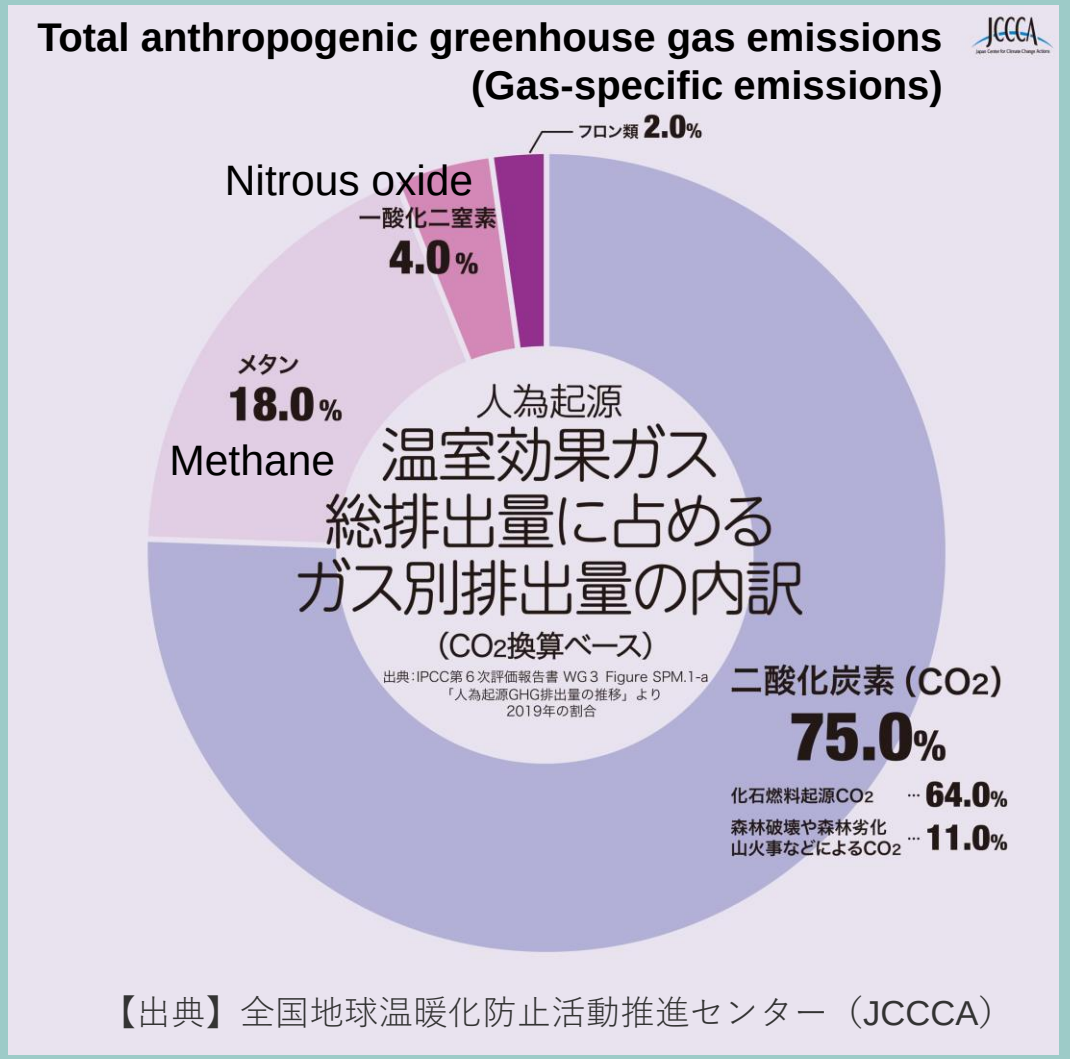
Red seaweed saves cows, seas and the planet

Alnur Co., Ltd.

GHGs known to cause global warming

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF_6)
- Nitrogen trifluoride (NF_3)



【出典】全国地球温暖化防止活動推進センター（JCCCA）

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GHGs known to cause global warming

- Carbon dioxide (CO_2) : 1*
- Methane (CH_4) : 25*
- Nitrous oxide (N_2O) : 298*
- Hydrofluorocarbons (HFCs) : 1,430*
- Perfluorocarbons (PFCs) : 7,390*
- Sulphur hexafluoride (SF_6) : 22,800*
- Nitrogen trifluoride (NF_3) : 17,200*

*Global warming potential (GWP)

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GHGs known to cause global warming

- Carbon dioxide (CO_2) : 1*
- **Methane (CH_4) : 25*** **(caused mainly by rice cultivation, enteric fermentation in livestock etc.)**
- Nitrous oxide (N_2O) : 298*
- Hydrofluorocarbons (HFCs) : 1,430*
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*Global warming potential (GWP)

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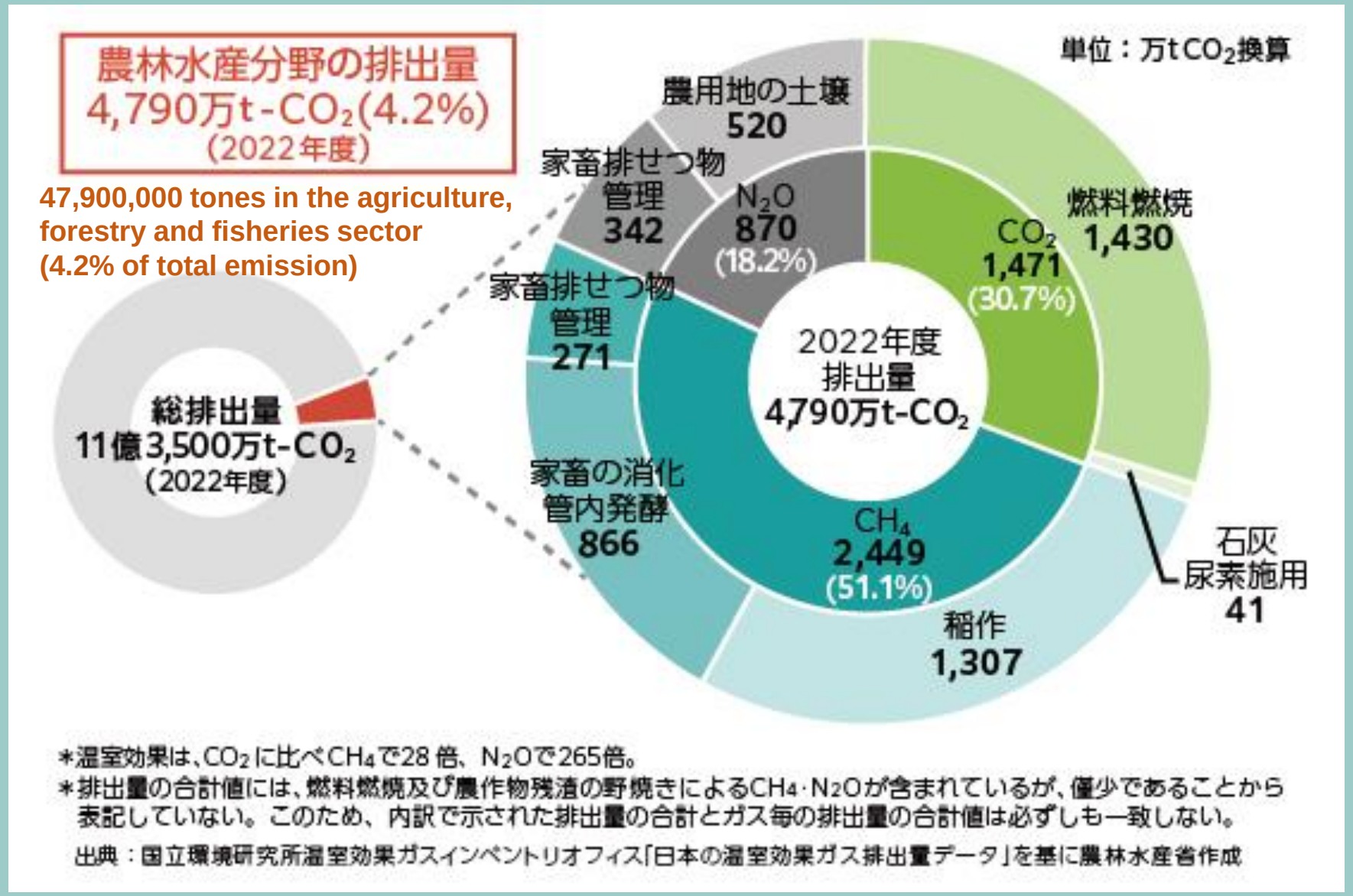
CO2 emissions in the agriculture, forestry and fisheries sector (FY2022)



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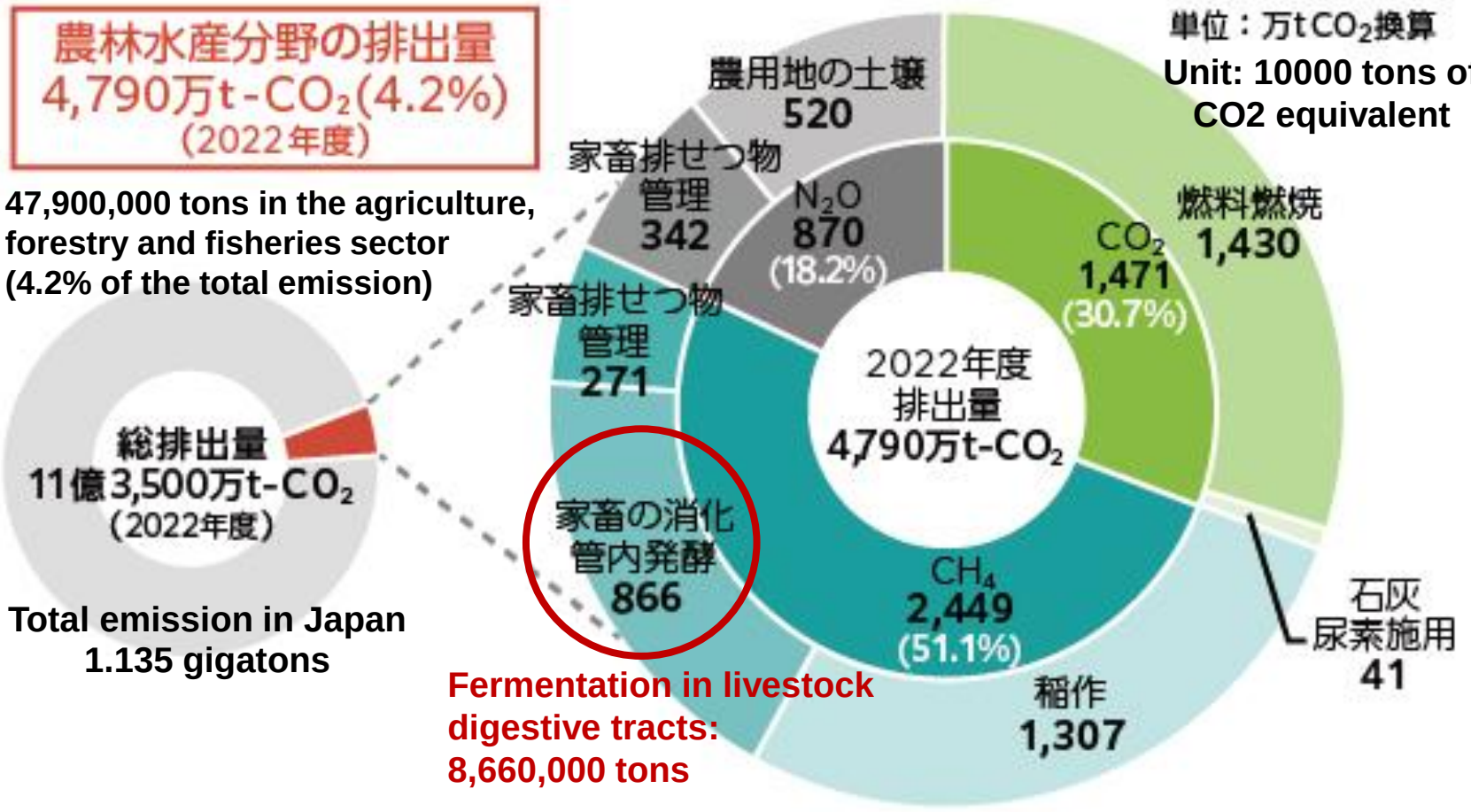
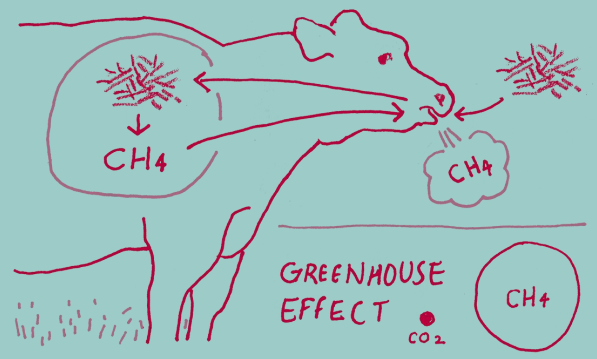
CO2 emissions in the agriculture, forestry and fisheries sector (FY2022)



Methane emitted as a burp or fart from one cow 200～600L/day



Methane gas emissions from ruminant burps around the world (CO2 equivalent)
3 gigatons/year

=Approximately 5~7% of the total GHGs emitted around the world

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Growing GHG emissions and impact of global warming on the ocean

Rocky-shore denudation

- Erosion by sea urchins and fish
- Decrease in seaweed bed-forming species
- Increase in sea temperature

Coral bleaching

- Increase in sea temperature
- Ocean acidification

Decrease in fish catches

- Increase in sea temperature
- Loss of habitat
- Changes in catch species

【出典】全国地球温暖化防止活動推進センター（JCCCA）

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GHG emissions

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Destruction of the marine environment

We have the ‘Key (Kagi)’ to solve these two major issues Simultaneously!

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A key (Kagi) connecting the future
of the oceans and cows.

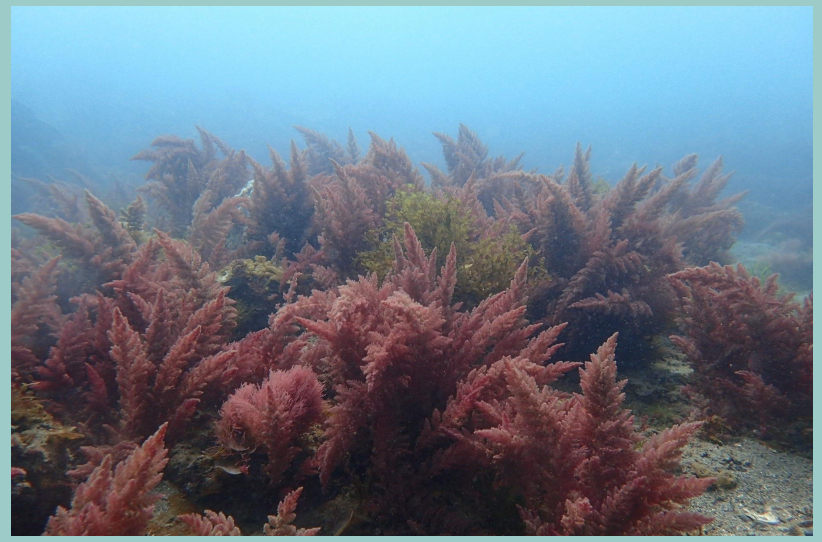
Asparagopsis taxiformis (Kagike-nori)

Characteristics

- A species of red algae with a whitish-red-purple colour
- Densely covered with fuzzy, fine hairy twigs
- Distribution area: tropical and subtropical regions

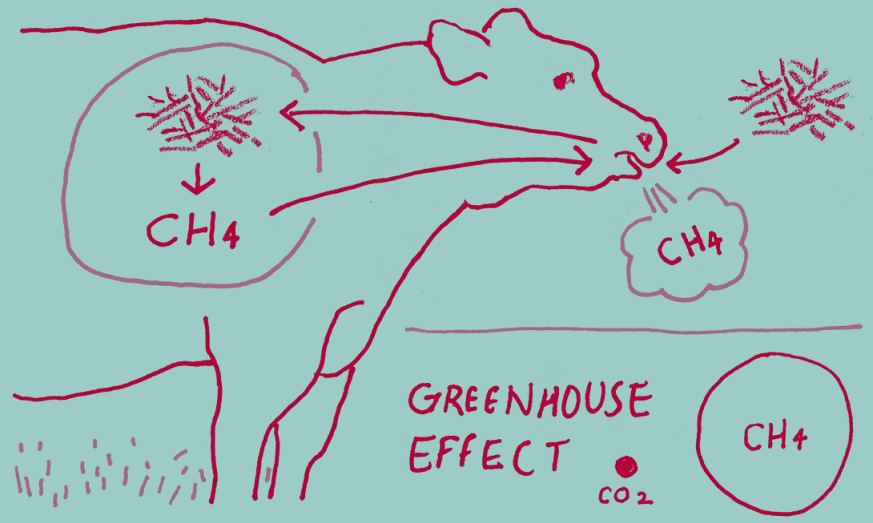
  Japan: Central and southern Pacific Honshu, Kyushu, Nansei, Ogasawara, Goto Islands, etc.

  Overseas: Korean Peninsula, Taiwan, tropical Pacific, Australia, etc.
- Hight: 10-30 cm
- Shallow seabed to a depth of about 10 m, growing in clusters on rocks



Asparagopsis and methane from cows

Kagikenori has a very high bromoform* content compared to a wide variety of other algae.
(*Substance that reduce methanogenesis in cattle stomachs.)



Cattle are ruminants, and part of their digestive system (the first stomach) contains micro-organisms (archaea: methanogens) that ferment and break down low-nutrient feed such as grass and leaves, helping them to extract as many nutrients as possible from the food they eat.

During the digestion process,
methane is produced and released into the atmosphere.

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KAGINOWA Business Model

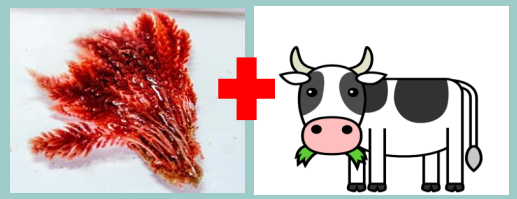
Livestock farmers

J-Credit→ reduced feed costs
Low methane beef→Branding!

Utilization of J-Credit

About 90% reduction

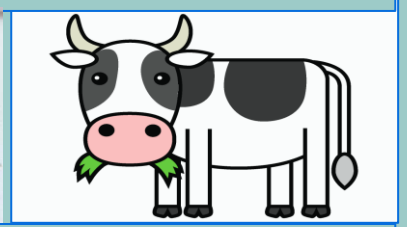
Methane



Fishermen+Local Gov.:

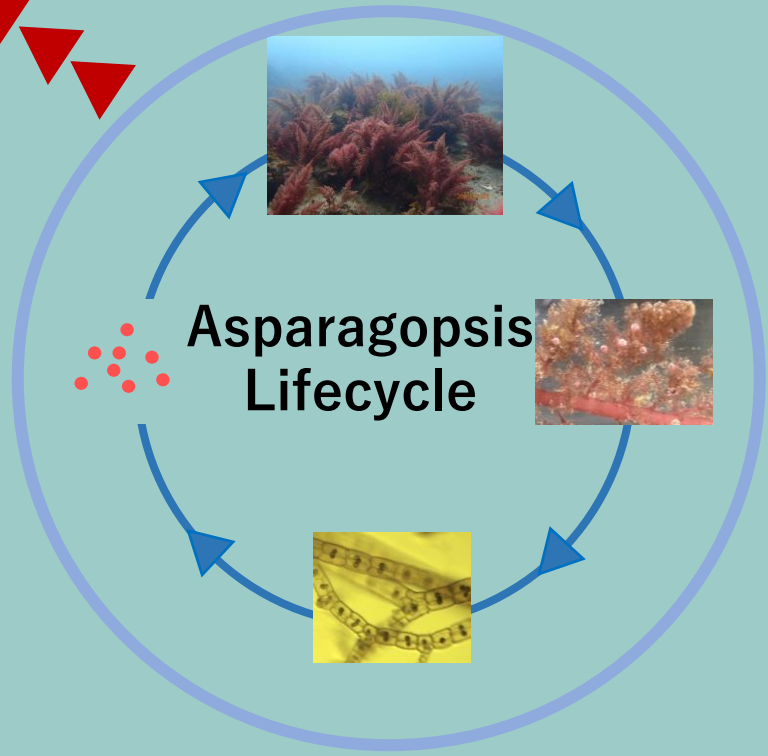
- Asparagopsis marine farming is
- a new source of income!
- Revitalization of the local communities

Feed additive registration in Japan

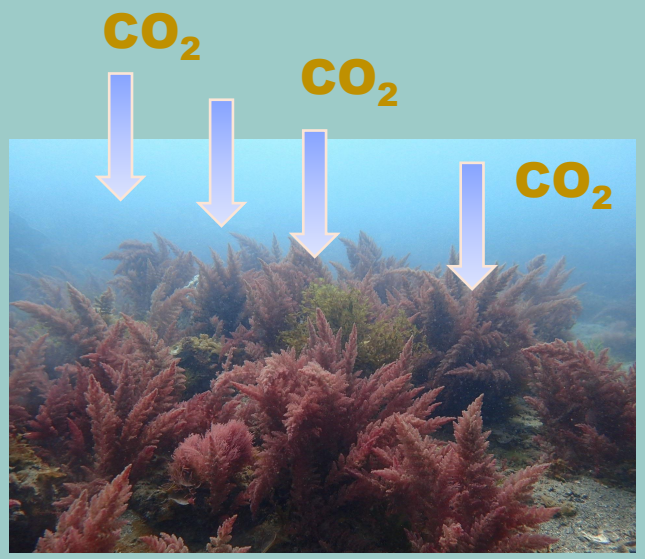


- Submission of data on effectiveness & safety, etc.
- → MAFF
- Ensure safety of cattle health and human health
- From submission to approval: approx. 1.5 to 2 yrs

Land-based aquaculture



Asparagopsis and Cows
Circular simultaneous GHGs Reductions



- Enhanced blue-carbon absorption!
- Restoration of seaweed beds
- Improvement of marine ecosystems

Cycle of continuous GHGs Reduction

Reducing CO2 in the ocean by marine culture of Asparagopsis

Reducing methane emissions in cattle with Asparagopsis feed additive

- About 90% reduction in methane from cattle burps!
- Utilization of J-credit
- (Reduced feed costs?)

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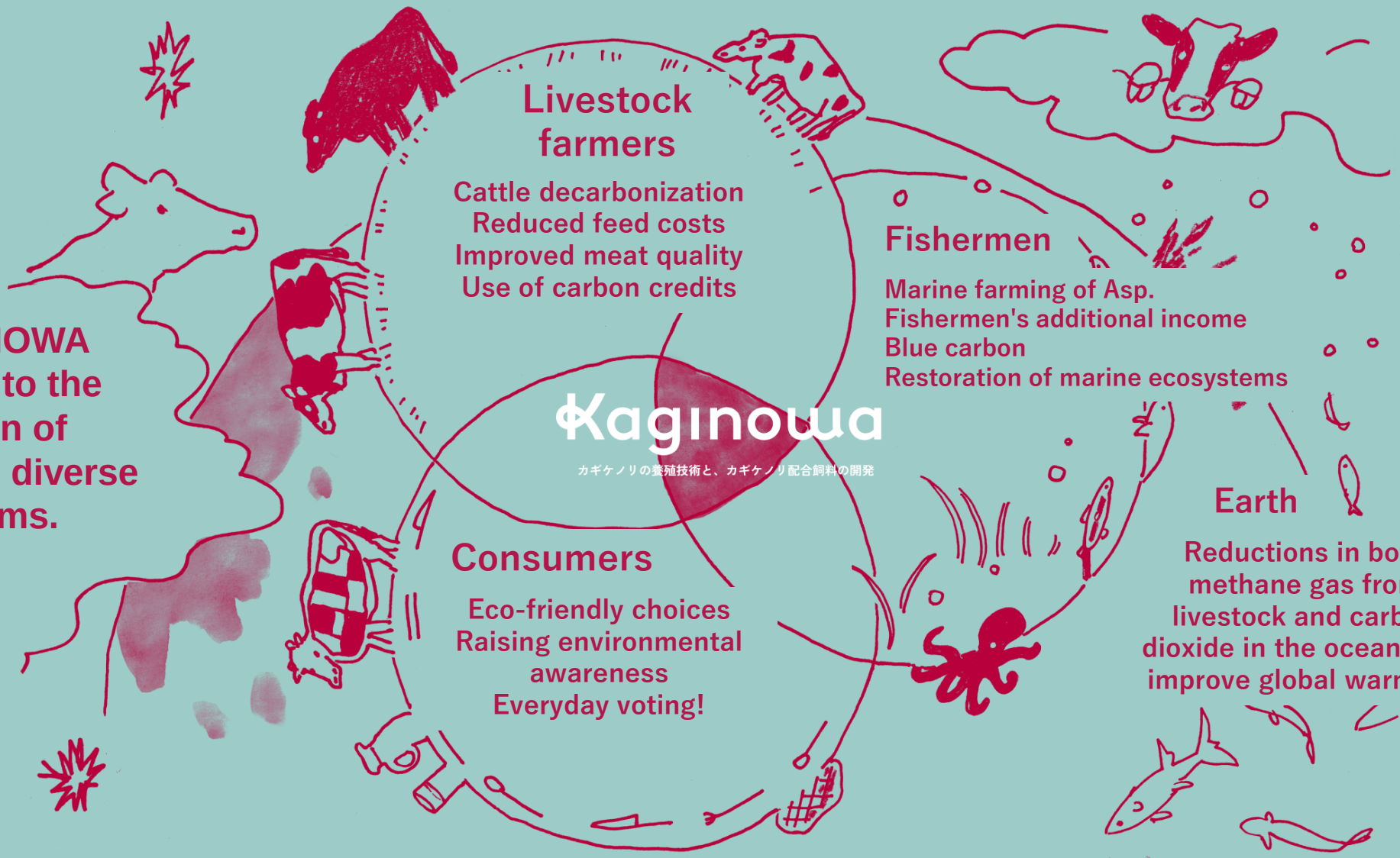

The KAGINOWA cycle leads to the restoration of abundant and diverse ecosystems.

Please visit us!

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