

Impact of Footprint Hierarchies on the Bioeconomy

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Objective

- To answer the questions:
- 1) Does a hierarchy exist between different footprints?
 - 2) What is the impact of the footprint hierarchy on the bioeconomy?
 - 3) To introduce the framework of ability expectation to the footprint discourse

Table 1: Hit count frequency of footprints in NYT, Globe and Mail, Google Scholar, China Daily, and The Star online

	NYT (since 1981) from nytimes.com	Globe and Mail	Google	Google Scholar	China Daily	The Star online (Malaysia)
Footprint	2 868	446	76 200 000	380 000	1511	584
Ecological Footprint	23	19	1 270 000	25 500	56	17
Water Footprint	9	1	403 000	2 640	1	3
Carbon Footprint	624	67	29 300 000	22 300	399	218
Eco Footprint	5	2	432 000	883	13	1
Plastic Footprint	4	0	35 700	9	0	0
Environmental Footprint	57	11	1 270 000	7 810	51	17
Energy Footprint	6	0	137 000	1 550	8	4

Table 2: Hit count frequency of footprints in Canadian Newspapers

	Calgary Herald (Alberta)	Edmonton Journal (Alberta)	Vancouver Sun (British Columbia)	Star - Phoenix (Saskatchewan)	Winnipeg Free Press (Manitoba)	Cape Breton Post (Nova Scotia)	The Gazette (Quebec)	Toronto Star (Ontario)	Ottawa Citizen (Ontario)	The Daily Gleaner (New Brunswick)	Whitehorse Star (Yukon)	National Post (Canada)
Footprint	614	631	675	230	1335	42	410	674	494	170	98	566
Ecological Footprint	42	15	51	20	38	4	18	22	13	10	2	17
Water Footprint	0	0	1	2	2	0	0	1	0	0	0	0
Carbon Footprint	104	108	127	45	229	0	61	134	58	52	18	94
Eco Footprint	13	2	7	0	1	0	2	4	3	0	0	1
Plastic Footprint	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Footprint	53	40	39	13	88	1	24	19	20	10	6	26
Energy Footprint	0	0	1	0	3	0	0	1	1	0	0	1

Introduction

- Footprints are measures of environmental impact; they link the creation and consumption of goods and services to environmental costs
- Ableism: the sentiment that certain abilities are perceived as essential (1)
- Ability desires and preferences are a key dynamic that influences whether costs are seen as acceptable, which leads to the classification of only certain products and actions as waste and wasteful (2)
- In a growing economy where production and consumption are increasing, ability preferences will reveal the possible future of wasteful practices

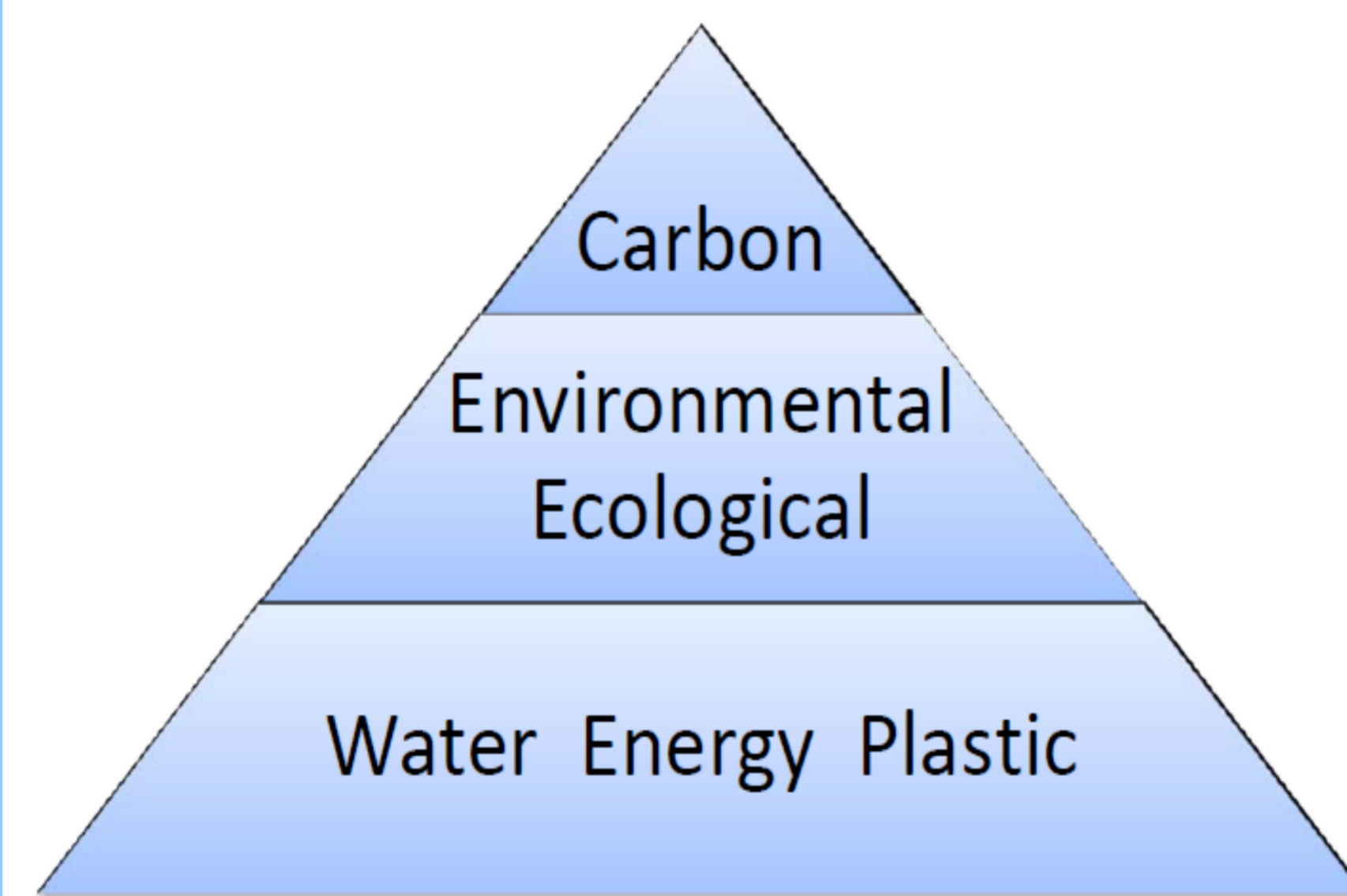
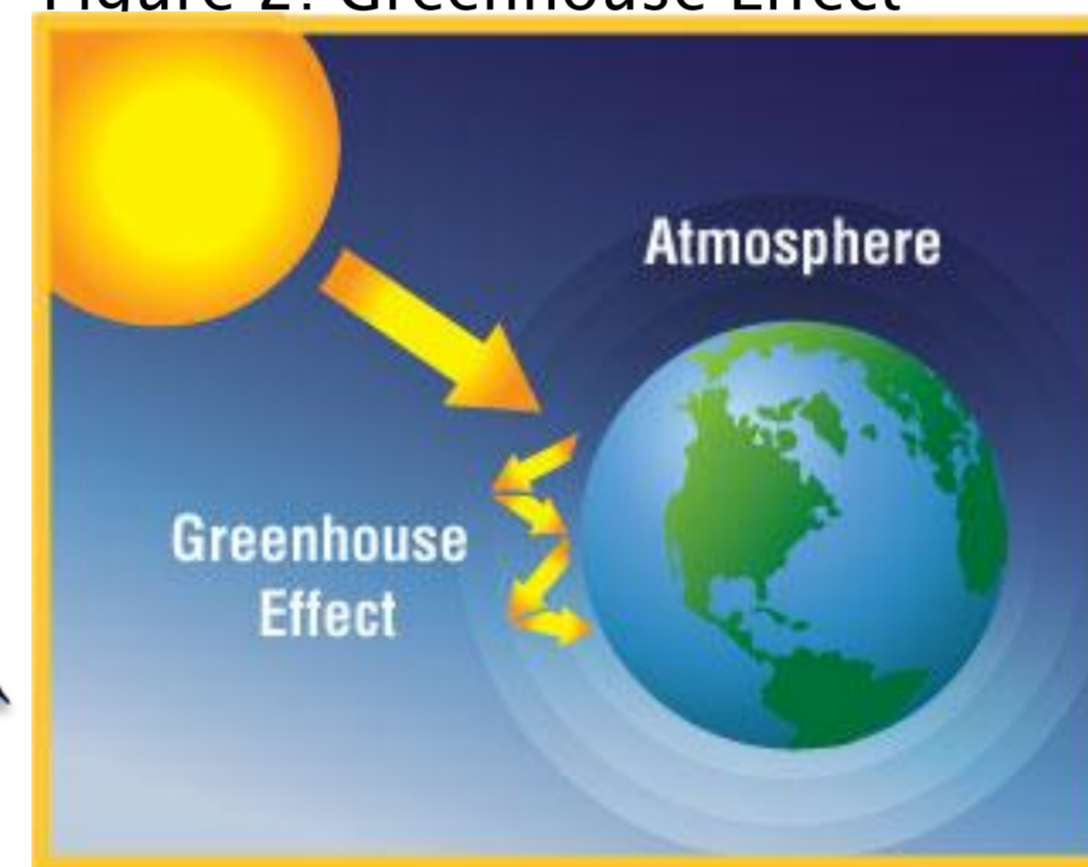


Figure 1: The Footprint Hierarchy

Implications

Reduced carbon emissions

Figure 2: Greenhouse Effect



http://www.enwin.com/kids/conservation/greenhouse_effect.cfm



Sustained production of plastic

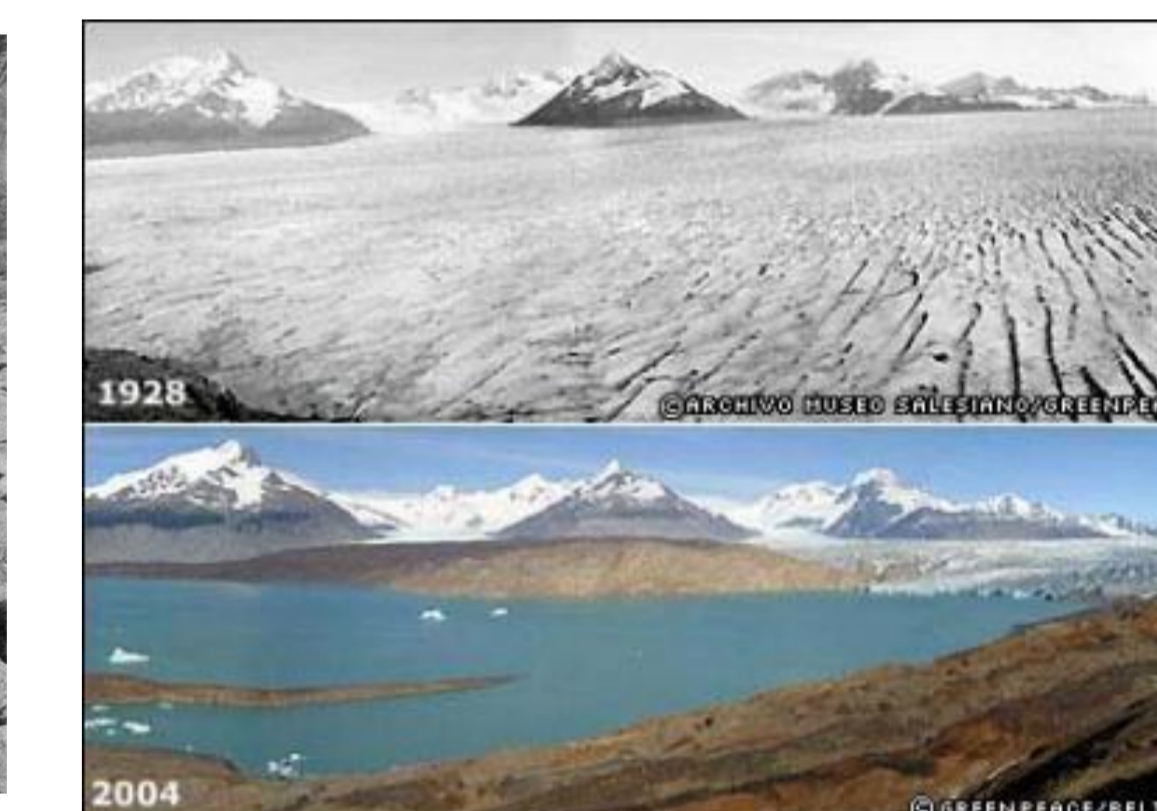
Figure 3: "Plastic Mountain"

Continued consumption of water in production processes

Figure 4: Drought in Portugal



<http://www.fedre.org/en/content/portugal-prays-rain-drought-adds-crisis>



Persistent energy use

Figure 5: Environmental Impacts of Specific Fuels

Method

- Conducted a search of various newspapers from Canada and Asia looking for visibility of different footprints (frequency analysis)
- Accessed: the Canadian Newsstand Proquest online database, the New York Times (NYT.com), China Daily (<http://www.chinadaily.com.cn>), Google, Google Scholar, and Malaysia The Star online (<http://thestar.com.my/>), searching from 1990–2012
- Using Adobe Acrobat, a code hit count was generated
- Initially a large list of codes, then the codes which had the highest frequencies were analyzed within their contextual basis

Product	Litre of Water needed (l)
Drinks	
Apple (100g)	70
Apple Juice (200ml)	190
Beer (350 ml)	75
Coffee (1 cup)	140
Tea (1cup)	30
Milk (1 litre)	1000
Wine (1 glass)	120
Breakfast	
Bread (1 slice)	40
Cheese 1kg	5000
Egg (one)	200
Orange (one)	50
Meat	
Beef (1kg)	15500
Chicken (1kg)	3900
Croat (1kg)	4400
Hamburger (single beef slice)	2500
Pork (1kg)	4800
Sheep (1kg)	6100
Side dish	
Peas (1kg)	500
Rice (1kg)	3400
Soybean (1kg)	1800

Figure 2: Water consumption patterns

Conclusion

- A hierarchy is apparent amongst footprints; carbon being most visible (Table 1,2 & Fig. 1)
- Environmental implications are seen in the impact of less visible footprints (Fig. 2–5). While emphasis on reducing carbon footprints may mitigate global warming, other damaging practices such as water and plastic overconsumption go mostly unnoticed, thus the harmful environmental impacts persist.
- While production practices which emit carbon may be reduced, the production of plastic and consumption of water and energy may continue without consideration
- These practices are interlinked (the production of plastic emits carbon, water is needed to produce energy, etc.) yet considering carbon emissions alone is not sufficient, it is necessary to consider all of the environmental implications when changing current practices
- The water footprint of consumer goods is unknown to most people (2); part of the solution could be to add water footprint information to restaurants menus (Fig. 2)
- Using an ableism lens, it is possible to analyze the motivation for undertaking certain actions such as dealing with environmental issues (2)

Implications for the Bioeconomy

- With this knowledge more efficient and effective prevention methods can be implemented
- Developing a bioeconomy requires holistic examination of the environmental impacts of production and consumption processes; considering the impact of replacing one method of production for another is crucial, as decreasing one method of production because it emits carbon may require increasing another production method which uses more water, energy, etc.

References

- (1) Wolbring (2011) Guest contribution Ableism, disability studies and the academy to the Equity Matters blog of the Canadian Federation for the Humanities and Social Sciences <http://blog.fedcan.ca/2011/06/17/ableism-disability-studies-and-the-academy/>
- (2) Wolbring, G; Leopatra, V., Noga, J., The sentiment of waste and the measure of footprints evaluated through an ableism lens, Asian Journal of Bioethics EJAIB Vol. 22 (3) page 117– 123