

BEST PRACTICES FOR INTEGRATING THE ENVIRONMENTAL PERSPECTIVE INTO THE IMPLEMENTATION OF THE SUSTAINABLE DEVELOPMENT GOALS

Integrating Nature in Implementing SDG 14 on Oceans, Seas, and Maritime Resources

Prepared by

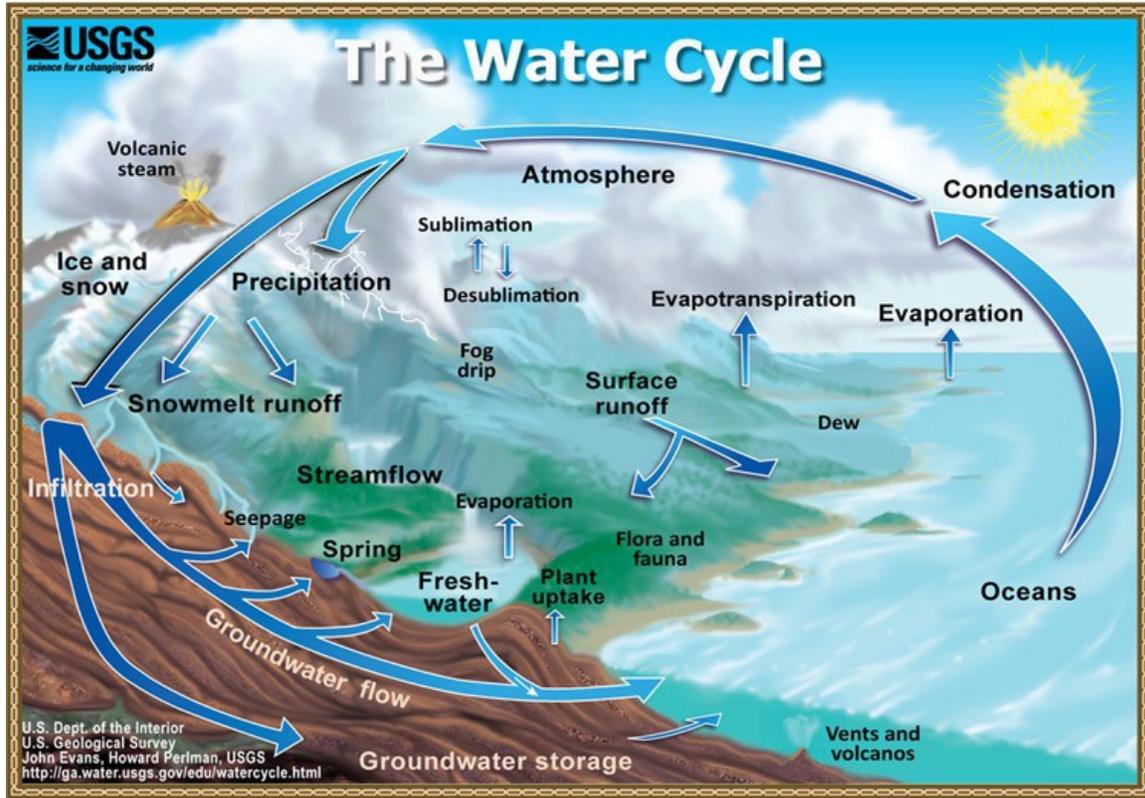
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Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Introduction

Bearing in Mind the Relational Dimensions, Guiding thoughts on Oceans

The Ocean is the lifeblood of our planet. It covers three quarters of the Earth's surface, contains 97 percent of the Earth's water and provides more than 50% of the oxygen we breathe.

It drives global weather patterns, absorbs around 30 percent of human-produced carbon dioxide, and serves as a critical buffer to the ever-worsening impacts of global warming.

It encompasses landscapes every bit as complex and varied as those on dry land. It is home to nearly 200,000 identified species. Humans depend on many of these for their livelihoods. Others are beyond our reach because they inhabit the seabed at depths inaccessible to people. The actual numbers are estimated to lie in the mil-

lions. Economists estimate the value of the ecosystem services provided by the Ocean to be around \$24 trillion per year.

Oceans affect every part of the Earth System: the climate, hydrological cycles, biodiversity, while it also acts like a womb where-in new land is created through volcanic eruptions from deep below the ocean floor, thus providing rich mineral resources within human reach. Due to its very vastness and plentiful riches, the oceans and associated resources have largely been seen as inexhaustible, much as land-based ecosystems were seen a hundred or perhaps even 50 years ago.

Fortunately, and perhaps also unfortunately, we are now becoming aware that human activities are resulting in many-fold impacts that are devastating to both the oceans and to all life. Put simply, we are all united by the oceans; and without healthy and sustainable oceans, our place on this planet is in jeopardy.

Science has confirmed our oceans are in a critical state and that urgent remedial action is required. The need for collective action to reverse the cycle of decline in which the ocean is currently caught was recognised by world leaders last year, when they adopted the 2030 Agenda for Sustainable Development. Sustainable Development Goal 14 (SDG 14) sets out critical targets that must be met in order to conserve and sustainably use our oceans, seas and maritime resources. We include recommendations for achieving each of these targets below.

14.1 by 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution

Oceans are being affected by our impact on all of the Earth sub-systems (the hydrosphere, the biosphere, the lithosphere and the atmosphere), for these are all in a constant complex process of developing inter-relationships. As a result, marine pollution is brought about by a host of different causes, such as run off from agriculture, dead zones, flushing of oil tankers, and garbage dumps from cruise ships, barges and accidents at sea. These problems are often connected in turn to social problems, such as poverty, lack of education, greed, and perceived economic necessity and are further aggravated by a compilation of actions such as dumping of plastics that pile up into whole islands because of the ocean currents.

Unfortunately, humans often act recklessly, carelessly and without thought for the consequences and impacts on others or of what we may face in the long run. Marine pollution, for example, is bringing about an extinction of species at a rate that is threatening to transgress those planetary boundaries necessary for supporting human life. (Note: *The proposed boundaries for biodiversity loss are 10 per million species per year. The current status is more than 100 per million or thus ten times as much as has been proposed according to the Report: Planetary Boundaries: Guiding human development on a changing planet in Science 347: DOI:10.1126/Science.1259855. Source Will Steffan et al.*)

In all these problems people play a central role both as victims and as perpetrators. So it is important to focus on both our activities and capacities to steward nature in

the areas we inhabit, from mountain communities and along streams and rivers which flow through both farming regions and industrial areas and on down to the coast. Many people contribute to pollution of the oceans and likewise will continue to be subject to the potential consequences, including those coming from diseases caused by the pollution, unless they can be given the educational and financial means to better steward the areas they inhabit.

As a result, even when we target certain problems, such as dumping at sea, with some measure of success it is likely to be temporary and somewhat tentative, at least until we can change our relationships with other connected problem areas, by understanding the interconnections and inter-dependencies among all aspects of the Earth System.

Two types of actions are needed to bring about change. These must target both marine pollution specifically and also the larger context of oceans and seas as well as within the all-encompassing Earth System.

1. to change our mindset with regard to pollution within the seas and oceans; and
2. to show that they--and we--are integral parts of an even larger context: the all-encompassing Earth System that we harm at our peril.

A two-pronged approach would be most effective:

1. **Through adopting strictly enforced legislation**, which recognizes our relationships and position with Nature and how harming Nature actually harms ourselves. "Rights of Nature" Law and Policy are being developed that stress that Nature, far from just being property to be used for human benefit, is in fact a rights-bearing partner with which humanity has co-evolved. Ecuador has led the way by adopting in its Constitution the *Law of the Rights of Mother Earth*. On March 30, 2011, the first legal case--Vilcabamba River, against the Provincial Government of Loja was settled in favour of protecting Nature.

In 2009, Bolivia introduced the topic Harmony with Nature in the UN General Assembly. This has led to increased activity in this field every year since--UN resolutions, annual celebrations of UN Earth Day on April 22nd, Interactive Discussions, and Reports by Experts - summarized in official documents by the UN Secretary General, etc.

In 2010, Bolivia adopted the Rights of Nature in its own constitution. The **Rights of Nature** articles acknowledge that "**nature** in all its life forms has the **right** to exist, persist, maintain and regenerate its vital cycles."

A number of Nations have also adopted legislation in a similar spirit at local or state levels, including Argentina, Mexico and the US where beside a number of local laws, the Colorado State Constitution was especially amended.

2. **Through an inspirational approach** to change how we humans feel about Nature as a whole, so that we are actively motivated to find solutions where these have not yet been discovered: Through education, our motivation and inspiration

to tackle marine pollution can grow, the more deeply we experience the wonders of Nature.

Actions

Legal

1. Develop legislation in all nations to be able to prosecute by universal jurisdiction those who pollute oceans and seas or otherwise harm any aspect of Nature, for instance addressing the need to stop the devastating impacts on whales, dolphins and other marine life through the use of sonar in the oceans.
2. Since most pollution of the oceans and seas takes place outside of national jurisdiction, it will be important to create an International Environmental Court to enable prosecution by the International Community for crimes against the global commons.

Formal and Informal Education, Science and Technology

3. In addition, formal education, the media, governments and individual people can together bring about a shift so that rather than focusing on the problem, we see Nature as providing solutions. Before the industrial revolution and even before the early 1950's, the oceans were able to process and break up most of the waste dumped into them and to maintain a balance. Removing the surplus of waste could help to restore the re-generative capacities of oceans and seas. Developing such a mind shift as referred to above could be brought about by using both formal education and the media, including through producing and using documentaries, recreational films, etc. Here are some examples for how:

Inspire action by speaking to the heart in portrayals of Nature:

- a) Show the beauty and miracle of Nature, her myriad interconnections, how all contrives to restore balance even after ocean dumping, oil spills and run off from agriculture, etc. though myriad disparate forces that are constantly interacting with one another;
- b) Give examples of how people can aid this restoration process, such as how growing oysters in the polluted waters around New York City is actually purifying the water; and
- c) Emphasize how Nature can thrive once we relieve Nature from the crippling burden of excess pollution.

Inspiration and acting from "wonder" can give people a sense of joy and can help them feel like they are a part of something much larger than when we are driven by fear, guilt and desperation.

Show simultaneously:

- a) Approaches to cleaning up marine pollution to jolt people's inventiveness; and

b) Stories of actual initiatives - people who are taking helpful steps. Even if these are not immediately successful, they can inspire others to build on the ideas of those that went before. Take for instance the work of the Ocean Clean Up initiative founded by a 21 year old at: www.theoceancleanup.com.

Provide publicity and prizes, as well as Quality Certifications, to media and educational institutions for the degree to which they help to inspire solution-oriented thinking and actually come up with and describe much needed solutions. The Dutch Government, for instance, issues a Prize for Innovation.

14.2 by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans

There are a number of critically important problems and challenges that must be addressed as we strive to meet this target. Due to humanity's destruction and depletion of land based ecosystems, harmful agricultural practices, and climate change impacts we have significantly reduced and depleted stream flows, destroyed coastal wetlands, and disrupted both small and large scale natural water cycles.

As ecosystems are damaged or destroyed the land tends to dry out and with it the water both under, in and also above the soil and plant matter. The loss of ground cover causes further run-off, erosion, evaporation and even loss of groundwater, thus destroying natural water cycles and causing both flooding and desertification, along with the rising of the sea level as water from the land and air returns to the seas.

There are several hundred ocean dead zones scattered in coastal areas around the world where rivers dump large volumes of agricultural run-off and human wastes into the sea, some of which are tens or hundreds of miles long. Many of these dead zones are reversible, though the extinction of organisms due to them is not. It is thus essential that protracted efforts be undertaken now to change our agricultural practices, to eliminate chemical, nutrient and soil run-off, and to quit dumping unprocessed wastes into our rivers, lakes and streams.

Similarly, our agricultural practices; disruption and destruction of land-based ecosystems; over-pumping of ground water; and then the resulting climate change are causing whole regions to dry out, weather patterns to be altered, water cycles to be disrupted, and even more soils and nutrients to be lost to the sea. This is causing siltation and the destruction of habitat and breeding grounds that ocean fisheries are dependent upon, salinization and salt water intrusion in coastal regions, acidification of the ocean, and the failure of land-based ecosystems to be able to retain and slowly release water and maintain healthy watersheds and ecosystems - especially as climatic events increase in occurrence, intensity, and severity.

The loss of such processes, water cycles, and healthy eco-systems is causing significant increases as well in sea level rise, which then in turn further threatens these same eco-systems as well as communities and human well-being.

At the same time coastal development is causing the continuing loss of wetlands, more than 64% to date, and marine and coastal species that depend on fresh water are in major decline. Mangroves, mud flats, salt marshes and sea grasses in deltas and along the coast provide millions of people with a vital source of income and can protect them from the ravages of storms and floods when left intact. Coastal wetlands serve as nursery grounds for fish, provide water for agriculture, build up soils, protect against storms, store tremendous amounts of carbon, and provide timber and medical plants. It is thus imperative that both national and global efforts are undertaken to protect and restore our remaining wetlands and ensure that no more are lost.

Actions

Formal and Informal Education, Science and Technology

1. There is thus a great need for humanity to undergo a mind shift such that ALL education and practices are rooted in preservation of our natural environment, this should include focusing on the need to:

Invest in and create water retention landscapes,
Engage in regenerative and restorative agricultural practices,
Restore damaged ecosystems to protect against flooding and monsoons,
and
Create ecological buffer zones in coastal areas to protect coastal communities and ecosystems alike.

This would also include teaching about such practices as:

Agro-ecology and agroforestry with key-line farming, carbon sequestration, cover cropping, no-till, rotational and multi-cropping, etc.

The need to eliminate the use of toxic products, which pollute the oceans and cause death and disease; and the benefits that could come from universally adapting the use of non-toxic products.

Financing

2. There is also a great need to substantially increase the amount of development assistance that is provided to developing countries and civil society organizations to carry out such activities as are described above and to support businesses in making such a transition.

3. Extension programmes and training courses also need to be established and scaled up in all countries and regions around the world to support such a transition as is described and called for above.

14.3 minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

The best means to reduce the impacts of ocean acidification is to stop the practices and activities that cause it in the first place. This begins with phasing out and ending our use of fossil fuels; but it also requires changing our agricultural practices and diets and reversing de-forestation. Something like 70 - 80% of the water we use goes to agriculture, much if not most of this is to grow feed for animals. To pump and move water often over long distances requires a lot of fuel. Our industrial agricultural practices result in both further loss of water and also increased levels of climate change - thus even further adding to acidification.

In addition, industrial agriculture uses something like 30% of our fossil fuels and produces an equal amount of green house gases in order to run farm equipment; produce fertilizer, pesticides and herbicides; and store and move produce to market - thus leading to further acidification of the seas.

Cutting and burning down forests also results in large emissions of carbon dioxide most of which then ends up in the sea causing further acidification. This also leads to a loss of plant life which before could absorb much of the carbon dioxide released to the atmosphere, before it could be deposited in the seas.

Actions

Science and Technology, Agriculture,

1. Switch to locally based, organic, regenerative and climate friendly agriculture. This uses far less energy and chemical inputs while greatly increasing productivity especially in the developing world. The practices associated with such agriculture can significantly reduce acidification, although they will need major funding increases, particularly in the developing world. Switching to more plant based and less meat intensive diets will also help.
2. Transition to 100% renewable energy as rapidly as possible.

Forests

3. Invest in regenerating forests and adopt laws requiring sustainable management of all timber lands and conservation of forests.

14.4 by 2020, effectively regulate harvesting, and end over fishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

Fish and marine species have important roles to play with regard to the vitality of the oceans themselves, which are critical to the well-being of all life on Earth. These individual marine species are part of an intricate web of life which is beyond our full understanding, and not simply there as a source of food.

When we take actions such as fishing without considering sustainability as a whole, imbalances are created whereby the so-called solution of one problem creates a host of other problems and imbalances. This attitude lies at the heart of un-sustainability.

Even though fish stocks are dwindling and livelihoods are at stake and despite legislation over fishing; illegal, unreported and unregulated (IUU) fishing; and destructive fishing practices are still taking place. This is a part of a much larger problem, namely: how we relate to other species, our fellow human beings and the environment we live in.

When we see fish as "things", distinct from ourselves, that can be separated by categories, it is easy to believe that over fishing just one or two species will have few repercussions. If we see fish, as "mere" creatures engaged in a savage fight for survival, we won't mind squandering their lives when we massacre them in our attempts to catch more lucrative species. If, as a mega corporation the profits for our shareholders is threatened or as a small fisherman our traditional way of making a living in order to care for our families and communities is at stake, then it is easy to justify illegal, unreported and unregulated (IUU) fishing and destructive fishing practices.

This compartmentalization of how we perceive "reality" lies at the very heart of un-sustainable fishing practices and of un-sustainability in general. This can be reversed by creating a mind shift with regard to how we see ourselves in relation to *what is*--Nature and one another; and by providing information on alternative ways of fishing or of viably making a living.

Actions

Education

1. Through formal and informal education, as well as in media portrayals, move away from a view of reality as consisting of separate, unrelated fragments to one in which all is interrelated; where the water, the air, the earth and life itself are in constant interaction with one another; and where diverse types of plants and animals provide for one another's needs in cooperative communities within ecosystems; where there is also a jostling for position and survival, but seldom does one species eradicate another with the exception of human beings.

This message can be provided in literature, art, and through paradigms that are emerging in biology, chemistry and physics. It can be reinforced by having school gardens where students can see the miracle of life unfolding before their eyes. It will help us to see fish as miraculous and complex beings that are essential parts of a web of life that is essential to human well-being. Where we feel connected to the world around us, it is easier to appreciate it and harder to harm it.

2. Learning to communicate with Nature as is done by those whose livelihoods depend on their right relationship with the land; indigenous peoples; and other nature communicators. This will help people realize that we are an integral part of the complexity and wonder of life, that we cannot stand "apart" and try to oversee the whole, and that we must therefore be guided by Nature to live in harmony with "what is". *This will further enable us to feel a part of the world around us and thereby make it more difficult to stand apart and destroy whole species of fish.*

Social Actions

3. Encourage the formation of cooperatives of fisherpeople to steward diverse types of fish. This will further enhance the experience of connection to both fish species and with-in the fishing industry. In cooperatives, all share in decision making and in the consequences of their actions. It is therefore in the vital interest of all to steward rather than to deplete available resources. They tend to do well even in times of economic downturn. Also as a part of the Cooperative Identity, they give back both to the local communities where their cooperatives are active and to the global community by implementing sustainable development initiatives that benefit global development.

There are 2.6 million cooperative enterprises with annual revenues of US\$ 3 trillion that provide 250 million jobs (12% of jobs in G20 countries). There are already one billion members of cooperatives worldwide.

Nobel Prize winner Elinor Ostrom on occasion gave the example of how lobster fishermen in the North West of America revived lobster fisheries in this way. The creation of cooperatives is also mentioned below at local to global levels. Such cooperative relationships will tend to change the mindset from one of "making a killing" to feelings of mutual appreciation and cooperation.

Legal Actions

4. Strictly enforce agreements geared at preserving a diversity of fish species, while looking for solutions that rely on the regenerative powers of Nature herself.

5. Pass and enforce laws at all levels and in all localities, even those not directly connected to the oceans, to stop the mass extinction of species, including fish. For all species are intimately connected to one another's survival and by eradicating some, you also endanger others that are necessary for humans to survive.

6. Enforce such legislation with an International Environmental Court with branches at national and local levels, preferably with punishments that help perpetrators to better understand the consequences of their actions. This will achieve two things:

- a) It will deter others from such crimes;
- b) It will help to build a group of people who understand at first hand why a particular law is necessary. These can then be employed in an educational capacity to help inform others. They can also become members of an international group where members learn from one another.

Thinking about the establishment of an Environmental Court has progressed quite far. It seems just a matter of time until an Environmental Court will join the ranks

of the International Court of Justice and the International Criminal Court. Support is needed to accomplish this as soon as possible. (See also the proposed action under Target 14.1)

Science and Technology

6. Regeneration of fish stocks with the help of science, but accompanied with the understanding that these insights about this must proceed from the complex understanding of the host of subtle interlinkages among all that is.

14.5 by 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information

Coastal and other marine areas under national jurisdiction are jealously guarded by nations and for good reason. The coastal areas are often rich breeding grounds for a host of species, they provide protection for the land from ocean storms, and they provide food and livelihoods for inhabitants, including from tourism. On the other hand, conserving just 10% of Nature, is much like trying to maintain just 10% of a human being whose whole body is weak and riddled with disease, thus it would be good if countries would set targets that are far higher than 10% especially as we move on beyond 2020.

It is also important to bear in mind that, although the target requires that just 10% of coastal and marine areas are to be conserved, all areas that border on oceans and seas are, as mentioned in various contexts above, interlinked with many other parts of the Earth System; and thus efforts will have to be made to preserve and restore them as well in order to really conserve the 10%.

For these reasons it is essential to give all nations with coastal areas, and especially the Small Island Developing States (SIDS) a firm guarantee that their interests will be safeguarded, while all act from the clear understanding that since we all depend on the health of the coastal and maritime areas, these should be protected under universal jurisdiction.

Actions

International Law

1. Suggest that via the United Nations all coastal areas are proclaimed “Trust Territories” to be stewarded in such a way that they adhere to global environmental standards, while being used exclusively by the nation administering the Trust Territory. This approach is somewhat similar to that of the UNESCO World Heritage Sites. Perhaps there could also be a global fund for their preservation.

2. Nations with coastal areas could work closely with Regional and Global Commissions that are given a supervisory and consultative role in their maintenance and adherence to international standards.

3. Because marine and coastal areas and the global commons in general are vital to the survival of the whole human race, all disputes relating to the oceans, seas and maritime resources, and other environmental matters should be prosecuted under universal jurisdiction. They can also be brought, where there is a dispute, before an International Environmental Court, which could be created for, along with other things, this task. (See also: Actions under 14.1 and 14.4)

Social Development

4. Encourage people with an interest in an aspect of the oceans, or in the oceans as a whole, such as fishermen, boatbuilders, towns that depend on the oceans for touristic purposes, marine biologists, conservationists, etc. to communicate with one another and to work together. This can be done as follows:

Encourage them to form cooperatives to manage specific resources in a particular area. These have been discussed under 14.1. Since cooperatives place sharing at the heart of their Cooperative Identity this form of business will encourage their members to share what they know, to make cooperative decisions that benefit all concerned, to financially and otherwise benefit the communities where they are based, and provide means for global development.

Encourage cooperatives working with diverse aspects of the oceans to work together using a cooperative format at local and global levels to ensure that the fragmentation does not occur between the insights and concerns of any of these groups.

Create an international network of cooperatives that can, in consultation with the members of each of the cooperatives, develop best practices and ways of discouraging destructive ones. This can be backed by the legal mechanism described above.

14.6 by 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation *

Here we are dealing with monied mega-interests both with regard to the subsidies that allow destructive fishing practices to persist and also with regard to the fishing industry itself. They exist because the rest of humanity allows them to do so. Large political and commercial interests depend on their constituents for power. They hold only the power, to the extent this is granted to them by others.

To replace present power interests with a viable alternative, it is necessary to see

1. how these mega interests came about and how they survive; and
2. which alternatives exist to encourage citizens and governments to take responsible action for the well-being of all people and Nature.

Here is a brief description of some of the dynamics that led to the present disparity between rich and poor:

The monied mega-interests have developed over time and are connected to the debt-based economy whereby banks in some nations are permitted to lend money with just one tenth of the amount as collateral. This means that such banks are induced to continually make loans to make up for their deficit of funds. Borrowers, in turn, are necessitated to sell their goods and services to be able to pay off their loans and this results in massive global advertising campaigns to encourage people to buy! buy! Buy. From the perspective of the Banks and those businesses that borrow from them, the survival of their business is at stake. It is therefore critical for those of us who are supporting them to make it clear that if this continues, not just their businesses but also human survival and prosperity is at stake and we can no longer continue to allow this. We have throw-away economies, depletion of natural resources, destruction of the environment due to pollution and mountains of waste, and a growing chasm between rich and poor. Large commercial fishing fleets are rapidly depleting fish stocks, leading to increased levels of poverty for local fishermen.

Two actions are needed to counter such problems simultaneously in the Oceans domain:

1. To stop giving power to those who insist on the subsidies that are causing over-fishing and destruction of other marine resources.
2. To create a supplementary economy based on socially, economically and environmentally, responsible and just fisheries practices.

Actions Eliminating Subsidies by tackling the power structures that produce them

Social Development

1. A relatively low-risk strategy is to boycott fish products where these have been illegally procured.

To make such a boycott effective it would help to:

- a. show via the social media, the fishing practices and their consequences as these relate to people worldwide, including the rich and powerful who, among others, purchase the fish.
- b. make people aware of alternative ways of purchasing fish, for instance, via Fair Trade which provide support for small scale fisheries; and use all means possible to show the world how these fisher-people steward their resources.
- c. provide alternative ways for fishermen to make a living by, for instance, forming coalitions based on collaboration and sharing. Here cooperatives, as mentioned under 14.1 and 14.4 can provide an important alternative. Although this might be less lucrative than surviving from subsidies, it is preferable to starvation through popular boycotts.

Once the hold of monied interests is broken and the fishing industry has realized that their only alternative is to adopt environmentally sound approaches, the competition that in the past put small scale local fishermen out of business and led to over fishing, can make way for working with the restorative functions of Nature.

2. Encourage the formation of cooperative fishing business models which have the advantage that they share joint care for the "commons", such as marine resources and water quality, and because all members of the cooperative are owner/operators and all share in the profits, tend to do well even in times of economic downturn.

14.b provide access of small-scale artisanal fishers to marine resources and markets

Science and Technology

An important tool here is: Universal access to the Internet, as has been done by Rwanda. The technology is available and those who are Internet illiterate can be supported in its use by local facilitators.

The UN can also play an important role in training national networks of such go-betweens as follows:

1. The UN provides courses for those who will oversee the training of local facilitators for their respective nations. These top officials would (with support from their teachers at the UN) be responsible for organizing Internet based trainings for local go-betweens who in turn would be responsible for translating manuals into local languages and then helping whoever needs their help to locate the goods and services they need, if possible within the fast-growing global sharing economy.

The technology is available and the infrastructure can be developed and supported by the UN using the Internet as an effective and inexpensive tool.

APPENDIX ONE:

Oceans, Seas and Marine Resources in their larger contexts

In the above, we have emphasized that oceans and seas are integrally related with the rest of the Earth System: the hydrosphere (that is both fresh and salt water), the geosphere, the atmosphere and with all forms of human and other life.

As paragraph 33 of the Declaration of Agenda 2030 states, human social and economic development depends in part upon mountains. And this is particularly true as relates to the oceans and seas. For mountains are the source of rivers which provide oceans with fresh water, necessary to feed and restore them. These same rivers are breeding grounds for fish and other creatures that can only survive by di-

viding their life cycles between oceans and rivers. In this way both salt and fresh water belong to the same hydro-system.

To maintain these links between the Earth's subsystems it is essential that mountain people, those living around deltas, the fertile breeding ground of so much of the Earth's biosphere, as well as those who use the seas and oceans for transportation and for the resources these provide, are both economically and educationally prepared to steward the bioregions where they live and work and receive the necessary financial assistance to perform their missions well.

Actions

1. To ensure the protection of oceans and seas and the ecosystems that feed them and enable ocean resources to thrive: Issue licenses for each form of activity performed by people with regard to oceans, seas and maritime resources, as well as the sweet water aspects of the hydro cycle. Such licenses for fishermen, miners, crews of transport and passenger ships, as well as pleasure craft, would require those involved to have a high level of proficiency in their relevant skills. They would also require them to *understand the impact of their actions on ecological systems and the requirements these systems have to maintain all forms of life.*
2. Ensure that those mountain people, inhabitants of deltas and other shore areas are trained in stewardship of their bioregion; are conversant with the full life cycles each aspect of the bioregion moves through; how all these inter-relate and, in turn, affect human beings; and are provided with the necessary financial assistance to enable them to fully carry out their responsibilities.
3. Since oceans, seas and coastal areas must be cared for in the interest of the whole of humanity, courses can be given by the UN and its relevant Specialized Agencies (IMO, FAO, etc.) via the Internet. These can be attended first by national coordinators, who can then adapt them to national and local needs and have them translated into their national and local languages.
4. Create a wikipedia-type of web platform where people can share lessons learned from the oceans and seas. This can contain sections on best practices, boatbuilding, sea expeditions, science, religion, folklore, technology, maritime law, literature and art and information about human impacts on the seas.

APPENDIX TWO:

Here is the Blue Ecology Practitioners Guide **(1/11/2017)**

Blue Ecology Water Cycle is meant to be an intuitive companion to Western Science's analytical hydrologic cycle, which recognizes the integral relationship of the hydrosphere with the geosphere, the biosphere and the atmosphere as subsystems of the Earth System that is one integral, indivisible whole. It was written by a combination of indigenous and western peoples

Blue Ecology Principles

Vision: Embrace a water-first approach to planning human interventions in the environment.

Blue Ecology is an ecological philosophy, which emerged from interweaving First Nations and Western thought, that acknowledges water's (i.e. fresh and salt) essential rhythmical life-spirit and central role in generating, sustaining, receiving and ultimately unifying life on Earth Mother.

Key concepts

- Sustainability is about survival with dignity, rather than progressive development;
- There is no differentiation between fresh and salt water, they are both important and linked;
- Water is a living organism with a spirit;
- Water is always moving and connecting
- Water cannot be owned, and in the fluid form is heavy to transport;
- Healthy water meanders in its course; and
- Blue Ecology provides a focus -- a good place to start to solve complex ecosystem topologies.

“We are borrowing water from future generations” (Olivia Sam, youth)

The intent of the Blue Ecology vision is to give priority to water, over human's financial interests. The highest sustainability test is water-first: planned development (e.g. real estate, urban planning, forestry, agriculture, mining, oil and gas extraction) cannot impede the functional delivery of quality water to ecosystems in a healthy rhythm.

The five principles of Blue ecology are:

- a) Spirit: water, fresh and salt, is a living spirit.
- b) Harmony: harmonious sustainability in a functional rhythm engenders healthy bodies and ecosystems.
- c) Respect: water through ceremony, education and giving back, else Earth Mother will retaliate by taking water away.
- d) Unity: water has the ability to connect and unify humans because of our common reliance on this basic unit of existence. It is a proto-interest.
- e) Balance: restrained and measured water withdrawals in combination with and giving back (i.e. restoration, monitoring, or ceremony) to watersheds and water.

Blue Ecology Water Cycle

Ask first, how is water affected by this current or planned human intervention?

1. Recognize that access to water is a universal and basic human right (In UN General Assembly resolution 64/292 of 28 July, 2010, the UN recognizes the right to safe and clean drinking water and sanitation as a human right that is necessary for the full enjoyment of life and all human rights);
2. Communicate and prominently display the Blue Ecology vision and principles
3. Develop and monitor measurable indicators to audit the implementation of Blue Ecology principles and practices. Invest in real time water quality and quantity measurement systems;

4. Embrace the principle of subsidiarity when designing implementation plans: local people, especially the youth, have a strong interest, as caretakers, in the water that flows through their lives, and so they should be involved in water management at the smallest effective watershed management unit;
5. Mentor and train local caretakers in the Blue Ecology approach to work together among and across watersheds, states and countries;
6. Water cannot be owned, source-to-tap delivery is a state expense and responsibility and;
7. Celebrate water in architectural design, urban planning, artistic installations, community and nature parks, and forest visual landscapes, to remind the public of its importance.

Best Practices

A good example of a hydrologic cycle is illustrated above. More can be found at: <http://ga.water.usgs.gov/edu/watercycle.html>

Resources

Four Worlds of the Blue Ecology Water Cycle

- a) Sky world (i.e. spirit world): The model highlights the rhythmical role of the sun and moon, and how water is a gift from the spirit world (e.g. Creator, God etc). Balance and harmony are achieved, through respect, recognition of water's spirit and giving back, as well as by the understanding that all four worlds are connected by water.
- b) Earth Mother: All beings on earth are connected to each other by the transitory element, water. Our human health is directly dependent upon the health of the waters that flow through our land and bodies. If the water is sick, so too are we.
- c) Water world: Water has a spirit. Water is always moving and connecting in rhythms. Fish are part of the water, as all aquatic life is, the two are one.
- d) Under world: Water, the lifeblood, seeps, trickles and connects underground, like capillaries under human skin. Water is purified here.