



FAO Regional Training on the Aquaculture Production Systems
Including Cage Culture

Izmir, Turkey, on 02-05 October 2012

Principles of Cage Culture and Applications in Central Asia

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Why Cage Culture ?

Cage culture should not be thought of as a method to replace other methods. More correctly, it should be considered as method to be utilized in situations where other methods are not applicable. For example, open water, lakes, large reservoirs, irrigation canals, deep ponds resulting from excavation, estuaries, and other bodies of water where the use of other aquaculture methods are not feasible.



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Advantages of Cage Culture

Occupy a small area of water body
Don't compete for land used in agriculture
Can be used with most fish species
Low initial investment
Ease of management, harvest and predator control
Yield and profit are high per specific volume/surface area

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Risks of Cage Culture

Need nutritionally complete feeds
Security (fish theft)
Interference with of activities such as commercial fishing, water sports, tourism
Disease outbreak is common because of high density
Can cause environment pollution in the long run because waste and nutrients
Culture cycle depends much on season and culture cage is affected by floods, storms and strong wave

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Site Selection for Cage Culture

Water Depth
Water Current, Wave and Winds
Water Quality
Industrial and Agricultural Activities on Site
Other Farms
Logistics

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Fish Species Selection for Cage Culture

The desired species characteristics for cage culture are;
Fast growth rate, in regional environmental conditions.
Tolerance for crowded conditions,
Native to the region, and
Good market value.

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Cage Materials

Identification of the components and devices of cage cultures

Floating System

Service System

Cage Bag

Mooring System

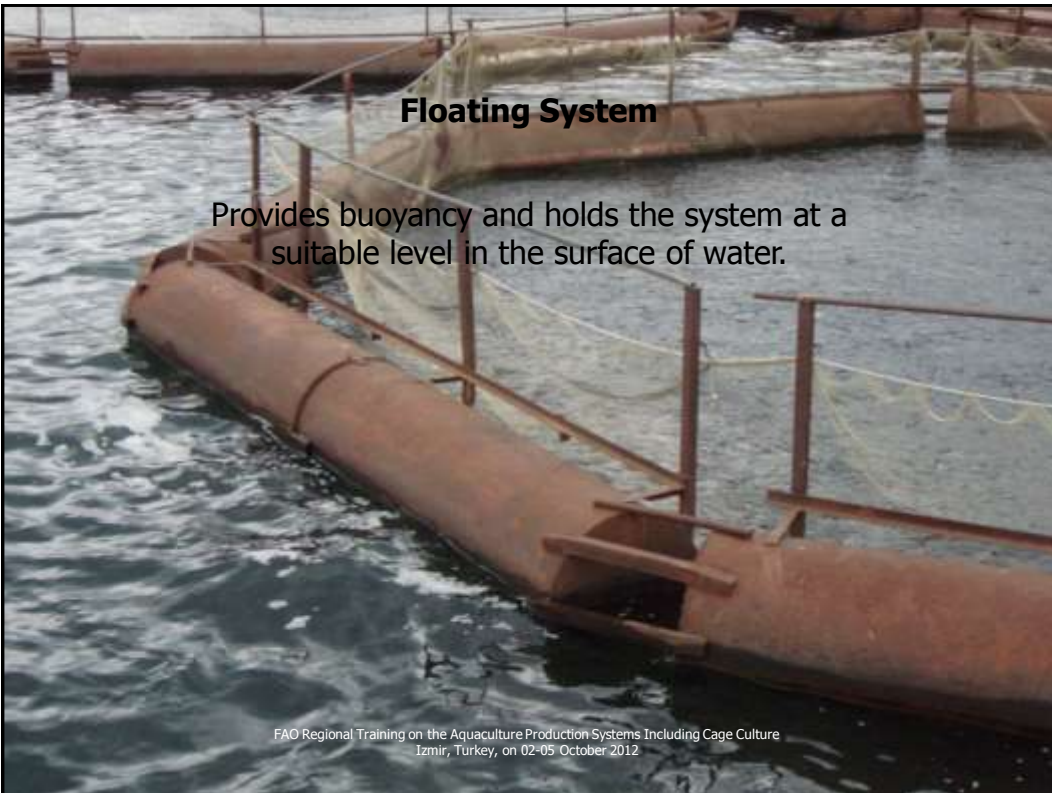
Anchor System



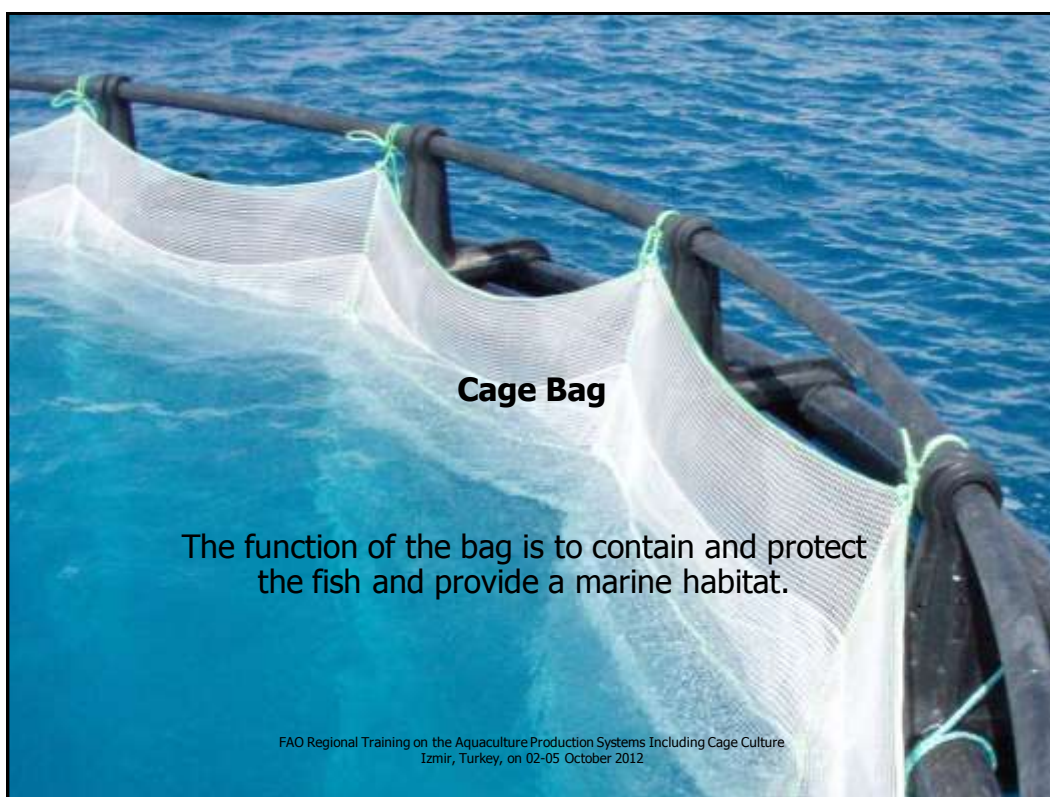
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Floating System

Provides buoyancy and holds the system at a suitable level in the surface of water.



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Mooring System

This holds the cages in the suitable position according to the direction and depth decided in the design, and sometime helps to maintain the shape of the cage.

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Anchor System

This holds the cage and all the components in a particular site in the seabed and is connected to the cage by the mooring system.

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Types of Materials Using to Build Cages

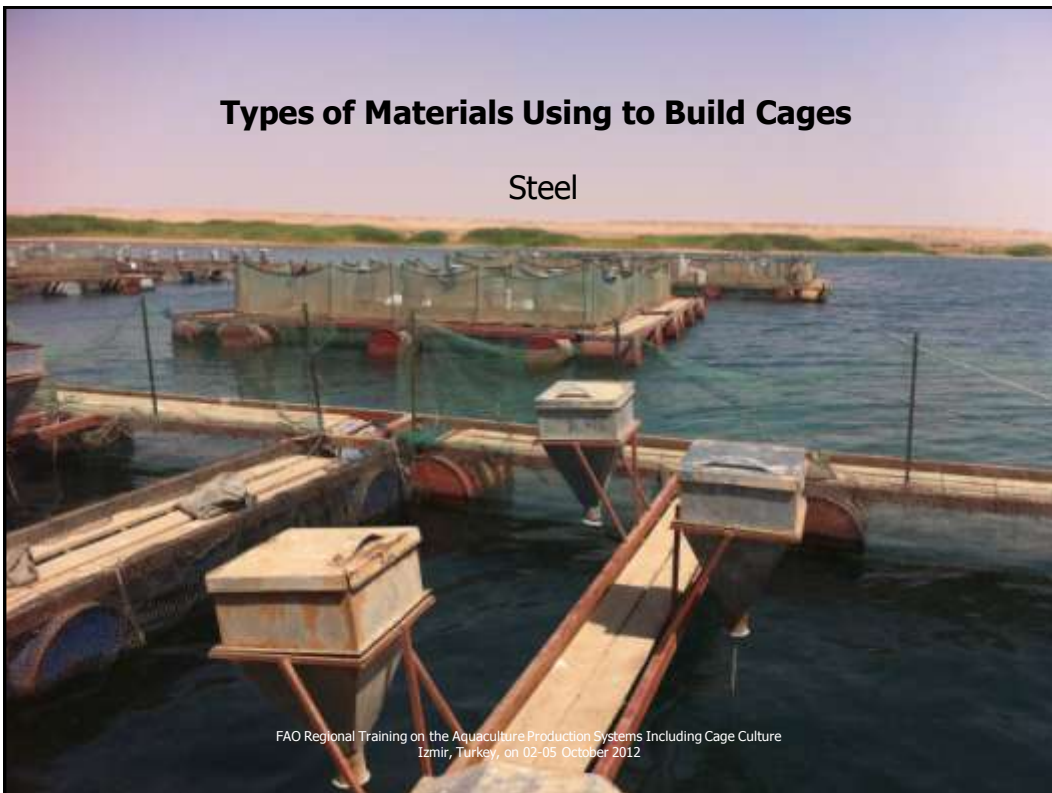
Wood



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Types of Materials Using to Build Cages

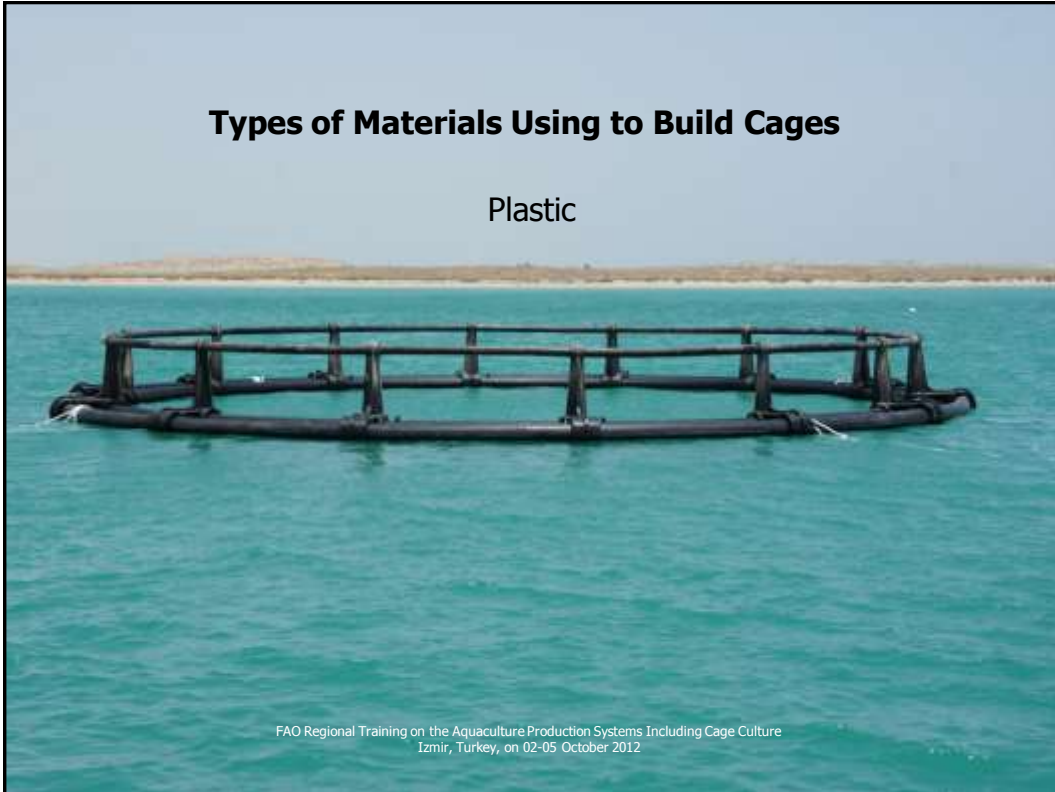
Steel



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Types of Materials Using to Build Cages

Plastic



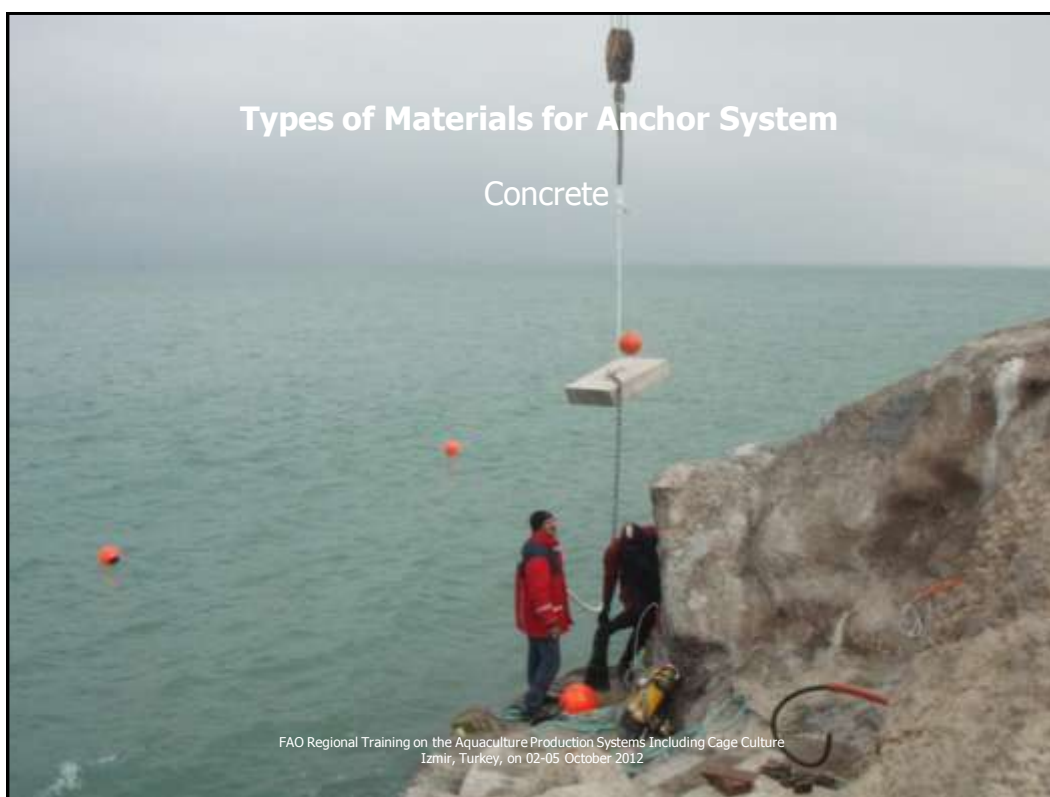
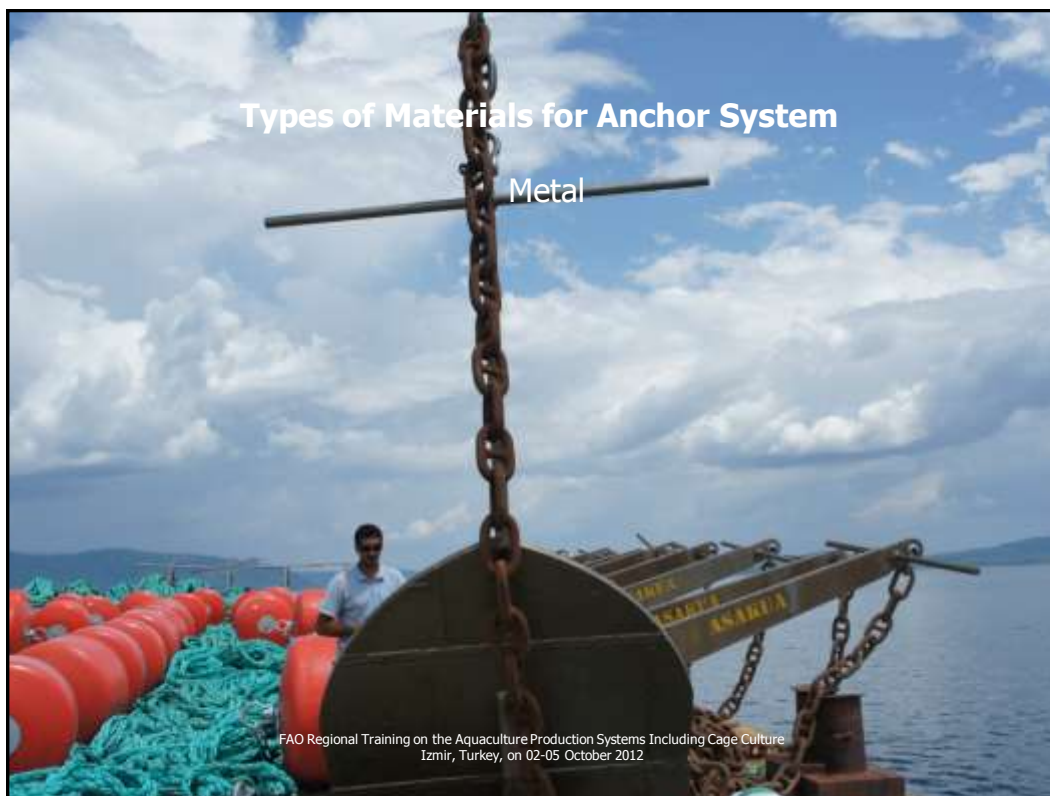
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Types of Materials for Cage Bags

Metal, Knotless Nets, Knotted Nets, Polyethylene Nets,
Polyamide Nets, UHMWPE (dyneema) Nets



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Components of Mooring System

Ropes
Connection Parts
Floaters
Signal Lights



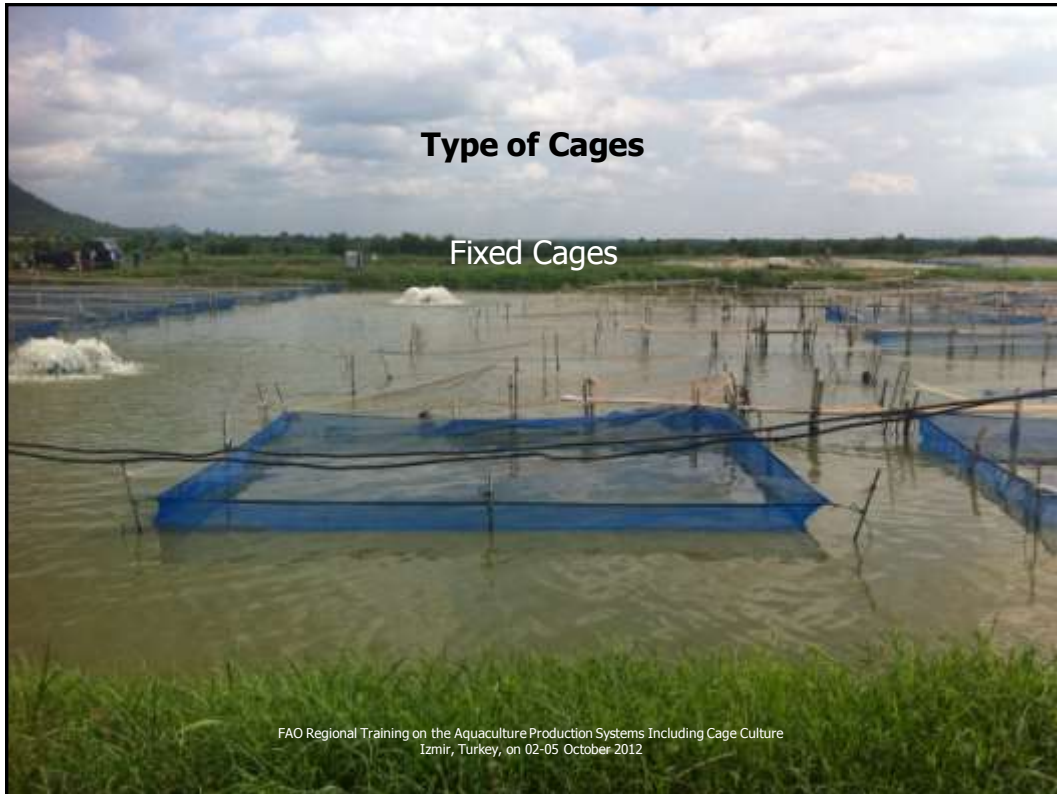
Cage Design

Design of the cage is directly related to the chosen site, inshore or offshore



Type of Cages

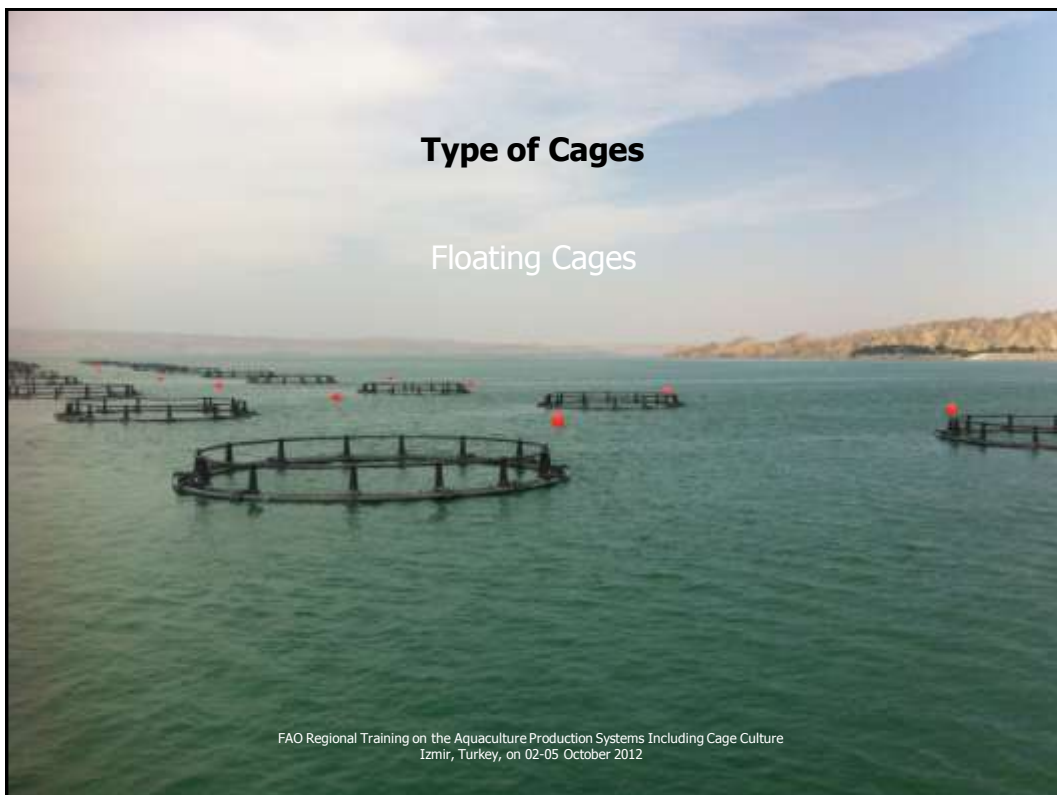
Fixed Cages



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Type of Cages

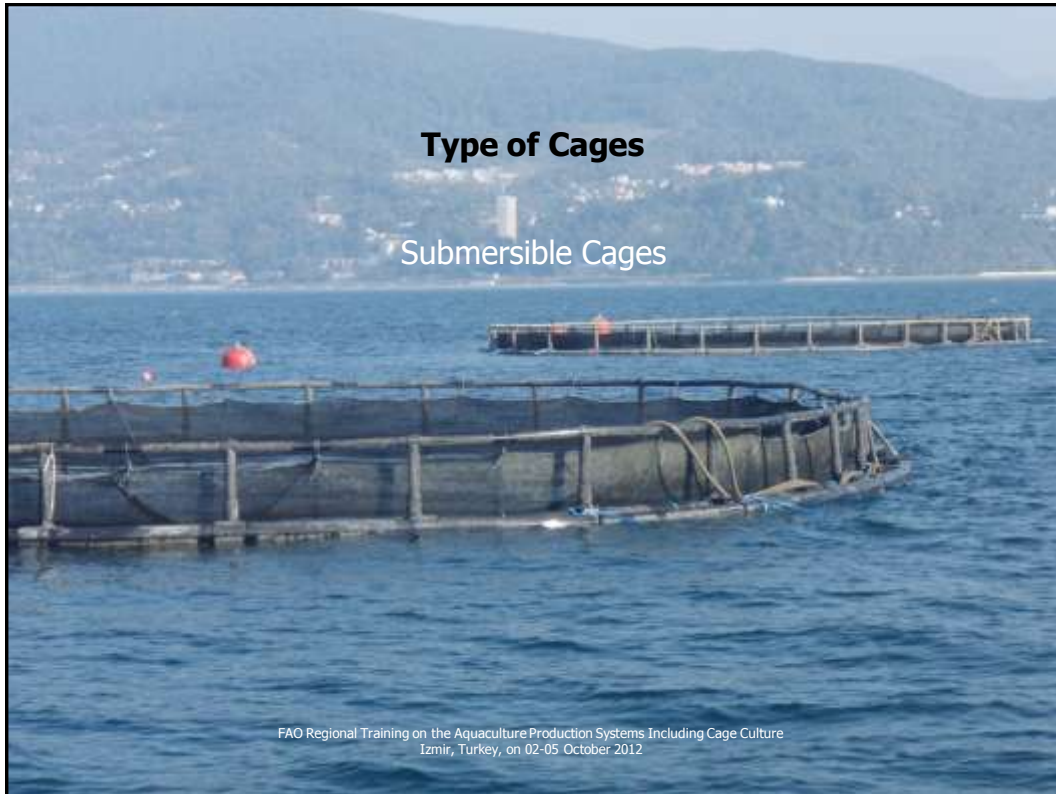
Floating Cages



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Type of Cages

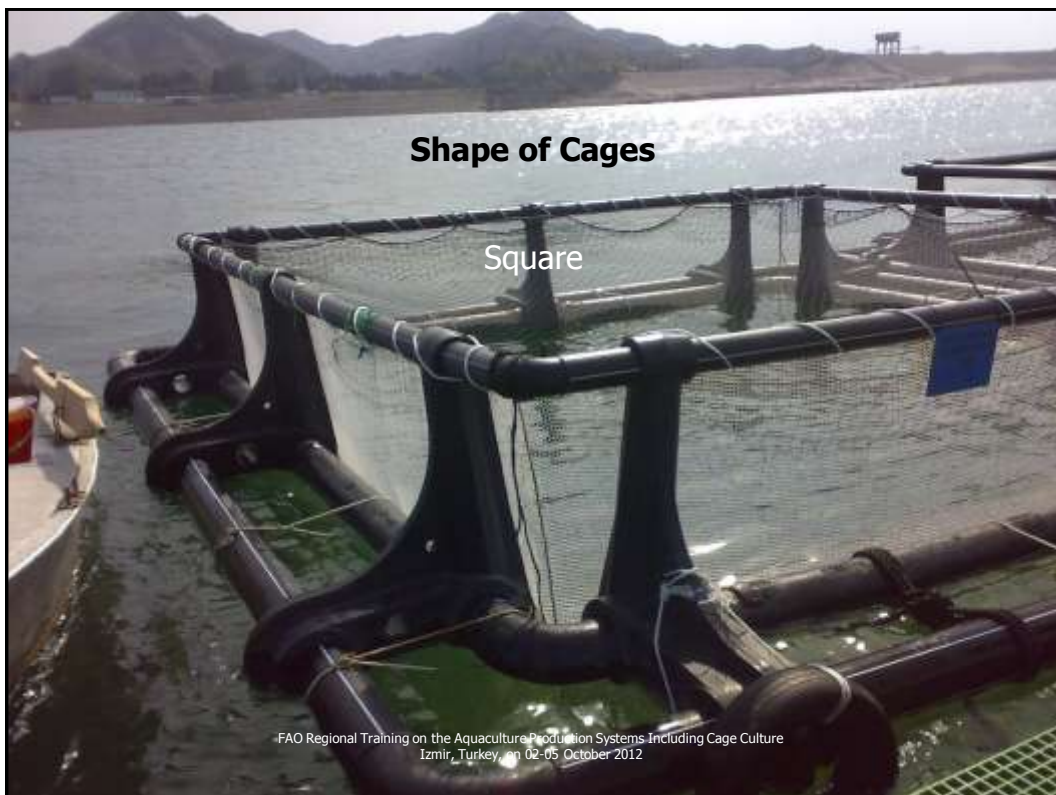
Submersible Cages



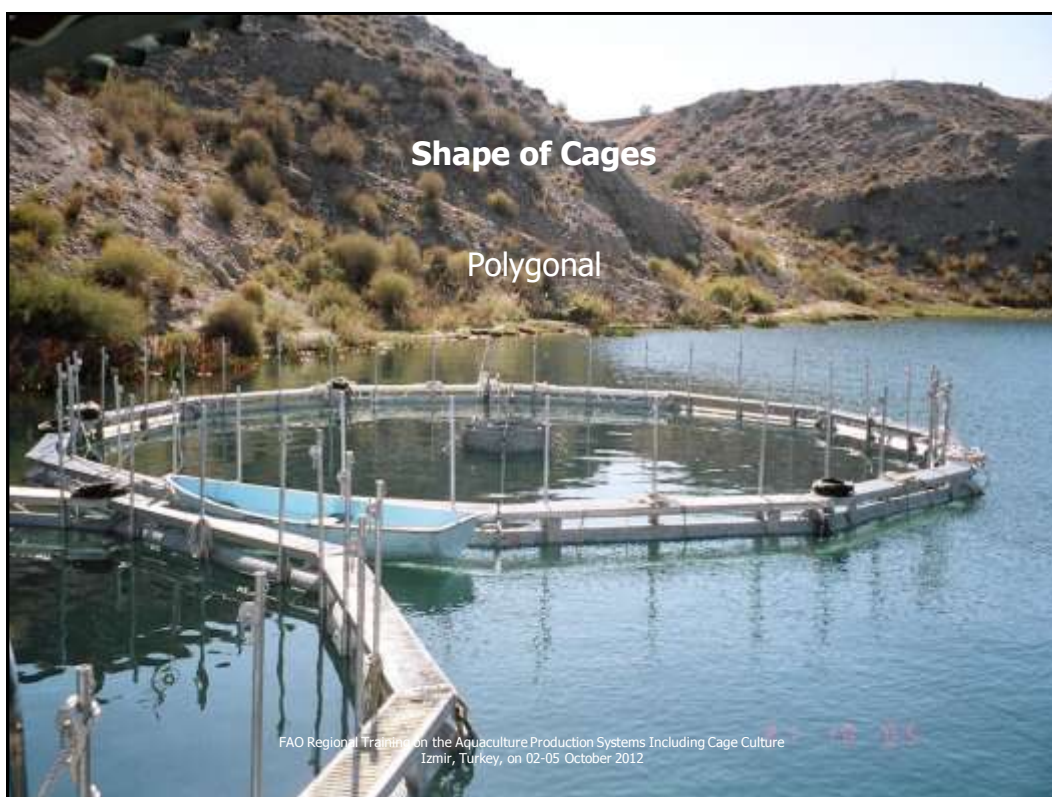
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Shape of Cages

Square



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Shape of Cages

Circular



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Design of Cages

In all the cases : inshore, offshore, sheltered or not, the cage structures must withstand the forces of the currents, waves and winds, while holding stock securely. This is the engineering task.

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Cage Culture Applications in Central Asia

Fish Species Cultured in Cages

Types of Cages Using for Aquaculture

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Common Fish Species Cultured in Cages

Trout Fish

Carp Fish

Sturgeon Fish

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Available Types of Cages in Region

Steel Cages

Plastic Cages

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Issık Kull, Kyrgyzstan



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Sochi, Russia Federation



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A photograph showing several rows of large, rectangular aquaculture cages floating in a body of water. The cages are constructed from dark metal frames and mesh. In the background, a steep, rocky hillside is visible under an overcast sky. The water is calm with some ripples.

Mingacevir, Azerbaijan

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Projects Completed in Region

**Between
2007-2012**

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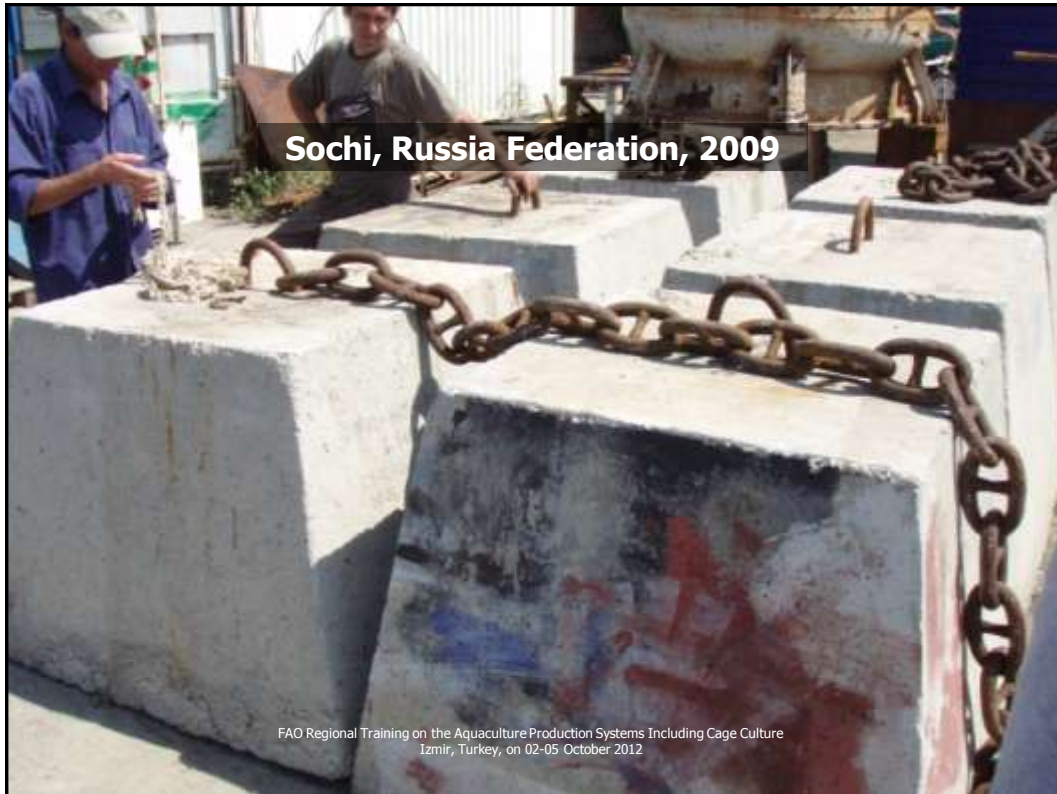
Issık Kull, Kyrgyzstan, 2007



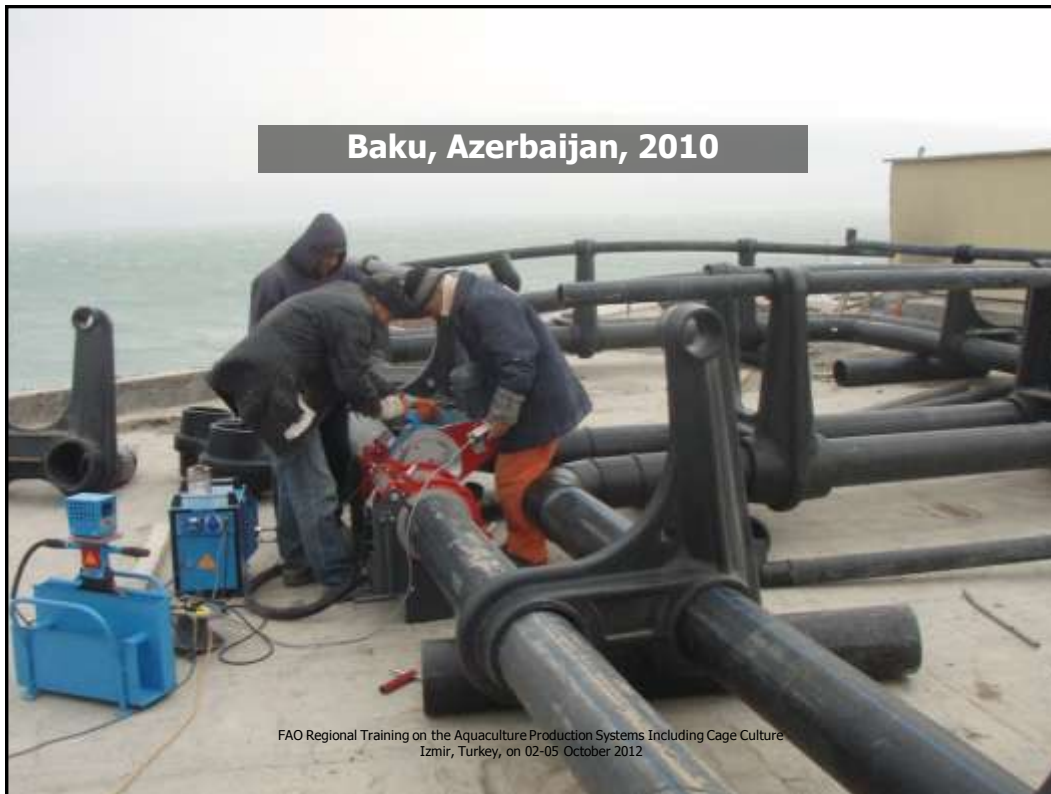
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Baku, Azerbaijan, 2010



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Mingacevhir, Azerbaijan, 2012

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Thanks!

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