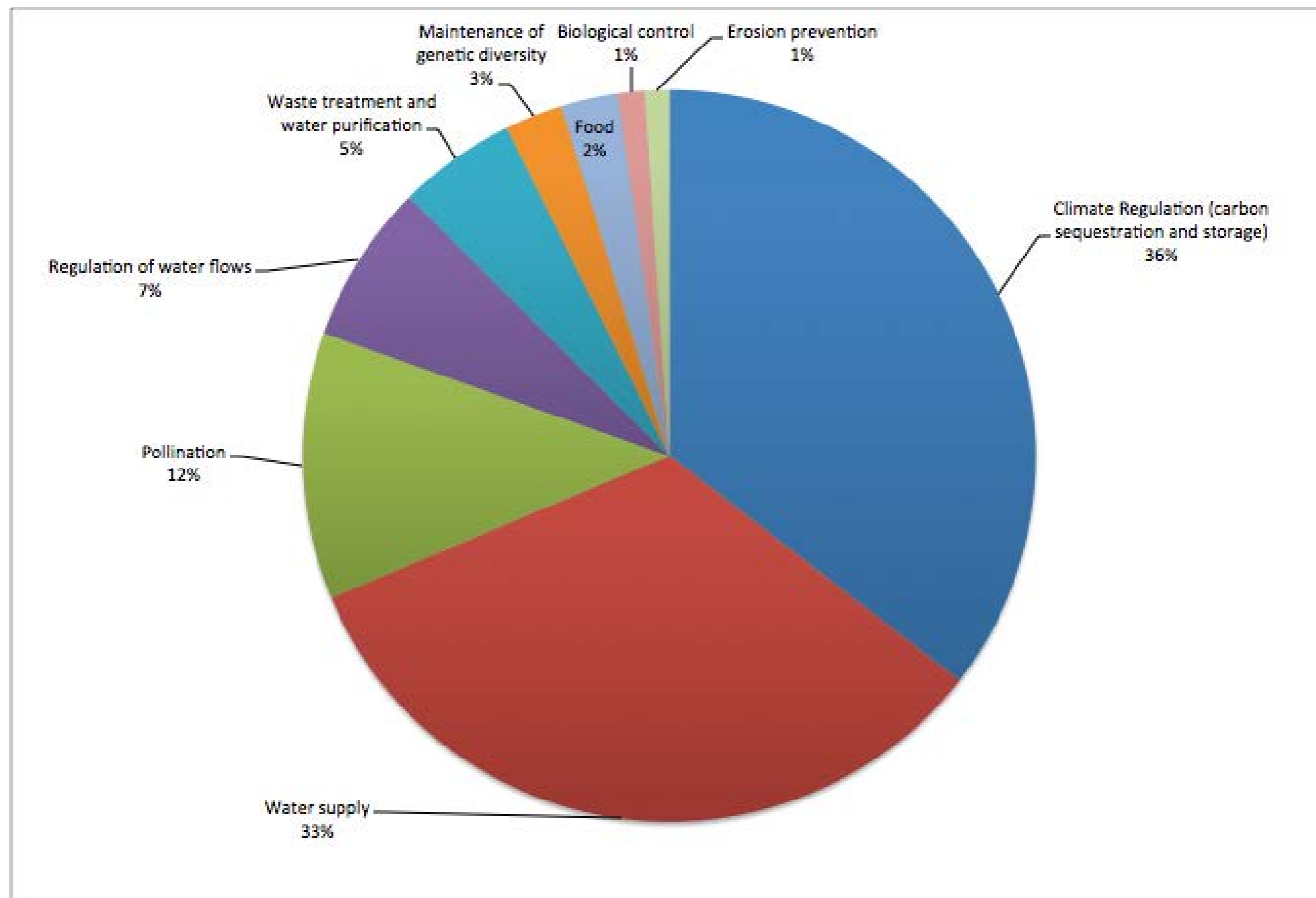


Employment Benefits by Land Use, Manitoba



Ecosystem Service Values

The total value of these ecosystem services (ES) associated with DUC's Manitoba wetlands (231,000 hectares) is estimated at \$335 million per annum (or \$1,445/ha/yr).



Value to Government Investment

For every \$1.00 of federal and provincial government investment in wetland conservation by DUC pays for itself 100% in about 6.5 months.

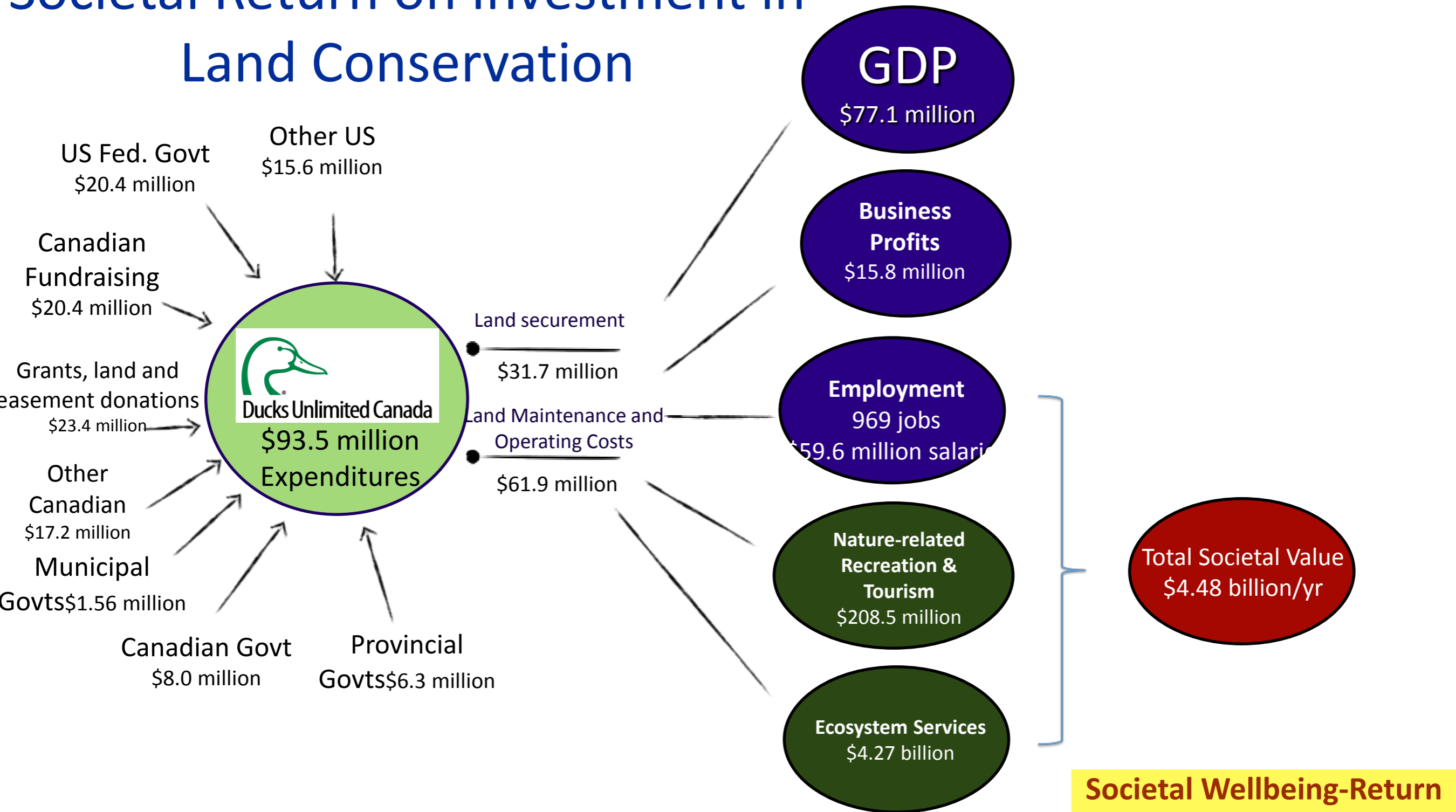
Societal Well-being Returns on Investment

The total societal value (TSV) related to DUC's efforts in securing and maintaining 231,000 hectares of wetlands and natural areas in Manitoba is the sum of:

- a) economic benefits to GDP and employment (\$7.0 million),
- b) recreation and tourism benefits (\$18.96 million)
- c) ecosystem services (\$336.3 million).

The Societal Net Present Value (asset value) of Manitoba's wetlands secured by DUC = \$9.0 billion.

Societal Return on Investment in Land Conservation



Societal Wellbeing-Return on Investment

For every \$1 invested in land conservation by DUC, society enjoys \$28.17 in well-being benefits.

Societal Well-being Return on Investment in Manitoba Wetlands

A SW-ROI of 31.2 to 1.

For every \$1 invested in the securement, restoration and regular maintenance of a hectare of wetland and natural conserved by DUC in Manitoba, society receives a \$31.20 benefit in terms of economic, ecological and societal well-being.



- Manitoba had 7,287,449 hectares of farmland of which 4,331,984 (59%) was cropland
- 1.2 million cattle and 2.9 million pigs
- Gross farm receipts = \$5.3 billion (2011)
- Farm receipts per hectare of farm land = \$727.28/ha
- Agricultural GDP per hectare of farmed land = \$635/ha/yr

- By contrast Manitoba Hydro has \$22.3 billion (2016) in assets covering a service area of 65 million hectares (the entire provincial land and water base)
- Average asset value per acre of land service area is \$139 per acre in 2016.
- Manitoba Hydro's total debt in 2016 was \$16.4 billion.
- Manitoba Hydro 2016 revenues of \$2.37 billion on a per hectare of service area = \$35.89/hectare
- Net Income of \$4.0 million per hectare of service area = \$0.06/hectare.



Societal Cost of Floods

Costs of Manitoba Floods	Payouts for property damages (\$ millions)	Public works investments (\$ millions)	People Impacted	Homes Impacted
1950	800	100	100,000	10,000
1966	□			
1979	\$2,645 (est.)	7	100,000	10,000
1997	\$4,000	130		?
2011	\$1,275		?	?
Totals	\$8,720	\$237	200,000	20,000
Per Manitoban	\$6,555.74	\$185.39		

Manitoba's Natural Capital Insurance Policy?

Cost of Restoring an additional 100,000 acres of Manitoba Wetlands?

- \$3.6 million (purchase and restoration costs)
- NPV asset value of \$4.85 billion
- Societal benefits per annum = \$58.9 million
- Investment cost per Manitoban = \$2.81
- Annual maintenance costs = \$285,830