

# COBALTBLU - SYSTEMS THINKING

CobaltBlu is a firm believer in a systems thinking approach to the world...it is this thinking that lead us to establish CommunityCarbon.

*CommunityCarbon works upon what we see as the goal of the system..."develop an economy that is sustainable, rewards sustainability, and engages all elements of the market. We think you will find Donella Meadows teachings interesting ... for your review.*



## LEVERAGE POINTS TO INTERVENE IN A SYSTEM

(In increasing order of effectiveness)

12. Constants, parameters, numbers (such as subsidies, taxes, standards)	For example, climate parameters may not be changed easily (the amount of rain, the <u>evapotranspiration</u> rate, the temperature of the water), but they are the ones people think of first (they remember that in their youth, it was certainly raining more). These parameters are indeed very important. But even if changed (improvement of upper river stream to canalize incoming water), they will not change behavior much.
11. The size of buffers and other stabilizing stocks, relative to their flows	The inhabitants are worried the lake fish might die as a consequence of hot water release directly in the lake without any previous cooling off. However, the water in the lake has a large heat capacity, so it's a strong thermic buffer. Provided the release is done at low enough depth, under the thermocline, and the lake volume is big enough, the buffering capacity of the water might prevent any extinction from excess temperature.
10. Structure of material stocks and flows (such as transport network, population age structures)	For example, the city council is considering building the waste water treatment plant. However, the plant will take 5 years to be built, and will last about 30 years. The first delay will prevent the water being cleaned up within the first 5 years, while the second delay will make it impossible to build a plant with exactly the right capacity.
8. Strength of negative feedback loops, relative to the effect they are trying to correct against	One way to avoid the lake getting more and more polluted might be through setting up an additional levy on the industrial plant based on measured concentrations of its effluent. Say the plant management has to pay into a water management fund, depending on the actual amount of waste found in the lake; they will, in this case, receive a direct benefit not just from reducing their waste output, but actually reducing it enough to achieve the desired effect of reducing concentrations in the lake. They cannot benefit from "doing damage more slowly" -- only from actually helping.
7. Gain around driving positive feedback loops	The eutrophication of a lake is a typical feedback loop that goes wild. In a eutrophic lake (which means well-nourished), lots of life can be supported (fish included).
6. Structure of information flow.	A monthly public report of water pollution level, especially nearby the industrial release, could have a lot of effect on people's opinions regarding the industry, and lead to changes in the waste water level of pollution.
5. Rules of the system (such as incentives, punishment, constraints)	For example, a strengthening of the law related to chemicals release limits, or an increase of the tax amount for any water containing a given pollutant, will have a very strong effect on the lake water quality.
4. Power to add, change, evolve, or self-organize system structure	For example, microorganisms have the ability to not only change to fit their new polluted environment, but also to undergo an evolution that make them able to biodegrade or bioaccumulate chemical pollutants. This capacity of part of the system to participate to its own eco-evolution is a major leverage for change.
3. Goal of the system	A city council decision might be to change the goal of the lake from making it a free facility for public and private global use, to a more touristic oriented facility or a conservation area. That goal change will effect several of the above leverages : information on water quality will become mandatory and legal punishments will be set for any illegal polluted effluent.
2. Mindset or paradigm that the system	A current paradigm is "Nature is a stock of resources to be converted to human purpose". What might happen to the lake were this collective idea changed ?
1. Power to transcend paradigms	Many today see Nature as a stock of resources to be converted to human purpose. Many Native Americans see Nature as a living god, to be loved, worshipped, and lived with. These views are incompatible, but perhaps another viewpoint could incorporate them both, along with others.