

All life on Earth is interrelated with each other; hence an everlasting 'ecological cycle' has been created.

To protect biodiversity...

Actions to avoid negative impacts on ecosystem conservation

Reduce the negative impacts of chemical substances and radioactive materials!
Reduce the use of artificial elements (plastic, chemical fertilizers, pesticides, chemicals, genetically-modified products etc) which can not be easily broken down by the natural processes.

Avoid unnecessary migration of animals and plants!
Since it causes genetic pollution, we must not relocate the original plants and animals to a place where they cannot migrate by themselves.
e.g.) when you plant trees, you should choose local seeds or use species that are locally grown or collected. Do not release Japanese rice fish, fireflies and beetles that have been brought from outside into the region.

Exclude the alien species which disrupt the local ecosystem!
Based on the Invasive Alien Species Law, we should exclude foreign invasive species that could affect the local ecosystem.
e.g. Snapping turtle, Crayfish, Water feather, and Bur cucumber.

Think and act from a creatures' point of view!
Let's conserve or help to create a habitat where endangered species live e.g. Restoration of neglected woodlands, securing the spots for habitat (biotope) through recovery/creating of shallow water areas.

Actions to restore ecosystem recovery

Establish adaptive management by monitoring!
Let's evaluate our natural environmental restoration through the status of creatures. Using the ecological indicators such as number of dragonflies and frogs, we could regularly monitor the status to [re]adjust future management decisions as necessary.

Promote conservation activities in conjunction with local people!
Let's make efforts to enrich the local ecosystem by contributing to the local community scheme. e.g. Cooperating with local organisations or highly specialised agencies, plan and implement cultural services. Encourage next generations so that they will continue to support biodiversity conservation activities in the future.



'Resources' which have been created by living creatures

4.6 billion years ago newly born earth was a burning planet covered with only carbon dioxide. Around 600 million years later, the "sea" was created and the ocean absorbed half of the carbon dioxide. After 200 million years primitive bacteria (one-celled organisms) were born in the sea as the first life. The history of living nature was started. 1.9 billion years since the Earth was born, photosynthetic cyanobacteria appeared and began to release oxygen into the atmosphere, and then seaweed appeared which produced more oxygen. 2.1 billion years later, the ozone layer was formed. The ozone layer blocked harmful ultraviolet rays from space and some marine plants came ashore.

Creatures and the Earth influenced each other and created a miracle! That is the current global environment.

Carbon dioxide that occupied most of the atmosphere was absorbed by the plants. Over a long period of time, carbon was deposited in the soil and on the seabed, and we currently use these deposits as fossil fuels e.g. oil and coal. Our activities of mining fossil fuels releases carbon dioxide into the atmosphere thereby damaging the ozone layer which provide protection to creatures, therefore we have a responsibility to pass the global environment and resources which were created in the pre-historic time, down to the next generations.

Biodiversity enriched global environment

Creatures have been adapted to the environment from time to time through a long evolutionary process. They have sometimes changed their form and shape, and have had repeated evolution and natural selection process. As a result an infinite variety of biospheres have been created. About 1.4 million different creatures are known so far, and there are at least 30 million creatures that live on the Earth.



These creatures have their individual roles on the Earth while having relationship with each other, and they finally established the current global ecosystem which human society receives a variety of benefits.

Three levels of 'diversity' which must be protected

All lives are linked to each other (Species Diversity)

Creatures adapt to their environmental conditions, linked with other species within the same ecosystem which preserve native ecosystem in relation to their roles. Ecosystem is formed by different species and it is stable when the statuses of intra-relationship among species remain undisturbed. Ecosystems also provide us a lot of benefits.

Yet same species are all different (Genetic Diversity)

For example, a fish species that live in the different rivers evolve to optimise their habitats and have their own genes even if they are the same species. This kind of genetic diversity protects species from extinction.

All lives are different (Ecosystem Diversity)

The ecosystems where various combinations of creatures inhabit are divided into many different types such as forest ecosystems, marine ecosystems and river ecosystems etc according to the conditions of the natural environment.

Biodiversity is damaged due to human activities

Habitat degradation of animals and plants due to land development
The land development would cause the loss of natural habitat. For example, the deforestation for timber and pulp may cause the collapse of the local forest ecosystem. It is important to ensure that our suppliers have a sustainable environmental management policy regarding the paper resources and also urge them to refrain from illegally cutting down the trees and over hunting of endangered species.

Qualitative change in the natural environment due to changes in human lifestyles

Rice fields and woodlands had been sources of energy and food in Japan before the time of rapid economic growth. At that time human activities in nature helped to conserve biodiversity. Now forests and woodlands have been destroyed because of the change of human lifestyles which depend on oil, and unique species from the ecosystem are disappearing.

Ecosystem disturbance by alien species or carry-in chemicals

Exotic species that were transferred from other parts of the country and from abroad have destroyed the native species. Alien species have taken over the habitats of native species, and caused the genetic disturbance by cross breeding among closely related species, as a result the local ecosystem has been threatened. In addition, species which are on top of the food chain (e.g. Ibis and Storks) are in danger of extinction because toxic chemicals are continuously accumulating in their bodies.

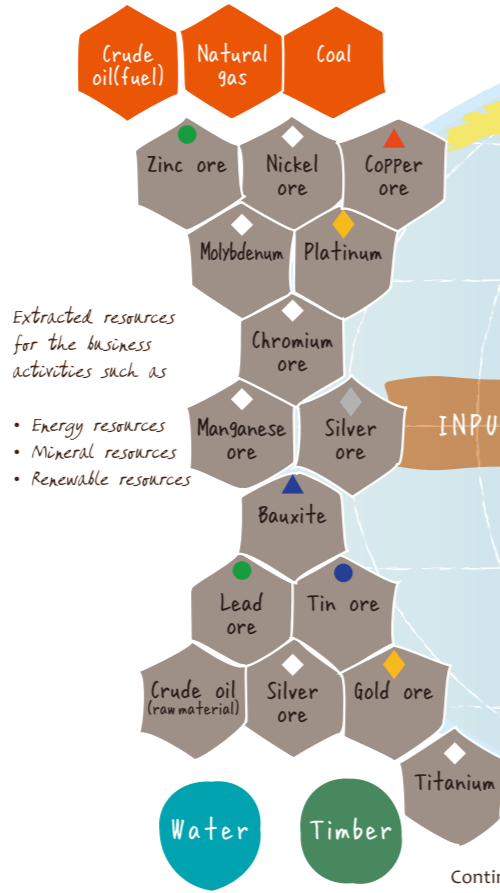


The surface temperature of newborn Earth was 2,000°C, since the concentration of carbon dioxide was 60 to 80% and zero oxygen in the atmosphere, therefore there were no living creatures who could survive in this environment. Eventually the Earth cooled down and the sea was created, then the primitive life was born. Cyanobacteria started photosynthetic process (organic substances are made by capturing carbon dioxide [CO₂] and oxygen [O₂] is emitted as by-product). After 3 billion years of endless time, the atmosphere of oxygen and ozone [O₃] has been created, and finally suitable atmosphere for biodiversity was established.

The Earth calendar that has compressed 4.6 billion years of the Earth's history into one year

- January the 1st ... Origin of the Earth
- February the 25th ... First creation of life
- May the 31st ... First photosynthetic organism born
- July the 10th ... Birth of eukaryotic
- August the 3rd ... Supercontinent Nuna
- September the 27th ... Multicultural organism born
- October the 13th ... Supercontinent Rodinia
- November the 6th ... Global freeze
- November the 14th ... Ozone layers form
- November the 20th ... Fish appear
- November the 28th ... Plants and arthropods migrate to the land
- November the 29th ... Amphibians crawl up to the land
- December the 2nd ... Mass extinction
- December the 3rd ... Spreading forest, birth of the Reptiles
- December the 11th ... Supercontinent Pangea
- December the 12th ... Biggest mass extinction in the history
- December the 13th ... Dinosaur era began
- December the 15th ... Mass extinction
- December the 19th ... Birds appear
- December the 25th ... Heyday of the dinosaurs
- December the 26th ... Giant meteorite crashes to the Earth
- December the 27th ... Prosperity of the Mammals
- December the 31st ... Appearance of humankind

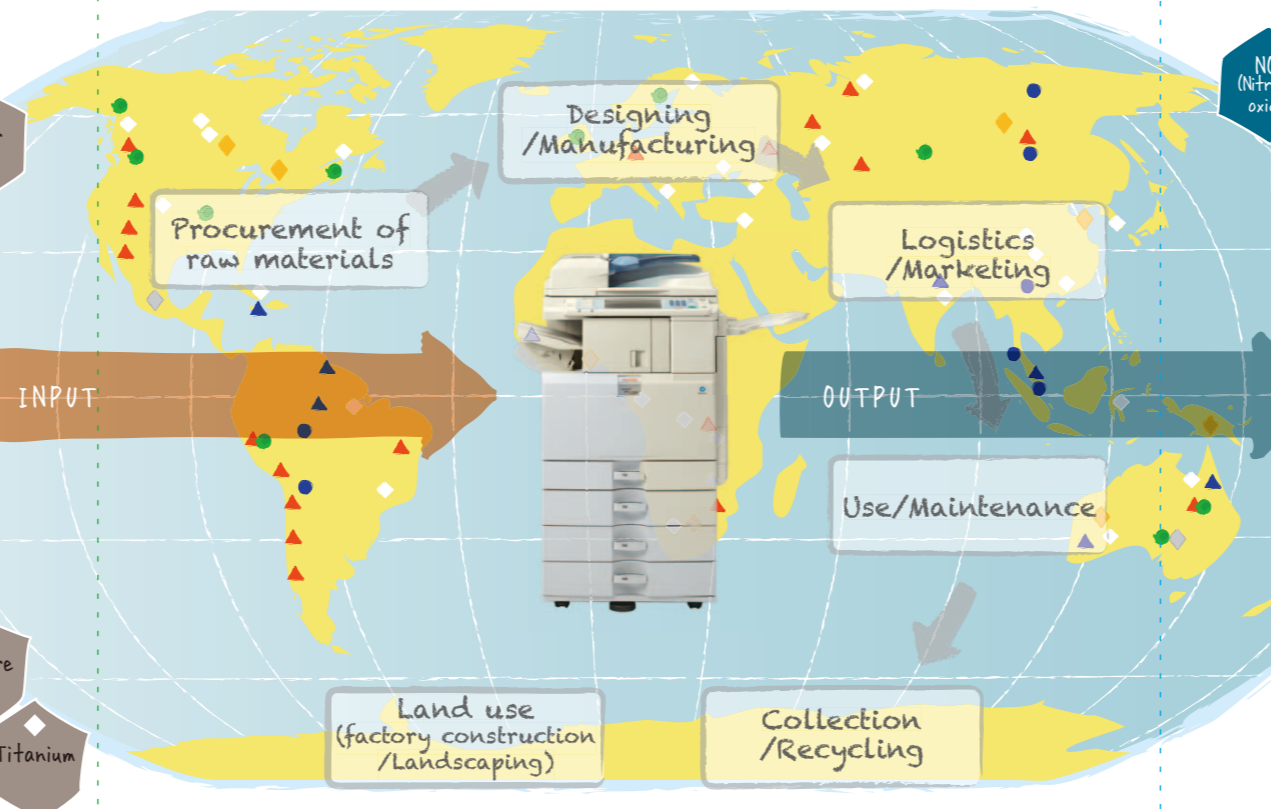
Do you know how much depend on



Extracted resources for the business activities such as

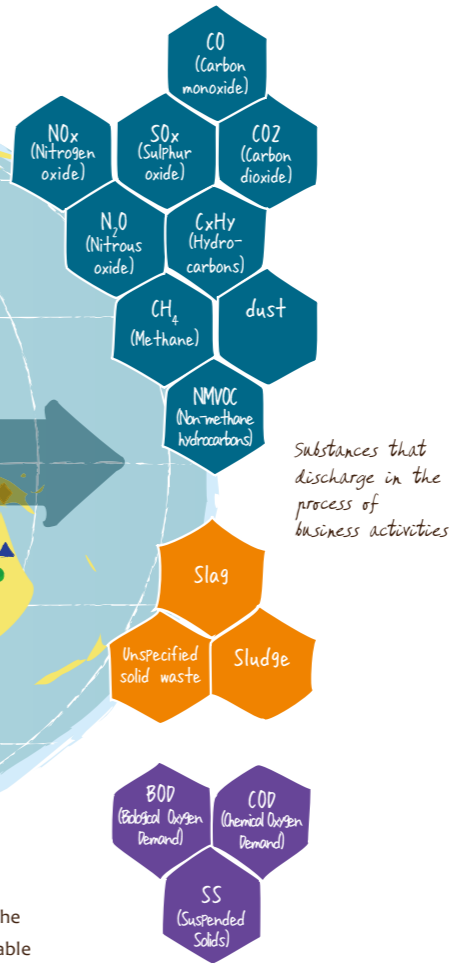
- Energy resources
- Mineral resources
- Renewable resources

Many types of materials in the world have been used

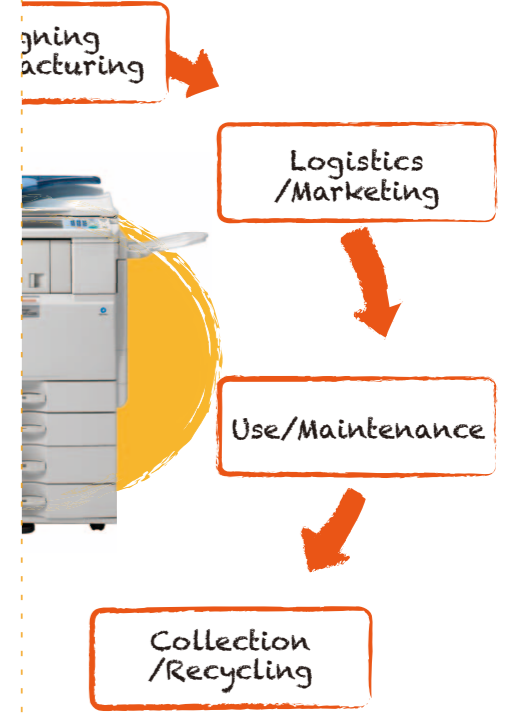


Continuous INPUT of resources to create products and OUTPUT of chemical substances, a linear relationship between these two are to be the basis of increasing the negative environmental impact on the Earth. In the future, if natural resources are to be depleted then we won't be able to continue our normal business activities. We wonder if there is a way to avoid running out of resources as opposed to such linear activities.

our business activities the Earth?



Substances that discharge in the process of business activities



Which planet do you want to live on?

Biodiversity Action Handbook

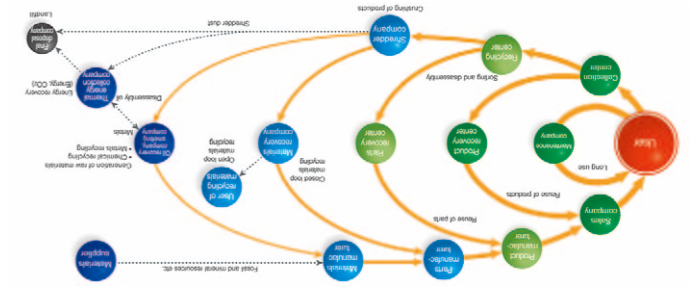
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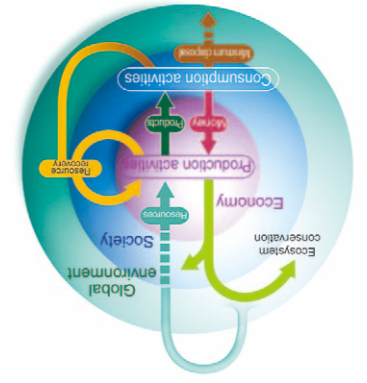
Ricoh Biodiversity Action Handbook
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Environmental impact remains within the self-recovery capabilities of the global environment. © 2002 RICOH



Pursuing the Ideal Society

Our environmental impact on the Earth has exceeded the planet's life-sustaining abilities as well as its self-recovery capabilities.



Status Quo

Pursuing the Ideal Society (Three Ps Balance™)