

# The role of artisanal fisheries and aquaculture in sustainable food systems

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## ABSTRACT

Artisanal fisheries and aquaculture have substantial roles in sustainable food systems. Unlike industrial fisheries, that operate to maximize commercial profits and economic efficiencies, artisanal fisheries satisfy local needs for healthy food. They also contribute to the maintenance of employments, knowledge systems, traditional institutions, and sociocultural values in the rural areas.

Resource management practices for artisanal fisheries have been intensively studied. Dr. Elinor Ostrom, winner of the Nobel Prize in Economics in 2009, described that successful forms of common pool resources have eight governance characteristics, namely, (1) clearly defined boundaries (against free-riders), (2) congruence (benefit distribution), (3) collective-choice arrangements, (4) monitoring, (5) graduated sanctions, (6) conflict-resolution mechanisms, (7) recognition of rights to organize (no IUUs), and (8) nested enterprises (multiple layers)<sup>[1]</sup>. She also explained that the “tragedy of commons”<sup>[2]</sup> can be avoided where local people engage in resource management under the above conditions.

Certain threats, however, exist against artisanal fisheries and aquaculture in the modern society. Depopulation of rural areas become eminent in many areas of the world because residents in rural areas tend to move to city areas. Maintaining small-scale family businesses become difficult due to decreasing labor forces. The price of their fishery and aquaculture products are weak due to increased competitions of imported food products. Climate changes may exaggerate volatilities of production outputs.

Two countermeasures exist against such threats. One is to enlarge the operation units by investing large scale industrial boats and processing facilities. The other way is to add values of local products while maintaining diversified small-scale traditional productions and processing activities. The Food and Agriculture Organization (FAO) provides support and encouragements for the latter option in fisheries and aquaculture, pointing out that states and all other parties should recognize, respect and protect all forms of legitimate tenure rights enjoyed by small-scale fishing communities<sup>[3]</sup>. In addition, FAO also has a mechanism to recognize a good practice as Globally Important Agricultural Heritage System (GIAHS) and this recognition could help local communities to increase profiles for food consumers and green tourists. Further use for these FAO tools are expected to keep the distinct values associated with artisanal fisheries and aquaculture in sustainable food systems.

[1] Ostrom, E. (1990) *Governing the commons: the evolution of institutions for collective action*. Cambridge University Press, Cambridge, UK.

[2] Hardin, G. (1968) The tragedy of the commons. *Science* **162** (3859), 1243-1248.

[3] FAO (2015) *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*.

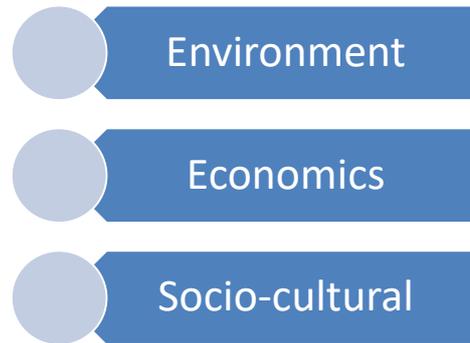


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Picture : Gifu City Government (<https://www.ukai-gifucity.jp>)

### The triple bottom line of the sustainable development





Picture: Nobuyuki Yagi



Cambodia

All Photos: Nobuyuki Yagi



Kerala, India

Picture: Nobuyuki Yagi



Picture: Nobuyuki Yagi



Japan

Photo: Nobuyuki Yagi



Women's involvements in fish distributions

Photo: Nobuyuki Yagi



95% of Japanese fisheries are coastal small-scale fisheries, and their contributions for the conservation need to be further encouraged

Photo: Nobuyuki Yagi



Photo: Nobuyuki Yagi

Labor intensive works: landing port



Photo: Nobuyuki Yagi

### Institution theory for sustainable management

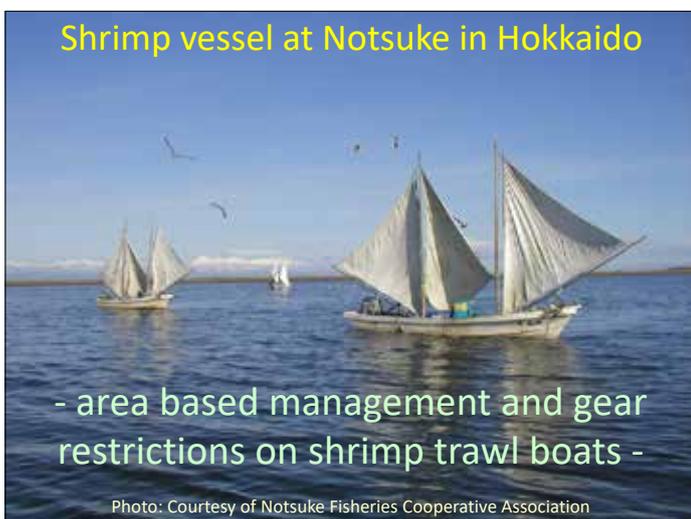


Elinor Ostrom (1933-2012)  
Nobel Prize in Economics in 2009

Ostrom's 8 Principles:

1. Clearly Defined Boundaries
2. Congruence (benefit distribution)
3. Collective-Choice Arrangements
4. Monitoring
5. Graduated Sanctions
6. Conflict-Resolution Mechanisms
7. Recognition of Rights to Organize (no IUUs)
8. Nested Enterprises (multiple layers)

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Shrimp vessel at Notsuke in Hokkaido

- area based management and gear restrictions on shrimp trawl boats -

Photo: Courtesy of Notsuke Fisheries Cooperative Association



Eelgrass (amamo) provides habitat to shrimps.

Fishery managements, such as restrictions on fishing gear, season, area, and quota are in place. Habitat conservation activities are also conducted.

Picture: Courtesy of Notsuke fishery cooperative office

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From 1983, women's group of the Notsuke FCA started to plant trees at upstream of the river. The activity was named as "Planting tree to increase fish." Tokyo buyer of the fish has supported the activity.

(<http://jf-notsuke.jp/event/event.html>)

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Small-scale aquaculture operations are also dominant in Japan

Photo: Nobuyuki Yagi

### Mutual supports inside a community exist

(Ehime Pref., Photo by Nobuyuki Yagi)



### Common threats against small-scale agriculture and fisheries

1. Depopulation of rural areas and decreasing labor forces for maintaining common goods such as water irrigation channels or ridges of rice paddies
  2. Increased competitions of agricultural products with imported foods
  3. Climate changes, and so on.
- Many threats are exogenous, and local people have no direct measures against them.



Norway: industrial fisheries

Photo: Nobuyuki Yagi

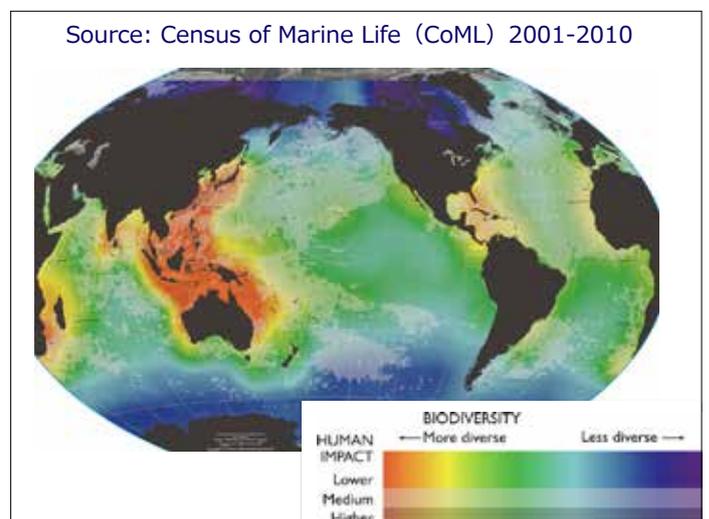
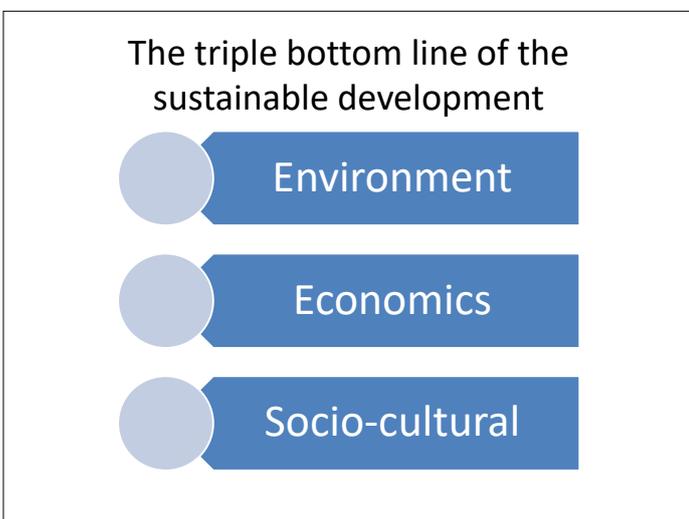


Photo: Nobuyuki Yagi



Asia, Africa, Pacific islands, Caribbean	Norway
Small scale boats	Large industrial boats
Many middlemen in landing markets	No landing market (only processing factories exist)
Labor intensive	Less employments
High biological diversity	Low diversity of fish
Domestic fish consumption is important	Fishing is an exporting business

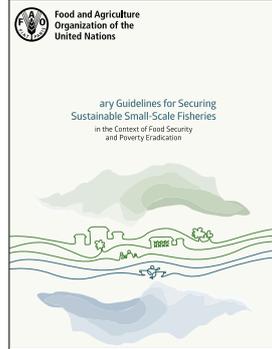
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## Food and Agriculture Organization of the United Nations: Head Office in Rome



## Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (FAO, 2015)



- Human rights, gender equality and equity, participation and others are the guiding principles.
- States and all other parties should recognize, respect and protect all forms of legitimate tenure rights enjoyed by small-scale fishing communities.

## GIAHS (Globally Important Agricultural Heritage System)

is characterized by remarkable agrobiodiversity, traditional knowledge, invaluable cultures and landscapes, sustainably managed by farmers, herders, fisherfolk, and forest people in ways that contribute to their livelihoods and food security. (<https://www.fao.org/giahs/en/>)



## WTO's emphasis is the "economic efficiency"



## Human diet with "diversity and inclusion"

(Photo by Nobuyuki Yagi)



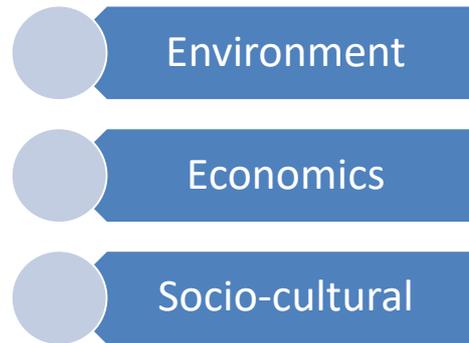
Or human diet with “selection and concentration for economic efficiency”?

(Photo by Nobuyuki Yagi)



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The triple bottom line of the sustainable development



- Substantial roles exist for artisanal fisheries and aquaculture in sustainable food systems.
- Keeping traditional knowledge has significant value for human to live in harmony with nature.
- “The more we think of ourselves as self-made and self-sufficient, the harder it is to learn gratitude and humility”. “Without these sentiments, it is hard to care for the common good”. Michael Sandel (2020).

Thank you

