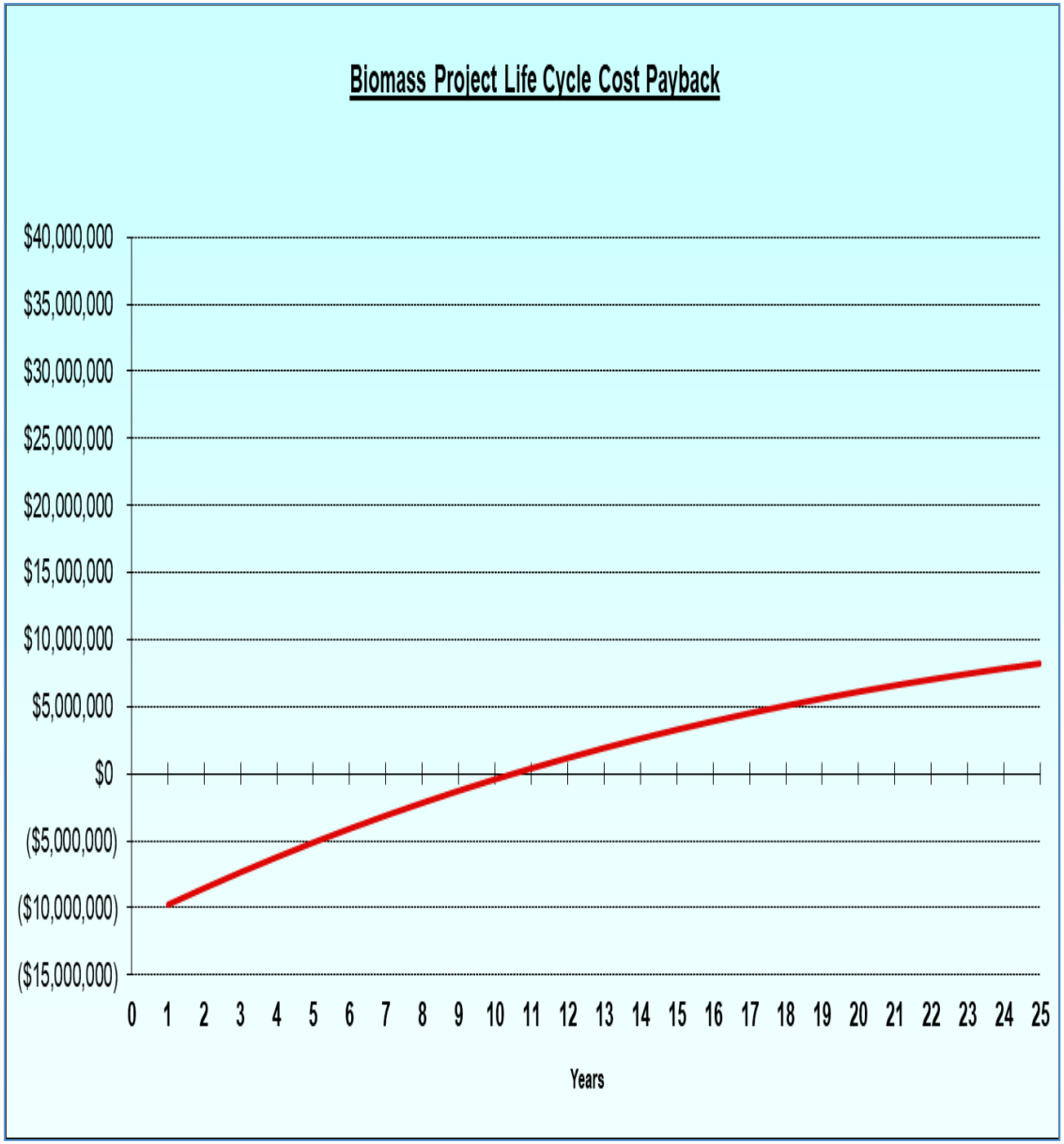
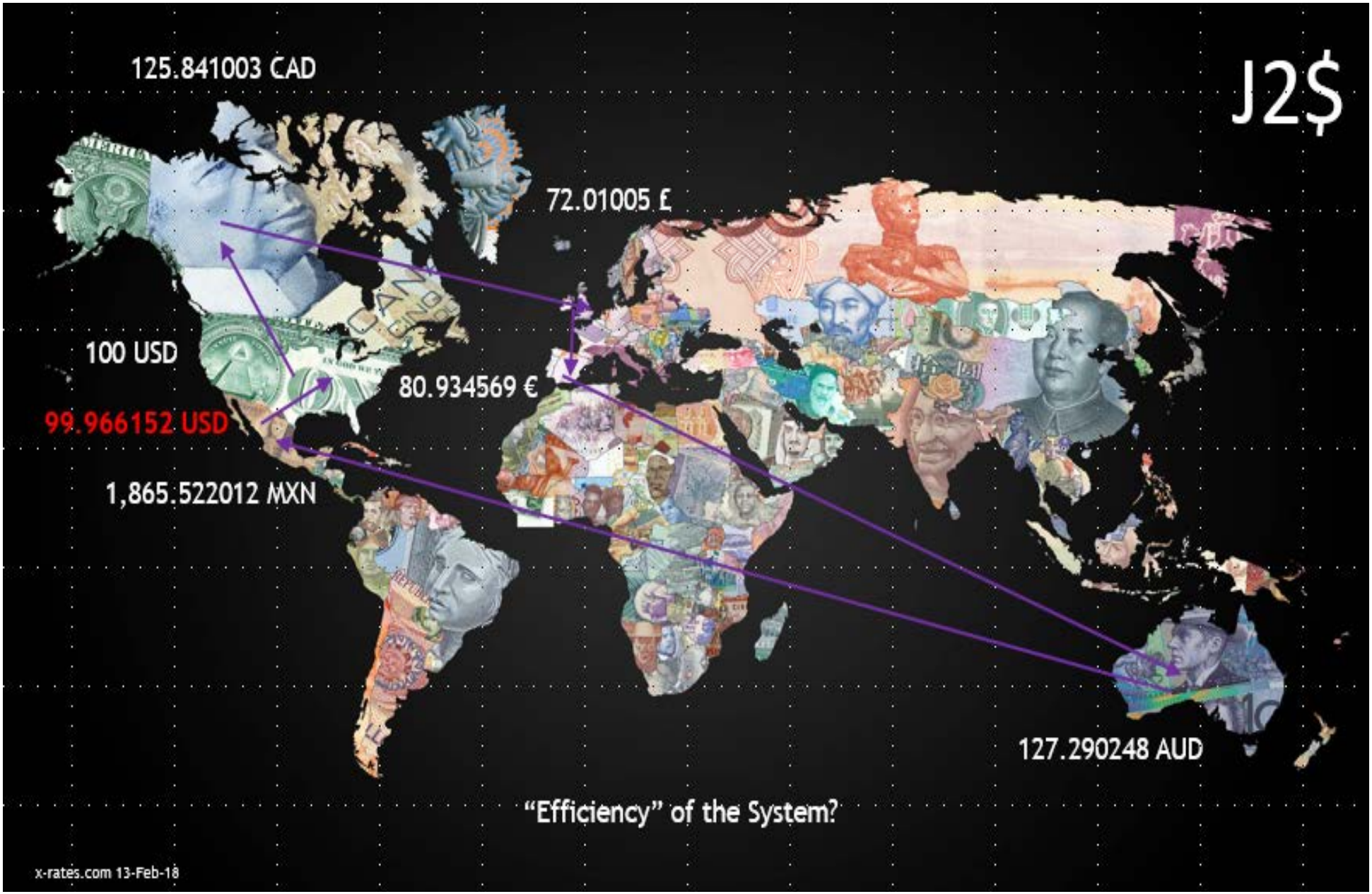
Colby's Biomass Facility

J2$

Scenario A: Base Case	FY2011	FY2012	...	FY2041
Utility Relocations	$ 550,000			
General Site and Utilities	$ 373,000			
Building	$ 2,779,000	$ 2,779,000		
Equipment	$ 1,698,500	$ 1,698,500		
Soft Costs	$ 1,367,000			
Grant	$ (750,000)			
Debt Proceeds		$ (10,495,000)		
Debt Service Expenses (5.5%, 30 year)		$ 737,000	...	$ 737,000
Total Payments	$ 6,017,500	$ (5,280,500)	...	$ 737,000
PV @ 5.5%	$ 10,450,312			



Biomass Payback Analysis			
Average No.6 Oil Consumption		1,167,656	gallons
No. 6 Fuel Oil Btu Content		150,000	btu/gallon
New Biomass System		**800**	**horsepower**
		22,241	lbs/hour capacity
Biomass BTU Content			
Gross Heating Value (Dry)		8500	btu/lb
Moisture Content		**50%**	
GHV-MC		**4250**	**btu/lb**
Biomass System Efficiency		**70%**	**Avg Eff'cy**
No.6 Oil Required for Peak Load		**143,000**	**gallons**
Biomass Required		**22,000**	**tons**
Biomass Waste (assumes 1%)		220	tons
Biomass Waste Disposal Fee	**$**	**30.00**	**per ton**
Biomass Annual Waste Cost	$	7,000	annually
No.6 Oil Cost/Gallon	**$**	**2.07**	**per gallon**
Biomass Cost/Ton	**$**	**30.00**	**per ton**
2008 No.6 Oil Fuel Cost	**$**	**2,417,000**	**annually**
Gallons of N0.6 Saved		1,024,656	gallons
Biomass Annual Cost	$	660,000	annually
No.6 Oil Cost (Peak Load)	$	296,000	annually
Total Biomass Annual Fuel Cost	**$**	**963,000**	**annually**
Total Project Cost	**$**	**11,000,000**	
Annual Fuel Savings	**$**	**1,454,000**	**annually**
Simple Fuel Savings Payback		**7.6**	**years**
Financial Parameters			
Biomass Escalation Rate		**2%**	
Fuel Oil Escalation Rate		**2%**	
Discount Rate		**5%**	
Additional Annual Costs (based on 2009 rates)			
Labor Costs	**$**	**60,000**	**annually**
O&M Costs	**$**	**50,000**	**annually**
Biomass Waste Disposal	**$**	**7,000**	
Total Annual Re-occuring Costs	**$**	**117,000**	**annually**
Equity Payback		**10.5**	**years**


125.841003 CAD
J2$
72.01005 £
100 USD
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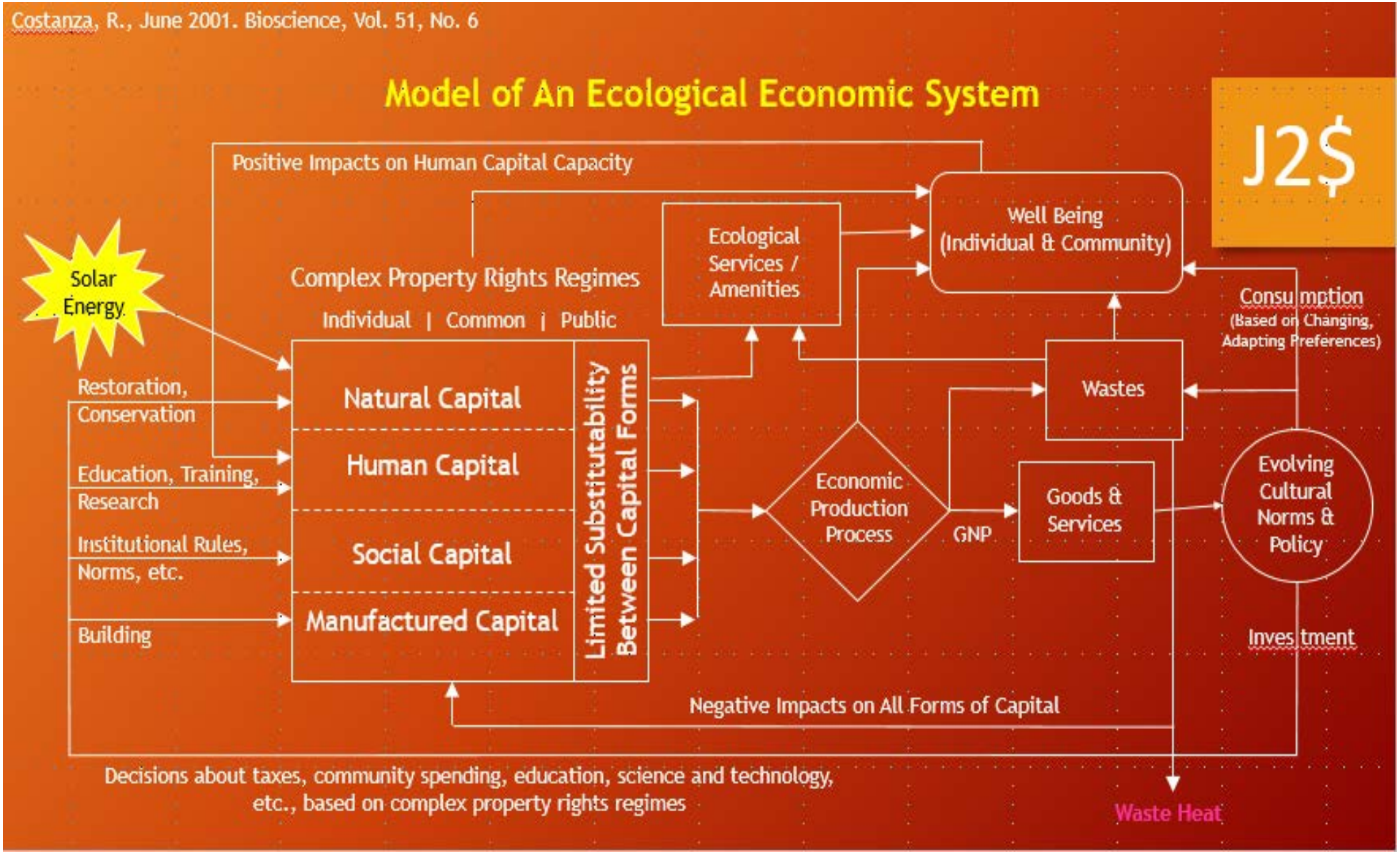
99.966152 USD
1,865.522012 MXN
127.290248 AUD
"Efficiency" of the System?
x-rates.com 13-Feb-18


Costanza, R., June 2001. Bioscience, Vol. 51, No. 6
Model of An Ecological Economic System
J2$
Positive Impacts on Human Capital Capacity
Well Being (Individual & Community)
Ecological Services / Amenities
Solar Energy
Complex Property Rights Regimes
Individual | Common | Public
Consumption
(Based on Changing, Adapting Preferences)
Restoration, Conservation
Natural Capital
Human Capital
Social Capital
Manufactured Capital
Limited Substitutability Between Capital Forms
Wastes
Education, Training, Research
Economic Production Process
GNP
Goods & Services
Evolving Cultural Norms & Policy
Institutional Rules, Norms, etc.
Building
Investment
Negative Impacts on All Forms of Capital
Decisions about taxes, community spending, education, science and technology, etc., based on complex property rights regimes
Waste Heat