Regenerative information technology

for healing the planet's ecological crises

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Regenerative information technology
for healing the planet's ecological crises

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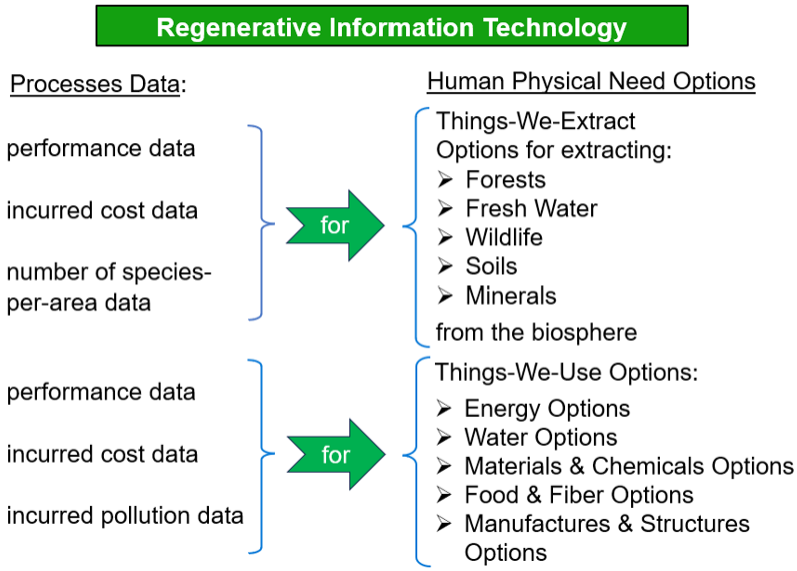
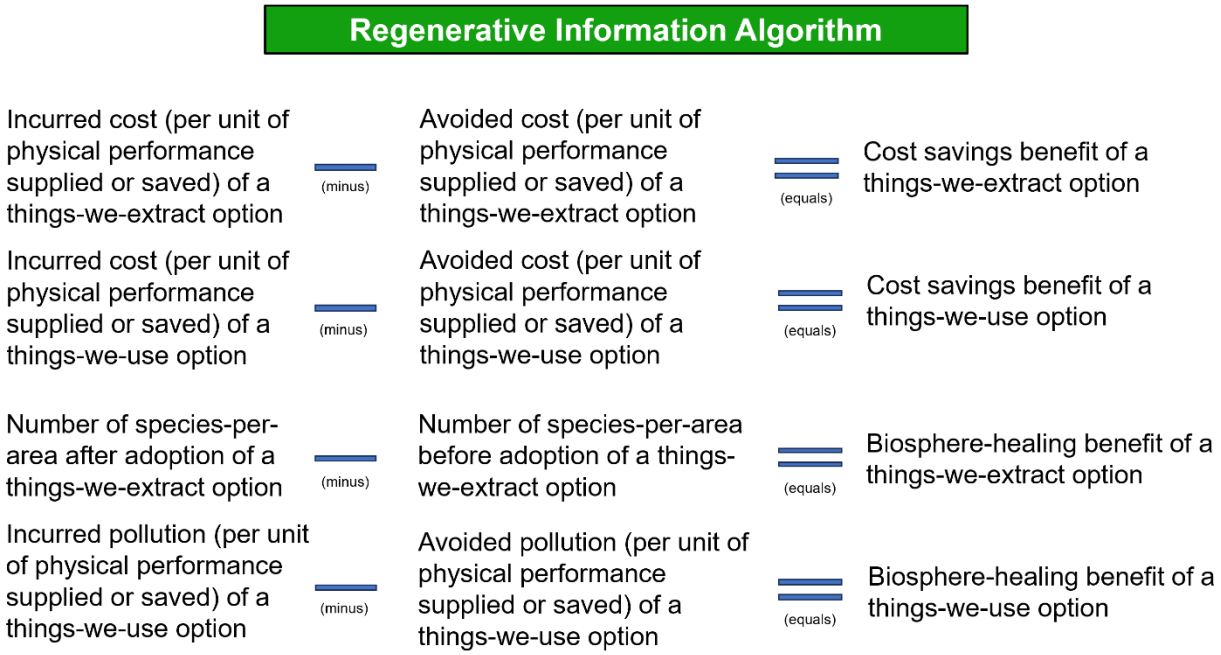
1.0 Regenerative information technology supplies people everywhere with regenerative information services for healing the ecological crises

"***Regenerative information technology***" (or "regenerative info tech") – is a simple and easy-to-use technology that processes data for options for meeting human physical needs …

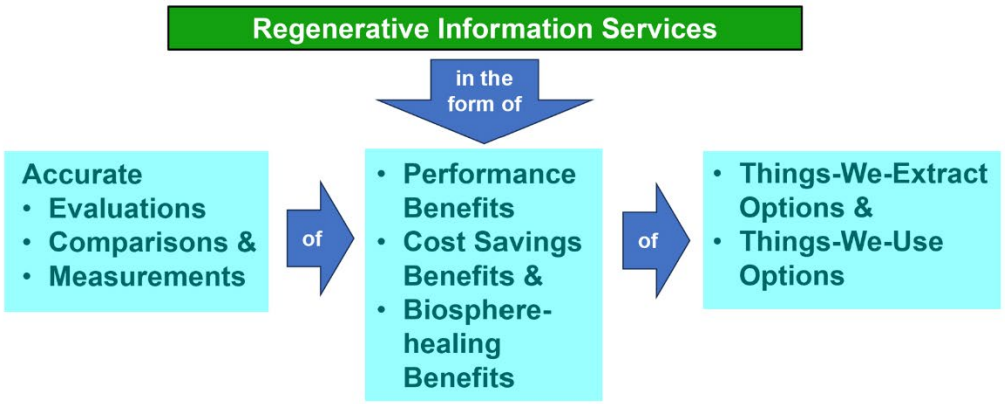


… through a "***regenerative information algorithm***" …



… for supplying people everywhere with simple "***regenerative information services***" in the form of:

- accurate evaluations, comparisons & measurements
- of the performance benefits, cost savings benefits and biosphere-healing benefits
- of things-we-extract options (like rewilding) and things-we-use options (like solar water heaters) for meeting human physical needs …



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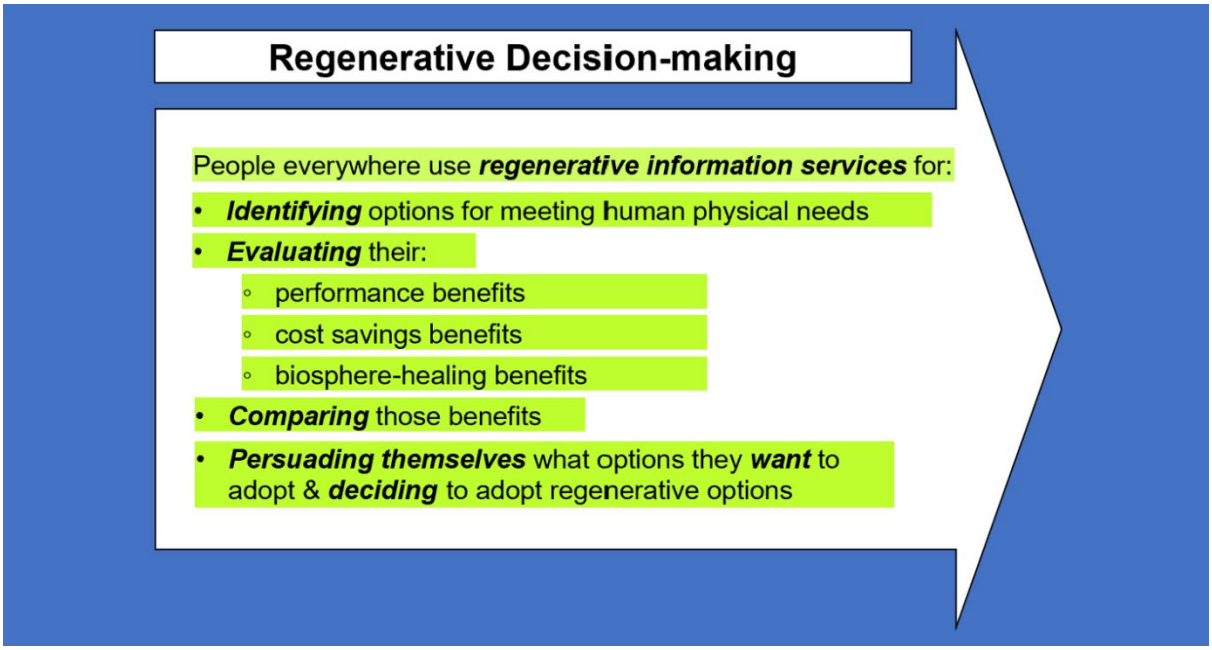
Through a simple decision-making process called "***regenerative decision-making***," people everywhere use ***regenerative information services*** for …

… ***identifying*** options for meeting human physical needs …

… ***evaluating*** the performance benefits, cost savings benefits and biosphere-healing benefits of those options …

… ***comparing*** those benefits …

… ***persuading themselves*** what options they ***want*** to adopt …



… and ***deciding*** to adopt "***regenerative options***" that deliver

- "***performance benefits***" because they meet human physical needs,
- "***cost savings benefits***" because they avoid more costs than they incur, and
- "***biosphere-healing benefits***" because:
    - they scale back extraction flows out of the biosphere measured through increasing the number of species in an area, or
    - they scale back pollution flows into the biosphere measured through avoiding more pollution than they incur …

A **regenerative option** that people everywhere ***want*** to adopt:

① Delivers performance benefits	because it meets a human physical need
② Delivers cost savings benefits	because it avoids more costs than it incurs
③ Delivers biosphere-healing benefits	because it scales back <u>extraction flows</u> measured through increasing the number of species in an area, or because it scales back <u>pollution flows</u> measured through avoiding more pollution than it incurs

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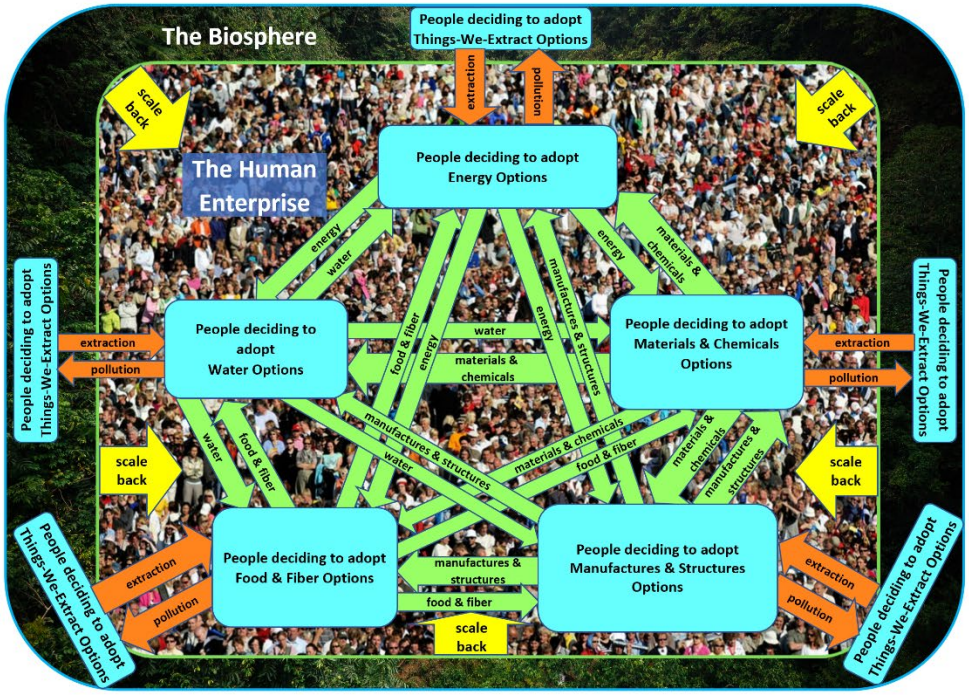
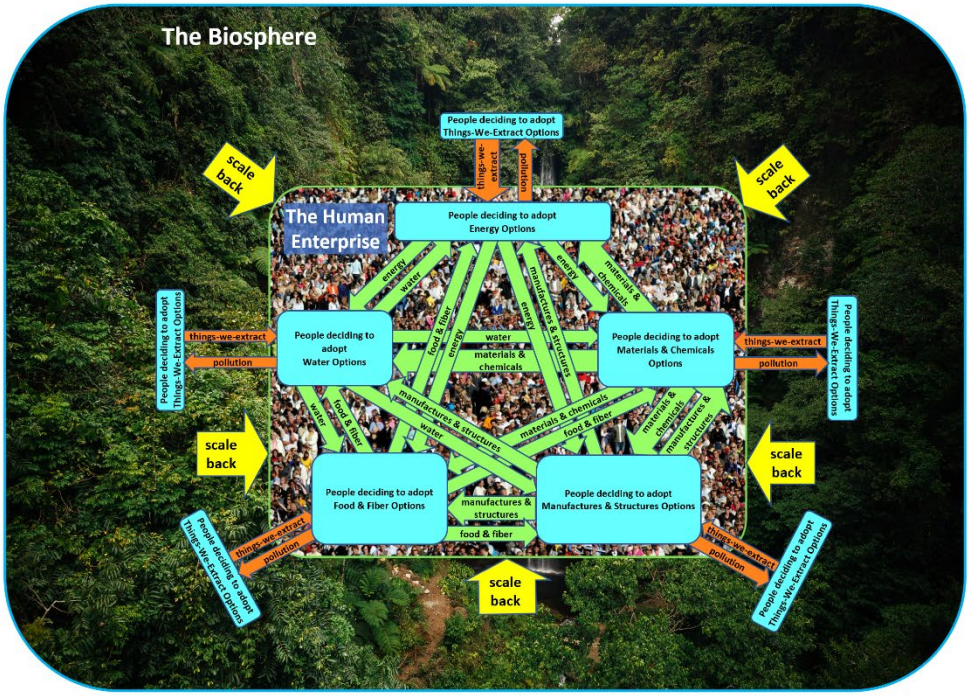
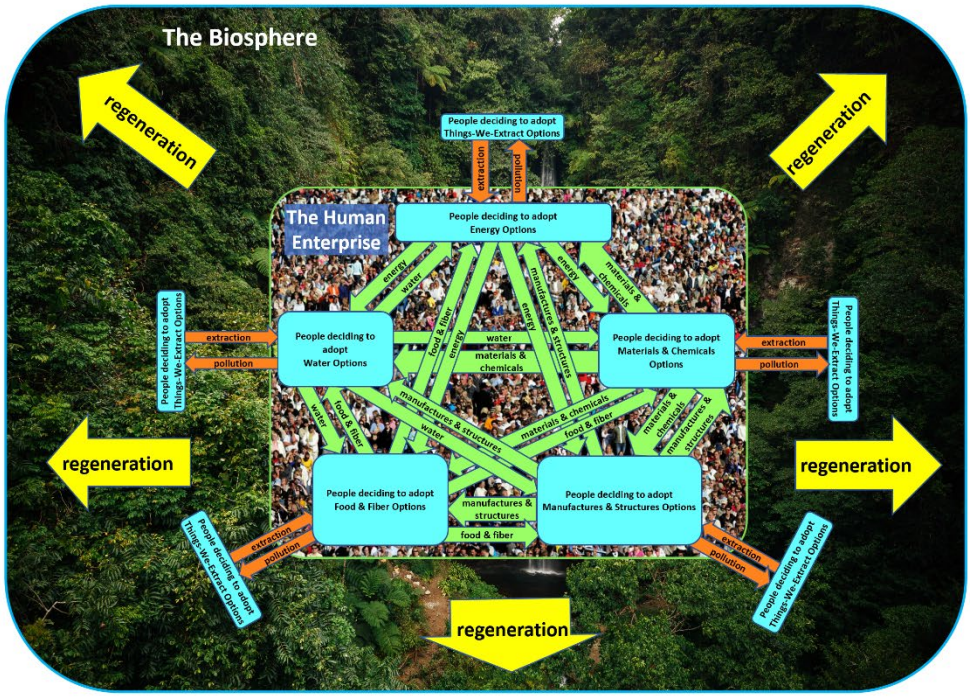
People everywhere ***wanting, deciding & acting*** to adopt regenerative options -- that deliver biosphere-healing benefits -- ***scales back*** the extraction flows out of the biosphere and the pollution flows into the biosphere (in orange), …



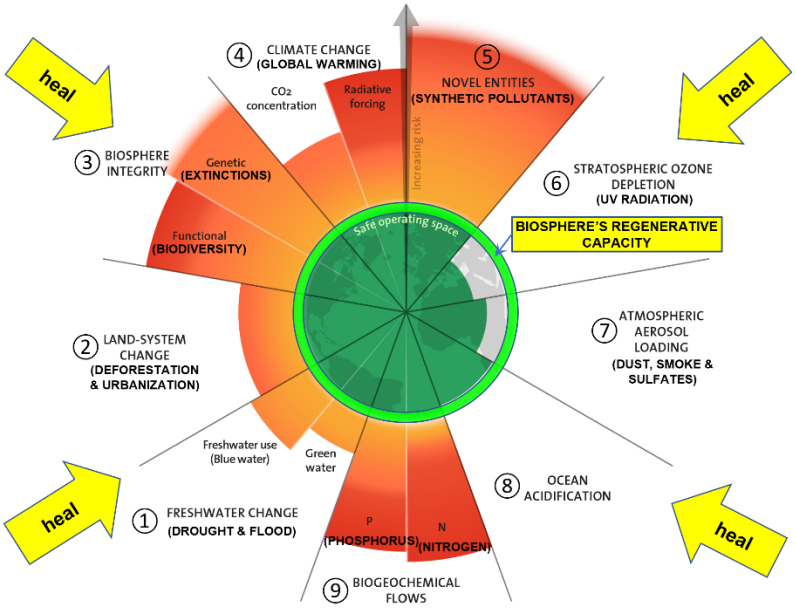
… and, at the same time, ***keeps intact*** the flows of things-we-use (in chartreuse) for meeting the physical needs of every human being, …



… which ***allows*** the biosphere (in deep green) to ***regenerate*** itself, …

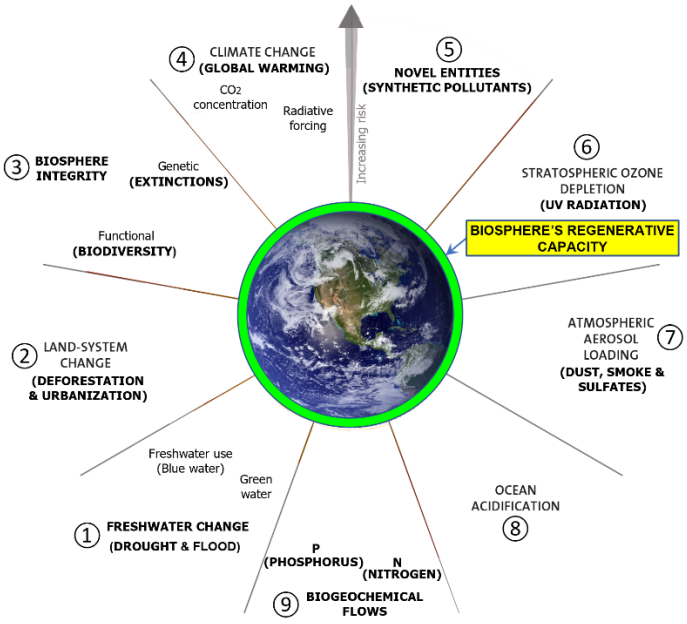


… ***allows*** the regenerated biosphere to ***heal*** the ecological crises as a whole, …



Source: Azote for Stockholm Resilience Centre, based on analysis in Richardson et al 2023

… and ***allows*** the biosphere to meet the physical needs of all living beings, including human beings …



Source: Azote for Stockholm Resilience Centre, based on analysis in Richardson et al 2023

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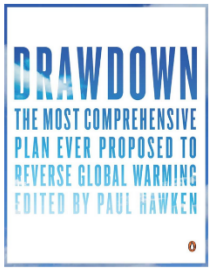
2.0 Regenerative information technology delivers beneficial social impacts on a scale of $97 trillion

What's the scale of beneficial social impacts delivered through regenerative information technology?

Paul Hawken's *Project Drawdown* showed the present-day availability of ***93 categories of regenerative options*** that – when widely adopted – were estimated to deliver more than ***$97 trillion of avoided cost savings*** (cost savings benefits) and more than ***1 trillion tons of avoided greenhouse gas (GHG) pollution*** (biosphere-healing benefits)…



93 categories of regenerative options

> $97 trillion of cost savings

> 1 trillion tons of avoided pollution

sources: https://drawdown.org/solutions/table-of-solutions/
and https://earth.org/project-drawdown

Through people everywhere using regenerative information services, regenerative information technology delivers ***beneficial social impacts*** – on a scale of ***$97 trillion*** of cost savings benefits – to people everywhere who adopt regenerative options.

* * * *

3.0 Regenerative information technology presents an entrepreneurial opportunity on a scale of $4 trillion

Today -- in this very moment -- the living planet is calling for entrepreneurs to ***found an enterprise*** that builds the regenerative information technology required for healing the ecological crises as a whole.

What is the opportunity for entrepreneurs who found such an enterprise?

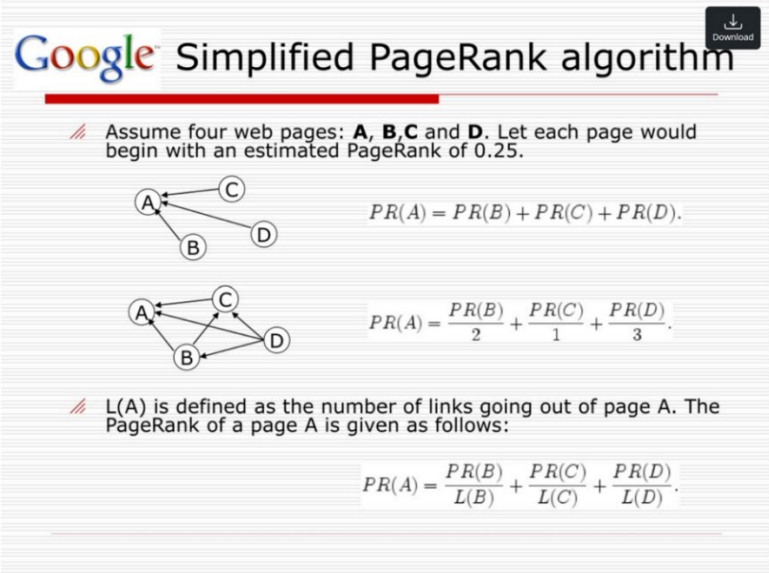
For such entrepreneurs, founding such an enterprise presents an opportunity as simple and uniquely valuable as the invention of Google Search in 1997.

Founding such an enterprise presents such an opportunity because regenerative information technology – using the Regenerative Information Algorithm – is as ***simple*** as Google Search using the Google PageRank Algorithm.

Regenerative information technology presents such an opportunity because both the Regenerative Information Algorithm and the Google PageRank Algorithm are ***simple algorithms*** for processing vast amounts of data into usable information for people everywhere.

The Google PageRank Algorithm – as invented by Larry Page and Sergey Brin[1] – is a simple link analysis algorithm for assigning a numerical weighting – to vast numbers of web pages – that measures the relative importance of each web page for supplying people everywhere with usable search services …

[1] S. Brin & L. Page, "The anatomy of a large-scale hypertextual Web search engine," Computer Networks and ISDN Systems 30 (1998) 107-117.



Like the simple Google PageRank Algorithm, the simple Regenerative Information Algorithm …

Regenerative Information Algorithm

Incurred cost (per unit of physical performance supplied or saved) of a things-we-extract option	(minus)	Avoided cost (per unit of physical performance supplied or saved) of a things-we-extract option	(equals)	Cost savings benefit of a things-we-extract option
Incurred cost (per unit of physical performance supplied or saved) of a things-we-use option	(minus)	Avoided cost (per unit of physical performance supplied or saved) of a things-we-use option	(equals)	Cost savings benefit of a things-we-use option
Number of species-per-area after adoption of a things-we-extract option	(minus)	Number of species-per-area before adoption of a things-we-extract option	(equals)	Biosphere-healing benefit of a things-we-extract option
Incurred pollution (per unit of physical performance supplied or saved) of a things-we-use option	(minus)	Avoided pollution (per unit of physical performance supplied or saved) of a things-we-use option	(equals)	Biosphere-healing benefit of a things-we-use option

… processes vast amounts of:

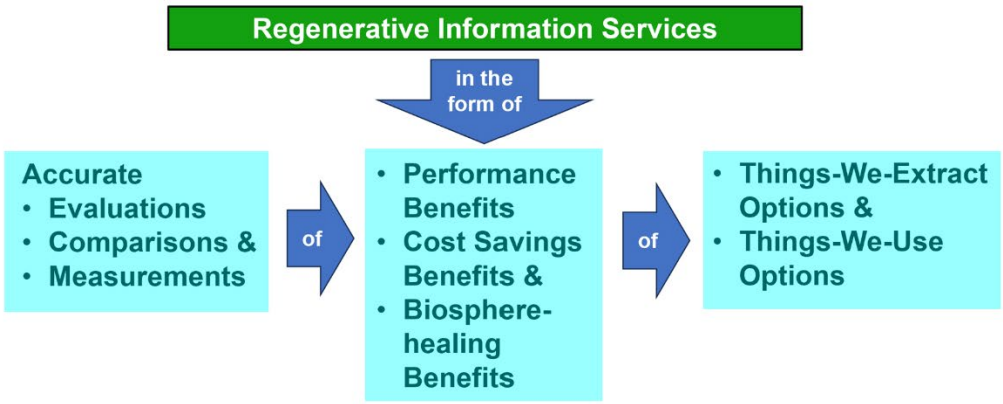
- performance data
- incurred cost data
- # of species-per-area data for things-we-extract options &

- incurred pollution data for things-we-use options,

and supplies people everywhere with usable information (that is, ***regenerative information services***) in the form of:

- accurate evaluations, comparisons and measurements
- of performance benefits, cost savings benefits and biosphere-healing benefits
- of things-we-extract options and things-we-use options for meeting human physical needs

…



* * * *

Founding such an enterprise -- that builds the regenerative information technology required for healing the ecological crises as a whole – presents an opportunity as ***uniquely valuable*** as the invention of Google Search in 1997 because regenerative information technology is as ***uniquely valuable*** as Google Search.

Google Search –using the Google PageRank Algorithm -- supplies uniquely valuable information search services because:

- Google Search – using the Google PageRank Algorithm – supplies information search services usable by people everywhere, and

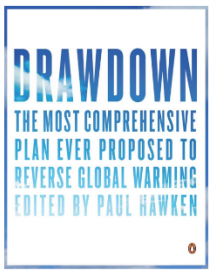
- Google Search – using the Google PageRank Algorithm -- supplies the core information search services through which Alphabet (Google) has built a **$4 trillion business enterprise** as of January 2026.

Just as Google Search supplies people everywhere with ***uniquely valuable information search services***, so does regenerative information technology supply people everywhere with ***uniquely valuable regenerative information services*** for adopting regenerative options that deliver performance benefits, cost savings benefits and biosphere-healing benefits.

* * * *

What's the scale of value supplied by regenerative information services?

Paul Hawken's *Project Drawdown* showed the present-day availability of ***93 categories of regenerative options*** that – when widely adopted – were estimated to deliver more than ***$97 trillion of avoided cost savings*** (cost savings benefits) and more than ***1 trillion tons of avoided greenhouse gas (GHG) pollution*** (biosphere-healing benefits)…



93 categories of regenerative options

> $97 trillion of cost savings

> 1 trillion tons of avoided pollution

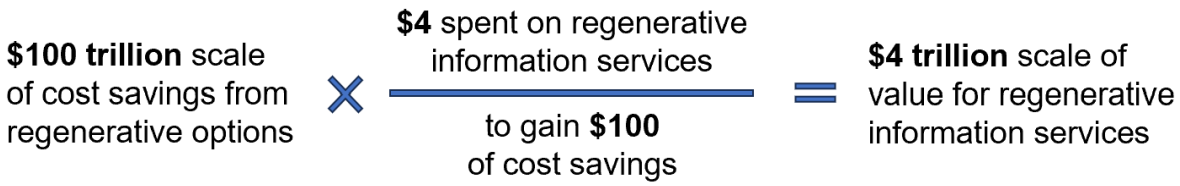
sources: https://drawdown.org/solutions/table-of-solutions/
and https://earth.org/project-drawdown

Rounding up the scale of cost savings – delivered by regenerative options – from ***$97 trillion*** to ***$100 trillion***[2]…

[2] Rounding up the Project Drawdown avoided cost savings figure from ***$97 trillion*** to ***$100 trillion*** is justified because Project Drawdown selectively & only studied about 93 categories of regenerative options from among thousands of categories of options for meeting human physical needs.

… and multiplying the scale of cost savings by **$4** spent on regenerative information services to gain **$100** of cost savings …

… equals a ***$4 trillion*** scale of value for regenerative information services …



In other words, simple regenerative information services present an entrepreneurial opportunity as ***uniquely valuable*** – on a scale of ***$4 trillion*** – as the ***$4 trillion*** value of the Google enterprise built on the information search services supplied through Google Search.

In the words of Ben Silbermann, "If Google teaches you anything, it's that small ideas can be big."

* * * *

Founding an enterprise -- that builds the regenerative information technology required for healing the ecological crises – presents an opportunity as ***simple*** and ***uniquely valuable*** as the invention of Google Search because regenerative information technology is as ***simple*** and ***uniquely valuable*** as Google Search.

* * * *

4.0 Regenerative information technology creates tens of thousands of career opportunities

Regenerative information technology creates tens of thousands of career opportunities[3] for people with training, skills and experience in the following disciplines:

Physical Sciences

Designing, building, testing and operating units-of-physical-performance databases & apps for evaluating performance benefits of things-we-extract options and things-we-use options for meeting human physical needs

Designing, building, testing and operating incurred-pollution-per-unit-of-physical-performance databases and apps for evaluating biosphere-healing benefits of things-we-use options for meeting human physical needs

Natural Sciences

Designing, building, testing and operating units-of-physical-performance databases & apps for evaluating performance benefits of things-we-extract options and things-we-use options for meeting human physical needs

Designing, building, testing and operating number-of-species-per-area databases and apps for evaluating biosphere-healing benefits of things-we-extract options for meeting human physical needs

Evaluating, comparing and measuring cumulative impacts of biosphere-healing benefits for healing the ecological crises as a whole

[3] This figure is derived from Google's professional workforce of 182,975 employees as of February 2025.

Cost Accounting

Designing, building, testing and operating incurred-cost-per-unit-of-physical-performance databases and apps for evaluating cost savings benefits of things-we-extract options and things-we-use options for meeting human physical needs

Information Sciences

Designing, building, testing and using regenerative information databases and apps for evaluating performance benefits, cost savings benefits and biosphere-healing benefits of things-we-extract options and things-we-use options for meeting human physical needs

Psychology

Applying psychological science – specifically the cognitive psychology of human decision-making and human decision-making processes – for adapting regenerative information databases and apps to people's informational and decision-making needs

Regenerative Option Innovation

Applying regenerative information services for innovating regenerative options that deliver more performance benefits, more cost savings benefits and more biosphere-healing benefits

Regenerative Consulting Services

Designing, building, testing and operating regenerative information databases and apps for use with regenerative consulting services

Regenerative Financial Services

Designing, building, testing and operating regenerative information databases and apps for use with regenerative financial services

Regenerative Information Technology Enterprise

Performing managerial and other business functions of a large enterprise for building regenerative information technology and delivering regenerative information services, including:

- governance and administration
- marketing and sales
- customer services
- finance and accounting
- enterprise information systems
- human resources
- communications and public relations
- investor relations

* * * *

5.0 Operational Plan and Budget

A provisional operational plan and budget for a regenerative information technology enterprise might look this:

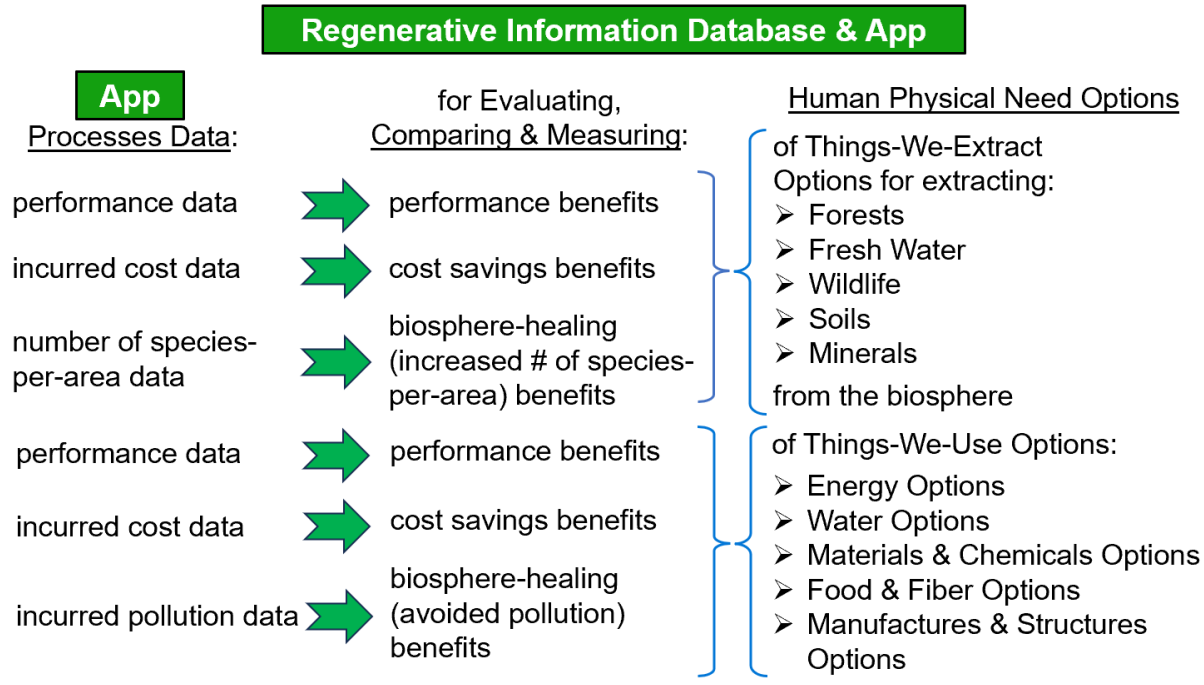
First, build a core management team composed of individuals with skills and experience in:

- founding, organizing and operating a very large information technology enterprise, and
- designing, building, testing and operating a very large database and applications for supplying regenerative information services to people everywhere

To build the core management team, the enterprise will be guided by this principle expressed by Steve Jobs:

> When you're in a start-up, the first ten people will determine whether the company succeeds or not. Each is 10 percent of the company. So why wouldn't you take as much time as necessary to find all the A players? If three were not so great, why would you want a company where 30 percent of your people are not so great? A small company depends on great people much more than a big company does.

Second, the core management team will design, test and implement a work process and a work plan for designing, building, testing and operating the very large ***regenerative information database and applications*** for supplying regenerative information services to people everywhere …



In a project of this scale, the potential is enormous for mistakes, conflicts, complexity, delays, overruns and waste in the designing, building, testing and operation of the very large regenerative information database and applications. To mitigate those risks, the design, testing and implementation of the work process and work plan is critical to the success of the enterprise.

Third, a budget for the regenerative information technology enterprise will depend on the work process and work plan developed by the core management team during the initial phase of the enterprise's operations.

A provisional budget for the enterprise might look like this:

Working from a nominal ***$4 trillion*** value for the successful regenerative information services enterprise (per Section 3.0), a nominal budget for designing, building, testing and operating a regenerative information database and app might look like 1% of that nominal $4 trillion value, or ***$40 billion***.

Such a nominal $40 billion budget – for designing, building, testing and operating a regenerative information database and app – might fund the salaries & overhead of a workforce of 200,000 people[4] at a nominal salary & overhead of $200,000 per capita.

Working from a nominal ***$40 billion*** budget for designing, building, testing and operating the regenerative information database and app, a nominal budget for designing, testing and implementing the work process and work plan – during the initial phase of the enterprise's operations -- might look like .1% of that nominal $40 billion budget, or ***$40 million***.

Such a nominal ***$40 million*** budget – for designing, testing and implementing the work process and work plan – might fund the salaries & overhead of a workforce of 100 people at a nominal salary & overhead of $400,000 per capita.

* * * *

[4] Such a nominal workforce of 100,000 people is on a scale with Google's professional workforce of 182,975 employees as of February 2025.

6.0 Management

Erik Kvam, Founder and Interim CEO, is a generalist and writer in the fields of energy transition and reversing global warming. He has law degrees from Georgetown University and New York University, a Masters of Science degree from Columbia University's School of Engineering and Applied Sciences, and an undergraduate degree in Finance and Economics from the University of Wisconsin-Madison. You can subscribe to his Substack channel, *The Regenerative Transition*, at https://erikkvam.substack.com.

Appendix: A first-ever problem statement for solving and healing the ecological crises as a whole

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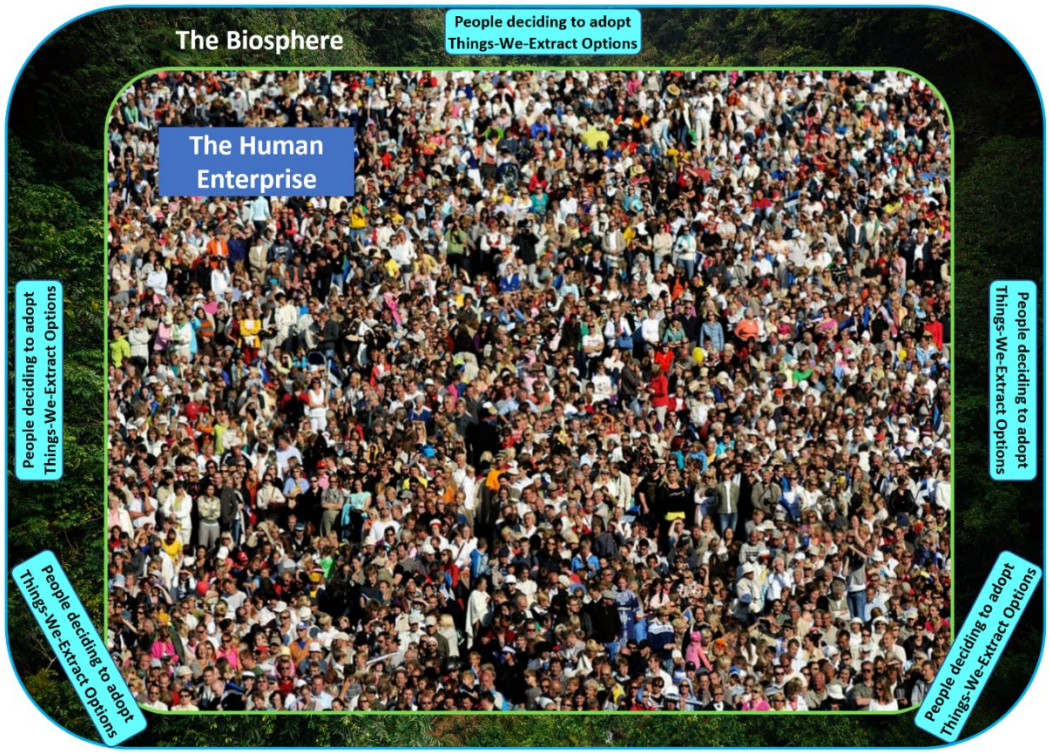
People everywhere making decisions for meeting human physical needs are creating the ecological crises.

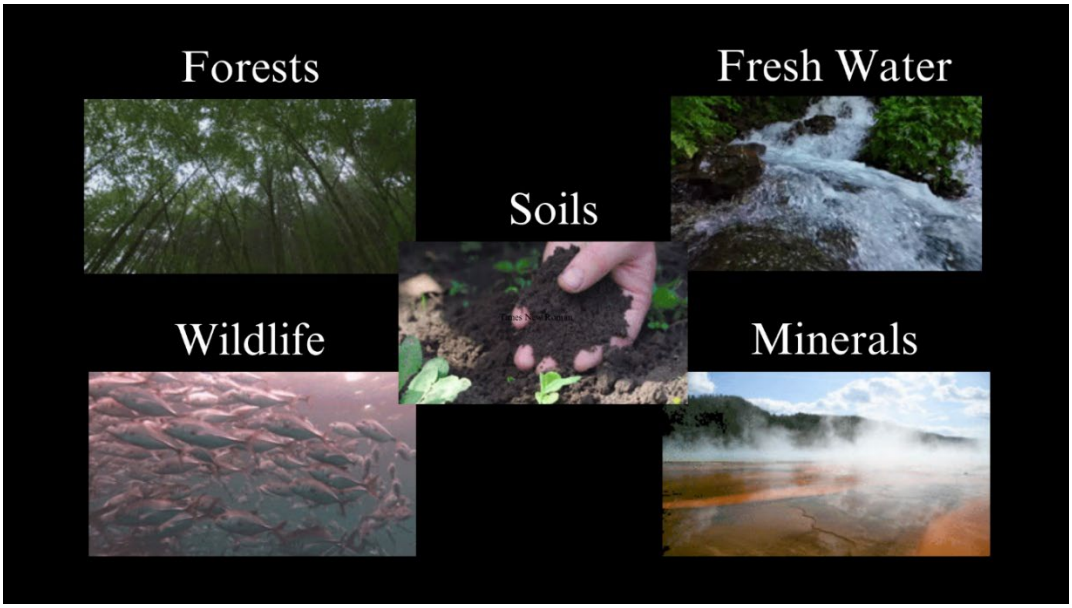
Human decision-making for meeting human physical needs -- which may be called "the Human Enterprise"[5] -- may be depicted as …

… the sum of people everywhere ***deciding to extract physical things*** (in turquoise) from the biosphere (in deep green) …

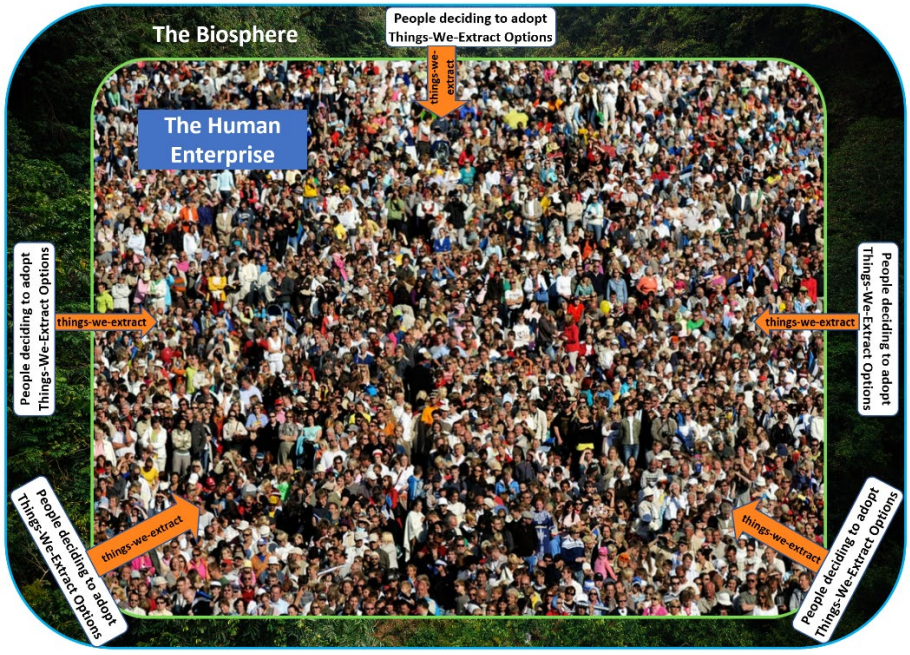


[5] Biologist Paul Ehrlich used the expression -- "the human enterprise" -- to capture the entirety of human activities in relation to the biosphere: "To rescue the human enterprise in the long run requires strong action in the short run directed toward saving biodiversity and bringing the human enterprise within sustainable limits."

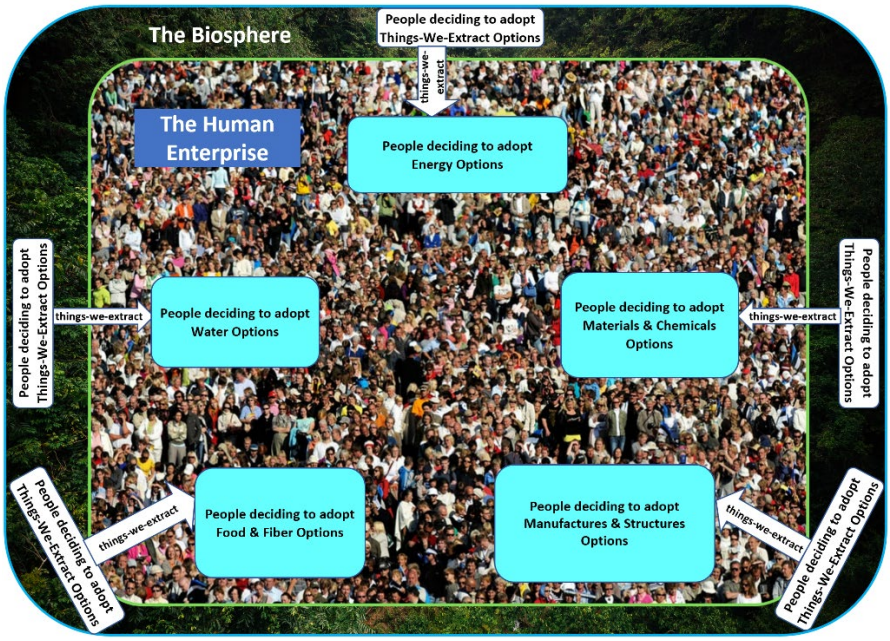
… things like forests, fresh water, wildlife, soils and minerals -- that may be called the "things-we-extract" …



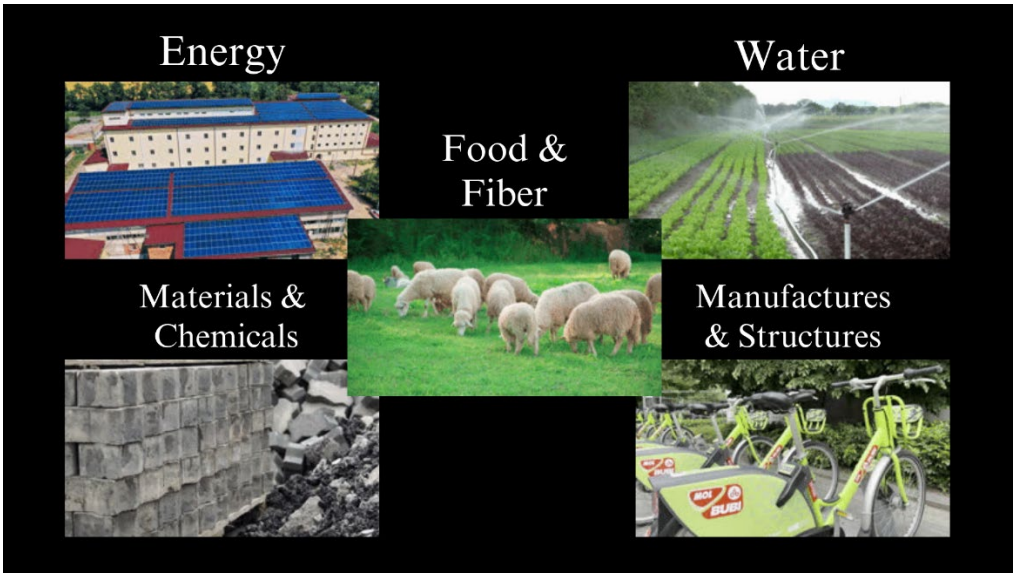
… plus all the ***physical flows of all those things-we-extract*** (extraction flows, in orange) – things like forests, fresh water, wildlife, soils and minerals – out of the biosphere (in deep green) and into the Human Enterprise …



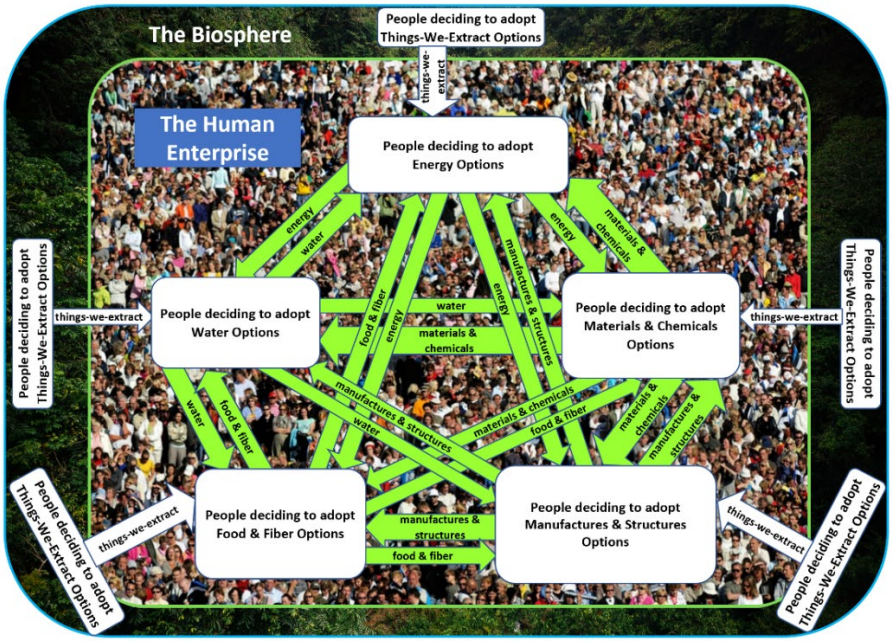
… plus people everywhere ***deciding to use all those things-we-extract*** (in turquoise) -- in the forms of energy, water, materials & chemicals, food & fiber and manufactures & structures …



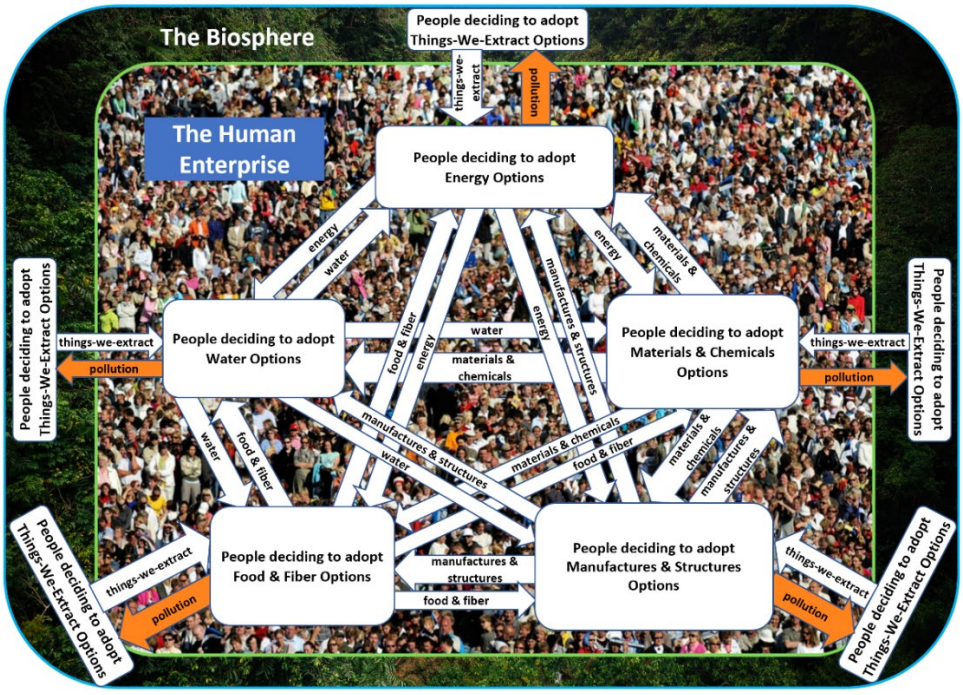
… things like energy, water, materials & chemicals, food & fiber and manufactures & structures that may be called the "things-we-use" …



… plus all the ***physical flows of all those things-we-use*** (in chartreuse) – things like energy, water, materials & chemicals, food & fiber and manufactures & structures -- ***within*** the Human Enterprise for meeting human physical needs …

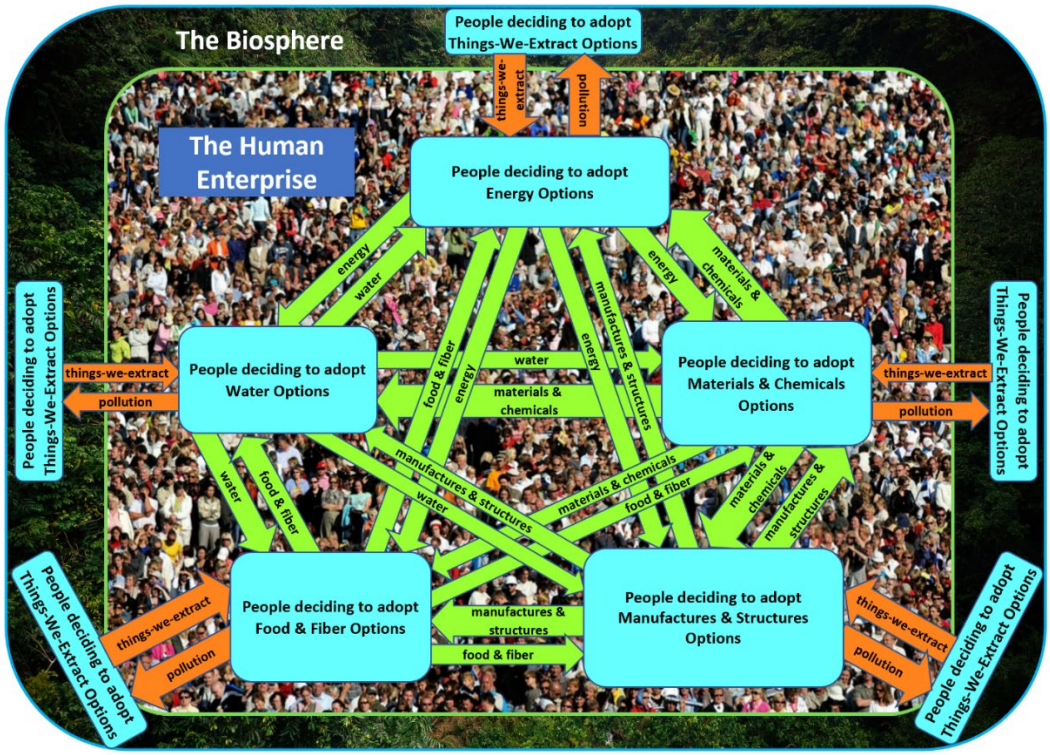


... plus all the ***physical flows of pollution*** from all those things-we-use (pollution flows, in orange) out of the Human Enterprise and into the biosphere (in deep green) …

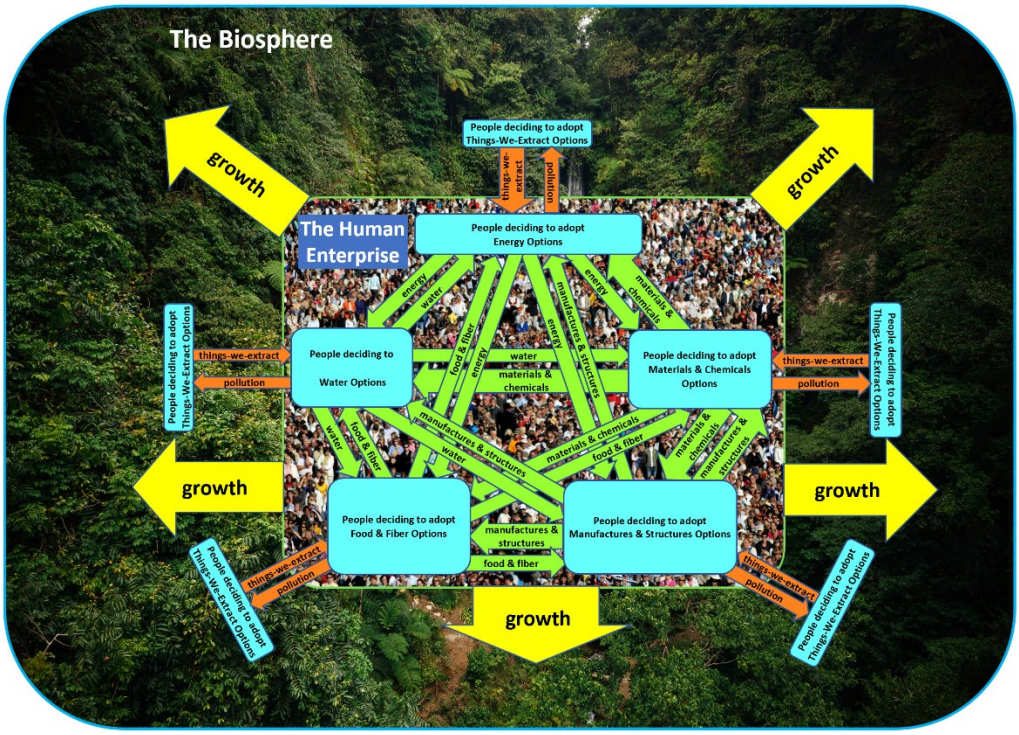


This simple "map" of the Human Enterprise depicts:

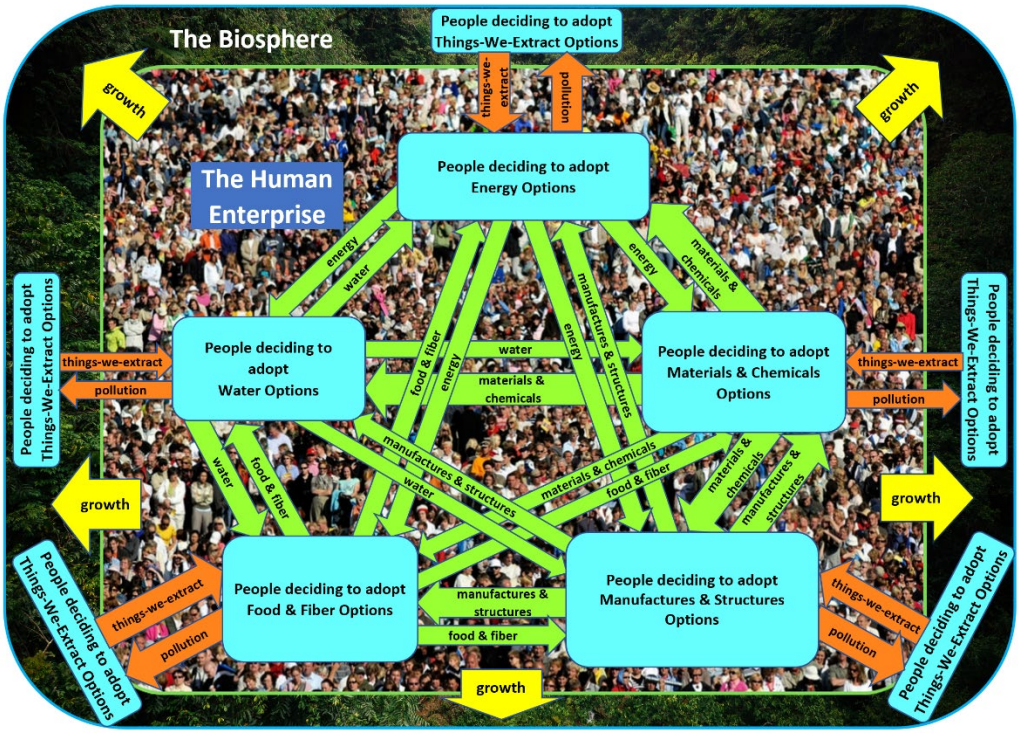
- people everywhere making decisions for meeting human physical needs (in turquoise), plus
- all the extraction flows (in orange), things-we-use flows (in chartreuse) and pollution flows (in orange) created by people everywhere making decisions for meeting human physical needs …



The simple map of the Human Enterprise allows one to visualize that the ***exponential growth*** of the Human Enterprise (in yellow) …

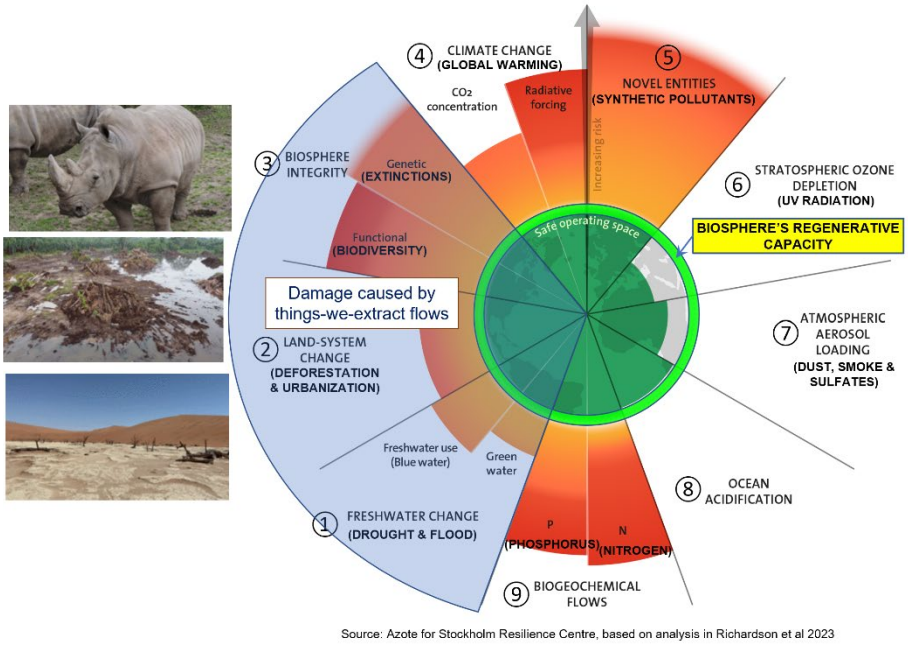


… has reached a point where the exponential damage to the biosphere (in deep green) from the exponentially growing extraction flows and pollution flows of the Human Enterprise (in orange) is outstripping the biosphere's capacity to regenerate itself …



The ***exponential damage*** to the biosphere as a whole from the ***extraction flows*** of the Human Enterprise is showing up (in blue-gray) as:

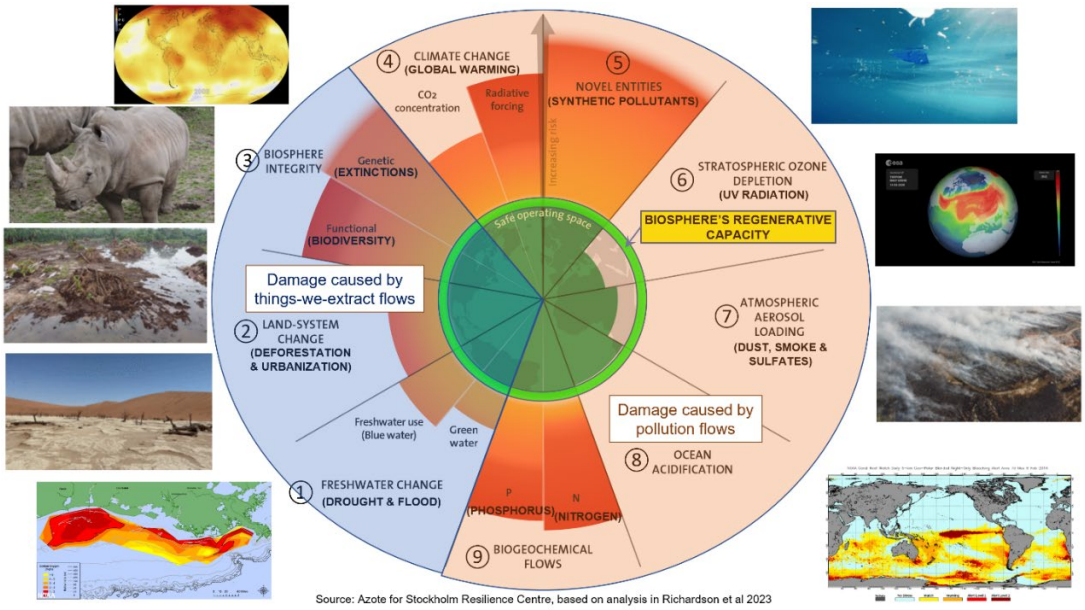
- eco-crises of freshwater drought and flood
- eco-crises of deforestation and urbanization, and
- eco-crises of species extinctions and biodiversity loss …



Source: Azote for Stockholm Resilience Centre, based on analysis in Richardson et al 2023

The ***exponential damage*** to the biosphere as a whole from the ***pollution flows*** of the Human Enterprise is showing up (in orange) as:

- eco-crises of global warming and climate change
- eco-crises of synthetic pollutants such as herbicides, pesticides and microplastics
- eco-crises of ozone layer depletion
- eco-crises of aerosol pollutants such as dust, smoke and sulfates
- eco-crises of ocean acidification, and
- eco-crises of phosphorus and nitrogen pollutants in rivers and coastal seas …



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The simple map of the Human Enterprise – depicting decision-making for meeting human physical needs that is creating the complex problem of the planet's ecological crises – allows one to apply the principle that ***the solution is embedded within the problem***.[6]

Defining the complex problem of the planet's ecological crises -- as being created by simple human decision-making depicted in the simple map of the Human Enterprise – allows one to solve the problem of the ecological crises:

- through a general process for scaling back the extraction flows & pollution flows and allowing the regenerated biosphere to heal the ecological crises as a whole, and
- through a specific process (***regenerative decision-making***) through which people everywhere ***want, decide and act*** to adopt regenerative options at the exponential rate required for scaling back the extraction flows & pollution flows.

[6] In the words of author Steven Pressfield:

> Problems seeking solutions. This is a very powerful way of thinking about the creative process. Implicit in this point of view is the idea that the answer already exists within the question, that ***the solution is embedded within the problem***. If your job is to find that solution, the first step is to define the problem … Define the problem and you're halfway to the solution.