THE CLAIMS

What is claimed is:

1. A method of producing ready-mix concrete, comprising:

- positioning a facility on a body of water, the facility being configured to produce and deliver ready-mix concrete, wherein an emission that includes carbon dioxide (CO2) is generated during operation of the facility;

- producing the ready-mix concrete at the facility;

- generating a process water by using a feed water during production of the ready-mix concrete, the process water including at least calcium and silica ions;

- separating the CO2 from the generated emission;

- liquefying the separated CO2 by compressing the CO2;

- adding at least a first portion of the separated CO2 to the process water; and

- adding at least a second portion of the separated CO2 to the ready-mix concrete produced at the facility.

2. The method of claim 1, further comprising moving the facility along the body of water; and wherein:

- the emission includes a first emission generated by at least a first emission source while moving the facility and a second emission generated by at least a second emission source while producing the ready-mix concrete;

- the step of separating the CO2 from the generated emission includes separating the CO2 from the first emission while the facility is moving; and

- the step of liquefying the separated CO2 by compressing the CO2 includes liquefying the CO2 from the first emission while the facility is moving; and

wherein:

- the ready-mix concrete is produced by a ready-mix concrete production system; and

- the steps of separating the CO2 from the generated emission, liquefying the separated CO2, adding the at least first portion of the separated CO2 to the process water; and adding the at least second portion of the separated CO2 to the ready-mix concrete is done by carbon capture system; and

further comprising:

connecting the carbon capture system to the at least one first emission source and the at least second emission source using a first fluid conduit; and

connecting the carbon capture system the ready-mix concrete system using a second fluid conduit.

3. The method of claim 1, wherein the process water also includes at least cement grains.

4. The method of claim 1, wherein the liquefied CO2 is stored in one or more containers before being added to the process water and the produced ready-mix concrete.

5. The method of claim 1, wherein at least one emission source generates the emission, wherein the at least one emission source is one of: (i) a propulsions system configured to move the facility, and (ii) a ready-mix concrete production system configured to produce the ready-mix concrete.

6. The method of claim 1, further comprising delivering the ready-mix concrete to a pour site that is on land.

7. The method of claim 1, further comprising delivering the ready-mix concrete to a pour site that is underwater.

8. A system for producing and delivery of ready-mix concrete, comprising:

a facility configured to be positioned on a body of water, wherein an emission that includes carbon dioxide (CO2) is generated during operation of the facility;

a ready-mix concrete production system disposed on the facility and configured to produce the ready-mix concrete, the ready-mix concrete production system generating a process water by using a feed water during production of the ready-mix concrete, the process water including at least, calcium, and silica ions;

a ready-mix concrete delivery system configured to deliver the produced ready-mix concrete to a selected pour site; and

a carbon capture system disposed on the vessel, the carbon capture system including:

- a least one offtake receiving the emission,
- a carbon capture / liquefaction unit configured to separate a CO2 from the received emission and liquefy the separated CO2, and
- at least one container configured to store the separated CO2, the carbon capture system being configured to add least a portion of the stored CO2 to the process water, and add at least a portion of the stored CO2 to the ready-mix concrete produced at the facility.

9. The system of claim 8, wherein the facility includes at least one emission source, and further comprising:

- a first fluid conduit connecting the at least one emission source to the carbon capture system; and

- a second fluid conduit connecting the carbon capture system to the ready-mix concrete production system

10. The system of claim 8, wherein the pour site is on land.

11. The system of claim 8, wherein the pour site is underwater.

12. The system of claim 8, wherein the ready-mix concrete delivery system includes a conduit that extends from the facility.

13. The system of claim 12, wherein the conduit is a flexible hose wound on a reel.