R7-B26 Rebuilding the local activities that protect the seaweed beds of Wajima

After the earthquake and heavy rain of 2024, what did the activities of the local association that has protected the seaweed beds of Wajima lose, and with what support, and how, are they about to be rebuilt?

Readers

Fishers and fisheries cooperatives, activity groups that protect seaweed and seagrass beds, local governments (those in charge of fisheries), research institutes and others without specialist knowledge. Those who want to check, with figures and sources, what the local association that has protected the seaweed beds of Wajima lost after the earthquake and heavy rain, and with what support it is trying to rebuild its activities.

Takeaways

1. In Wajima City, the Association for Protecting the Satoumi of Wajima, made up of fishers, mainly ama divers, and residents, has protected the seaweed beds since 2012. The Association has removed the sea urchins that eat seaweed and has placed parent seaweed of tsuruarame kelp (adult seaweed that releases the seeds). In a 2020 profile, the Association has 314 people. The prefecture's plan (2022) gave the seaweed beds protected by the Association as 80.5 ha, and expected that these beds would disappear without the activities.
2. The report of a nationally commissioned project (March 2026) writes that the seaweed beds of this area disappeared on a large scale in the earthquake and heavy rain of 2024. The present state of the 81 ha of seaweed beds for which the Association concluded an agreement under the national programme is "earthquake, flood damage". In fiscal 2024, the usual activities could not be carried out in the fishing grounds of the Association's districts. Instead, under a separate project that the prefecture explains as fully funded by the national government, fishers surveyed the fishing grounds and removed things that had drifted in.
3. In fiscal 2025, the nationally commissioned project made the Association 1 of the 4 districts nationwide for intensive support. The support for the Association was not to increase the seaweed beds, but to grasp the present situation and rebuild the plan. The report states that, to support the people of the Association, who are "exhausted", fertiliser was made from the removed sea urchins and vegetables were grown in a field. Students of the local Noto High School also took part in the harvest and the comparative tasting.
4. From fiscal 2026, the Association plans to newly carry out the production of kajime kelp seedlings (young seaweed plants), the transplanting of parent seaweed and seedlings, and the cleaning of mud that has built up to 1 cm or more on the rocks. The prefecture put 3.5 million yen and Wajima City 3.27 million yen into their fiscal 2026 budgets as support for the ama divers' activities to protect the seaweed beds. However, as of 12 November 2026, we found no record that the plan and the support had actually been carried out.
5. The only material that shows the effect of the activities in numbers is the number of sea urchins in shallow water before the earthquake. In a material from around 2016, the sea urchins in the Association's districts decreased from 0.7–1.0 individuals per 1 m^2 before the activities to 0.0–0.3 individuals after the activities. We found no measured value of how far the Association's seaweed beds have come back after the earthquake. In a national survey (2024; 221 seaweed-bed activity groups that answered), 48.0% gave a shortage of people, and 47.5% gave the lack of results, as challenges.

After reading

When using the story of the activities to protect the seaweed beds of Wajima in documents and plans, separate whether it is a plan or a budget or whether there is a record that it was carried out, and add the provider of the material and its date. As of 12 November 2026, no record has been found that the

Association's plan for fiscal 2026 (production of seedlings, transplanting, cleaning of mud) and the support of the prefecture and the city were carried out.

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This is an English translation. The Japanese edition is the authoritative text.

1. Key points

- In Wajima City, the Association for Protecting the Satoumi of Wajima, made up of fishers, mainly ama divers, and residents, has protected the seaweed beds since 2012. The Association has removed the sea urchins that eat seaweed and has placed parent seaweed of tsuruarame kelp (adult seaweed that releases the seeds). In a 2020 profile, the Association has 314 people. The prefecture's plan (2022) gave the seaweed beds protected by the Association as 80.5 ha, and expected that these beds would disappear without the activities. [S15, S16, S18]
- The report of a nationally commissioned project (March 2026) writes that the seaweed beds of this area disappeared on a large scale in the earthquake and heavy rain of 2024. The present state of the 81 ha of seaweed beds for which the Association concluded an agreement under the national programme is "earthquake, flood damage". In fiscal 2024, the usual activities could not be carried out in the fishing grounds of the Association's districts. Instead, under a separate project that the prefecture explains as fully funded by the national government, fishers surveyed the fishing grounds and removed things that had drifted in. [S1, S9, S13]
- In fiscal 2025, the nationally commissioned project made the Association 1 of the 4 districts nationwide for intensive support. The support for the Association was not to increase the seaweed beds, but to grasp the present situation and rebuild the plan. The report states that, to support the people of the Association, who are "exhausted", fertiliser was made from the removed sea urchins and vegetables were grown in a field. Students of the local Noto High School also took part in the harvest and the comparative tasting. [S1]
- From fiscal 2026, the Association plans to newly carry out the production of kajime kelp seedlings (young seaweed plants), the transplanting of parent seaweed and seedlings, and the cleaning of mud that has built up to 1 cm or more on the rocks. The prefecture put 3.5 million yen and Wajima City 3.27 million yen into their fiscal 2026 budgets as support for the ama divers' activities to protect the seaweed beds. However, as of 12 November 2026, we found no record that the plan and the support had actually been carried out. [S1, S20, S21, S22]
- The only material that shows the effect of the activities in numbers is the number of sea urchins in shallow water before the earthquake. In a material from around 2016, the sea urchins in the Association's districts decreased from 0.7–1.0 individuals per 1 m^2 before the activities to 0.0–0.3 individuals after the activities. We found no measured value of how far the Association's seaweed beds have come back after the earthquake. In a national survey (2024; 221 seaweed-bed activity groups that answered), 48.0% gave a shortage of people, and 47.5% gave the lack of results, as challenges. [S15, S6]

2. What is happening

Japan and the world: what it means for local groups to protect seaweed and seagrass beds

Seaweed and seagrass beds are places where seaweeds and seagrasses grow thickly, and they serve as homes and feeding grounds for fish and shellfish. The state in which the beds have declined and disappeared is called barren ground (isoyake) (the barren ground of Sotoura that has continued since before the earthquake is covered in R7-B11 "The barren ground (isoyake) that has continued since before the earthquake, and the decline of the seaweed beds of the offshore islands"). The ways of protecting the beds include removing the sea urchins that eat seaweed, placing parent seaweed (adult seaweed that releases the spores that become the seeds) in the sea, planting seaweed seedlings that have been raised (seed), and cleaning the rocks to which seaweed attaches. [S7]

The national government has supported, with grants, the activities in which activity groups formed by fishers and local residents protect seaweed and seagrass beds and tidal flats. According to the national guidelines (Guidelines on Measures against Barren Ground (Isoyake), 3rd edition, March 2021), the earlier project began in fiscal 2009, and from fiscal 2013 it has continued as the "programme to bring out the multiple functions of fisheries". The guidelines describe this as a "public subsidy scheme without parallel in the world" that supports the activities of fishers and others to restore and monitor seaweed and seagrass beds. Its present name is the "programme to strengthen fishing-ground productivity and the multiple functions of fisheries", and its period is the 5 years of fiscal 2025–2029. The report of the nationally commissioned project states that this is a revision that brings the next period of the programme (originally fiscal 2026–2030) forward by 1 year, gives priority support to the conservation of seaweed and seagrass beds, and strengthens watching over the beds (monitoring) and the dispatch of experts. [S7, S4, S1]

This grant has a fixed set of rules. It is a requirement that people other than fishers join the activity group, and the group concludes an agreement, in principle for 5 years, with the municipality where it is active. In activities to protect seaweed and seagrass beds, 1 or more of the priority activities, such as placing parent seaweed, producing seaweed seedlings, putting in seedlings, removing sea urchins and cleaning bedrock, and monitoring are required. The unit amount of the national grant is 319,200 yen per 1 ha of beds. The unit amount where a local government also pays, as its own project, in step with the national grant is 456,000 yen, and plans at or above this amount are adopted with priority. The national unit amount is equal to 70% of that (this paper's calculation). The national grant to 1 activity group has an upper limit of 20 million yen. On the shares borne by the national and local governments, the Fisheries Agency answered in the questions and answers at a training session, "national government : local governments = 7 : 3". [S4, S1]

The activities have spread nationwide. The national Vision for Seaweed and Seagrass Beds and Tidal Flats (revised December 2023) states that in fiscal 2021 more than 400 activity groups were carrying out conservation activities over about 58,000 ha of seaweed and seagrass beds and tidal flats. This is the area covered by the activities, not the area of beds that came back. The national budget for fiscal 2026 is 1.35 billion yen (1.366 billion yen in the previous fiscal year), and the supplementary budget for fiscal 2025 is 721 million yen. The national government has set the targets of increasing the amount of living things in the target waters by 20% and bringing the conserved area of seaweed and seagrass beds to 6,200 ha by fiscal 2029. [S5, S3]

Keeping the activities going has its difficulties. In a survey in which the Fisheries Agency asked 287 seaweed-bed activity groups in July–August 2024 and 221 groups (77%) answered, the challenges (multiple answers allowed) were "there is a shortage of people to carry out the activities" for 106 groups (48.0%), "the activities do not produce results" for 105 groups (47.5%), a shortage of funds for 52 groups (23.5%), and a shortage of techniques and know-how for 31 groups (14.0%). As for the future, 73.3% answered "we want to continue at the present

scale", 15.4% "we want to continue on a larger scale", 1.8% "we want to continue on a smaller scale", and 6.8% "we do not know whether we can continue". The national guidelines state that, with the decrease and ageing of fishers and their taking on of other work alongside fishing, there is a shortage of people to look after the beds, and that it is important to take in local residents, NPOs and others and build a system in which the whole community works on the matter. The fishery workforce of Sotoura is covered in R7-B23 "The decrease in fishers and crew (the workforce)". [S6, S7]

The effect of the activities is measured by cover (the proportion of the seabed covered by seaweed) surveyed by the activity groups themselves. The report of the nationally commissioned project compares 122 groups in 23 prefectures that have cover for the same season in fiscal 2019 and fiscal 2023, and gives 58 in which cover increased, 62 in which it decreased, and 2 in which it did not change. The report states that many of the groups in which cover decreased also combined the removal of sea urchins with the placing of parent seaweed, and that the conditions under which the efforts work (timing, place, scale, frequency and so on) need to be examined. The groups of Ishikawa Prefecture are not among these 122 groups. The national Vision for Seaweed and Seagrass Beds and Tidal Flats states that there are also areas that returned to barren ground again after the beds had once come back, and, since it takes from several months to several years for seaweed to grow, it calls for monitoring over a certain period and reviewing (PDCA). How the beds are decreasing nationwide, and the effect of efforts to restore them, are covered in R2 "Seaweed and seagrass beds and the living things of the sea". [S1, S5]

Japan and the world: what became of local activities after disasters and long declines

There are not many examples of seaweed and seagrass beds and local activities after earthquakes, tsunamis and long periods of barren ground. The examples in the materials this paper looked at are as follows (Table 1).

In the Great East Japan Earthquake of 2011, the effect of the tsunami differed from bed to bed. At Tomarihama on the Oshika Peninsula in Miyagi Prefecture (a bed with much arame kelp), the decrease in arame kelp was limited, while the sea urchins that eat seaweed decreased greatly, young arame kelp increased over a wider range of water depths, and the bed spread into deeper water. At Nagane in Otsuchi Bay in Iwate Prefecture (written "Nagane" in the abstract; a bed with many kelps related to kombu), there was no significant change in the amount of seaweed before and after the earthquake, and no clear decrease in sea urchins either. In another survey at Tomarihama, juvenile abalone and sea urchins decreased to 14% and 5% of the level just before the earthquake, and the state of few juveniles continued after that. As the reasons, it is estimated that mud and fine sand accumulated and limited the places where juveniles grow, that the bed spread, and that the parent shellfish decreased (all according to the abstracts of the papers). The national guidelines also state that on the affected coasts there were places where the original beds came back temporarily. [S35, S36, S7]

In Sanriku, local divers moved on from clearing up after the disaster to restoring seaweed beds. A blog by a diver active in Sanriku (2025) writes that the restoration of seaweed beds began around 2015, at a time when the removal of debris and the cleaning of the sea had reached a pause, and that it started when fishers asked the divers to investigate because sea urchins and sea snails were increasing and seaweed was decreasing. At the case-report meeting of the nationally commissioned project (fiscal 2024) too, Sanriku Volunteer Divers spoke about 14 years of activity under the title "From earthquake reconstruction activities to climate change measures". Meanwhile, the national "fishing ground restoration support project" continues even now, for the Great East Japan Earthquake, as a project in which specialist contractors collect the debris that flowed out to sea (the budget request for fiscal 2027 is 252 million yen; the previous fiscal year was 280 million yen). It has the same name as the project in Noto, but its content is different (chapter 5). [S41, S2, S10]

In the Kaikōura earthquake in New Zealand in 2016, a group that had already existed locally became the centre of the rebuilding. In Kaikōura, the "Kaikōura Marine Guardians" (an advisory body appointed by the minister)

had been created by a 2014 law out of the efforts of a group of local people. According to a 2025 evaluation report, the earthquake struck on the day of this body's first meeting, and for about 10 years after that, responding to the earthquake became its main work. It is reported that people said there was value in the fact that an already existing body could connect quickly to the emergency response. On the other hand, almost all the people of the body carry out their roles as volunteers, and the evaluation report recommends increasing the resources for administration and facilitation and for research. [S39]

The fishery for pāua (a relative of abalone) in Kaikōura was reopened on the basis of the results of monitoring. After the earthquake, in November 2016, the pāua fishery of this coast was closed (on the basis of, among other things, an initial estimate that about 21% of the places where fishing had been done until then had been lost through uplift). The government examined the effects of the earthquake with a research budget of 2 million NZ dollars, and in June 2018, together with a local group, held a presentation meeting attended by more than 150 people. On 1 December 2021, the fishery was reopened for 3 months only. The reopening followed a proposal by the Guardians, was made conditional on shellfish born after the earthquake being widely seen and on the amount continuing to increase, and was supported by the results of monitoring, such as surveys at 35 sites. [S37, S38]

In the restoration of the world's seaweed beds (kelp), long-continued support is regarded as a condition for large results. According to a review article (abstract) that examined 259 efforts in 16 countries from 1957 to 2020, 62% were led by researchers, 80% were less than 1 ha, many lasted less than 2 years, and events such as grazing by sea urchins were often the cause of failure. Japan's efforts are said to have begun in the 1700s. Another paper (2020) states that the 4 large successful examples of 110–21,000 ha (the United States, Norway, South Korea and Japan) all continued for more than 6 years, involved cooperation among universities, industry and government, and always had government taking part. And it writes that many efforts run by volunteers and funded by donations had no choice but to stop their activities when the funds ran out. [S34, S33]

At Hainan in Shizuoka Prefecture, after the beds had come back with long support, a decline was recorded again. According to the 2020 paper, at Hainan, 8,000 ha of kajime kelp and sagarame kelp beds declined between 1985 and 2000, and fisheries such as that for abalone closed. The transplants that the prefecture began in 1999 were eaten by fish (such as rabbitfish) within 3 years. After that, kajime kelp raised in large quantities in deep-sea water was attached to 2,162 blocks and placed in the sea, and the government asked local fishers to remove the fish that eat seaweed and paid the costs. The budget for 2002–2010 was 5.21 million dollars (2010 dollars), and about 870 ha had come back by 2018. In the prefecture's seaweed bed vision (March 2022), the 870 ha is a value from the analysis of a satellite image of June 2018, and includes beds of small seaweeds (species unknown). On the other hand, in the report of the nationally commissioned project, the average cover surveyed by the activity group of Hainan had fallen from 32.5% in autumn and 34.0% in early spring in fiscal 2019 to 0.0% in autumn and 0.2% in early spring in fiscal 2023. The 2 values differ in both the method of measurement and the place (chapter 5). [S33, S40, S1]

Table 1 Examples of seaweed beds and local activities after disasters and long periods of barren ground

Example	What happened	Local activities and support	What was learned
2011 Great East Japan Earthquake (Miyagi and Iwate)	Where the tsunami reduced the sea urchins, arame kelp spread. There were also places that did not change	From around 2015, local divers, asked by fishers, moved on to restoring seaweed beds. The na - tional debris collection project continues even now	The effect differs from place to place. Mud and fine sand are estimated to have reduced the places where juveniles grow

Example	What happened	Local activities and support	What was learned
2016 Kaikōura earthquake (New Zealand)	An initial estimate that about 21% of the pāua fishing grounds used until then were lost through uplift. The fishery was closed in November 2016	The local advisory body that had already existed was at the centre. The government put 2 million NZ dollars into research	Reopened for 3 months only in December 2021, conditional on the results of monitoring. The limits of relying on volunteers
Hainan, Shizuoka Prefecture (barren ground of 1985–2000)	8,000 ha of kajime kelp and sagarame kelp beds declined	The prefecture, the national government, the fisheries cooperative and the cities and towns gave long support and asked fishers to remove fish. An activity group does the monitoring	Came back to about 870 ha (including small seaweeds) in 2018, but the cover in the activity group's monitoring was 0.0% in autumn and 0.2% in early spring in fiscal 2023
2024 Noto Peninsula Earthquake and heavy rain (Wajima)	In the area where the 81 ha of seaweed beds under the Association's agreement lie, the seaweed beds disappeared on a large scale	The "Region (Sotoura)" sections of this chapter	Chapter 3

Note: The periods, the causes and the methods of measurement all differ, so they cannot be compared as they are. For the papers on the Great East Japan Earthquake, we read only the abstracts.
[S35, S36, S41, S10, S37, S38, S39, S33, S40, S1]

Region (Sotoura): the Association for Protecting the Satoumi of Wajima and its activities before the earthquake

Sotoura in this paper means the coast of Shika Town, Wajima City including Monzen, Hegurajima and Nanatsujima, and the north coast of Suzu City as far as Jike. Of these, this paper covers the local association that has protected the seaweed beds along the coast of Wajima City. Figures for Nanao Bay and Uchiura are not used. The fact that the local activities to restore eelgrass beds in Nanao Bay stopped because of the earthquake is covered in R7-A26 "The suspension of activities to restore eelgrass beds (the earthquake)".

The Association for Protecting the Satoumi of Wajima was founded in 2012. According to a material (from around 2016) written by Ryoko Ishikawa, an expert who supports the Association, a group of coastal fishers, beginning with ama divers, people connected with the fisheries cooperative, and local residents formed the Association at Najimi in 2012 and extended it to Hikariura in 2013, and a little over 250 people were taking part in the activities in the 2 districts. A 2025 report (a report published in a specialist academic journal) describes the 3 districts of Hikariura, Wajimazaki and Najimi as places where the Association, an activity group under the national programme, has removed sea urchins and surveyed the seaweed beds since 2013. In the profile on the information website of the national programme (posted in 2020), the Association consists of 314 people, namely fishers, local residents and the Wajima branch of JF Ishikawa (Ishikawa Prefecture Fisheries Cooperative), and is supported by an expert. [S15, S14, S16]

The background to the forming of the Association is the decline of shellfish and seaweed beds. The profile on the website of the national programme states that abalone, turban shells and others have recently decreased in Wajima, that the decline of the seaweed beds has been pointed out as the cause, and that barren ground at Nanatsujima has also been reported by ama divers. The barren ground before the earthquake is covered in R7-B11, and abalone and turban shells are covered in R7-B13 "The mass death of abalone and turban shells, and the fall in catches that continues for some years". The ama divers had rules for protecting the resources from before the Association was formed. For example, at Hegurajima and Nanatsujima there is a rule that tsuruarame

kelp, which is food for abalone, is not gathered and only what has been washed up on the shore is used (according to the prefecture's public relations magazine and the plan of the ama divers' section). The ama diving fishery is covered in R7-B25 "The ama diving fishery of Wajima (numbers, reopening and the passing on of skills)", and the fishing grounds of the offshore islands are covered in R7-B27 "Hegurajima and Nanatsujima (the fishing grounds of the offshore islands and life on the islands)". [S16, S17, S28]

Before the earthquake, the Association carried out 3 activities (according to the material from around 2016). The 1st was the removal of floating and deposited matter, in which residents other than fishers also took part, and about 5–7 t of rubbish (mainly plastic on the shore) was collected every year. The 2nd was the removal of the purple sea urchins that eat seaweed, in which, in a total of 6 sessions every year in the 2 districts, a cumulative total of about 700 people removed about 2.5–3.6 t in 1 year. The 3rd was the placing of parent seaweed of tsuruarame kelp. In a trial by the prefecture's Fisheries Research Center, a method of attaching the holdfast of the parent seaweed to a flat stone about 20 cm in diameter with cable ties was worked out, and from around fiscal 2015 the Association took the lead and ama divers set the stones in place by free diving. In the 2020 profile, the placing of parent seaweed is around April–June, the removal of sea urchins is around September (they are landed and disposed of at a waste treatment plant), and the cleaning of the shore is around September–November. [S15, S16]

The Association took the policy of not changing the seaweed beds suddenly and greatly. The material from around 2016 writes that not all the sea urchins are removed but only enough to keep the present density, that the transplanting of parent seaweed is extended while the kajime-type kelps are monitored by number, and that, since sudden and large changes made by human hands carry the danger of making the environment worse instead, small efforts and assessments are repeated. The material states that continuing the activities in itself "increases the eyes that watch over the seaweed beds". Monitoring was done 2 times a year with experts, and, in addition to the places of activity down to a water depth of 5 m, deeper places down to a water depth of 20 m were also looked at. The 2020 profile states that the Association wants to become able to do, with its own people alone, the diving monitoring for which it relies on experts. [S15, S16]

The prefecture and the city had put the Association's activities into their plans and budgets. The prefecture's seaweed bed vision (March 2022) stated that the Association would, along the coast of Wajima City, remove purple sea urchins and others and place parent seaweed of tsuruarame kelp and others, and so protect 80.5 ha of mixed beds of arame kelp and Sargassum (seaweeds of the Sargassum group). The vision, on the ground that the target beds are thought to disappear without this project, put a decrease of 80 ha in its outlook for fiscal 2026 (this is an outlook from before the earthquake, not a measured value). The vision also decided that the prefecture, the cities and towns, experts and representatives of fishers would make an assessment in a council 1 or more times every year, but we found no record that it was held. The prefecture's vision for the promotion of the fishing industry (2017), after stating that no large-scale barren ground had so far been confirmed along the prefecture's coast, states that the prefecture has supported the placing of parent seaweed and the culling of sea urchins that the ama divers work on. Wajima City, in fiscal 2020–2023, granted 1 million yen every year to the Association through the city (the "rich seaweed beds support project"). The city's explanatory document gives the subsidy rates as "national government 70%, prefecture and city 30% (project cost)", and the amount of the 1 million yen that the city itself bore is not written. The city's explanatory document writes that, through the surveys of the seaweed beds by experts' diving, the removal of living things that eat seaweed and so on, "the conservation of the seaweed beds was achieved". [S18, S19, S20]

From September 2023, the sea of the Association's districts has also been protected under the rules of the Fishery Act. The prefecture designated the waters off Wajima City as a "conservation coastal fishing ground" (Ho No. 1; the period is 1 September 2023 to 31 August 2033), and the Ishikawa Prefecture Fisheries Cooperative, as the body that protects the fishing ground (coastal fishing ground management body), removes drifted matter and the like, culls harmful animals and plants, and releases seed. The Fishery Act provides that this body is

made to report its activities and its income and expenditure, and that the governor makes them public. To suspend or end the activities, the governor's approval is needed. [S11, S12]

The activities of the last year before the earthquake can be known from the report of the Ishikawa Prefecture Fisheries Cooperative. According to the report for fiscal 2023 (waters off Wajima City), in September 112 people and 21 boats on the 17.6 ha of seaweed beds at Hikariura, and 95 people and 14 boats on the 29.1 ha of seaweed beds at Nanatsujima, removed sea urchins and others, and the amounts were 630 kg at Hikariura and 150 kg at Nanatsujima (including 50 kg at Wajimazaki). In November, a total of 6,560 kg of rubbish was collected on the shores of Najimi and Hikariura. In June and October, 4–5 people including 2 experts monitored the seaweed beds of Wajimazaki, Nanatsujima, Najimi and Hikariura a total of 6 times. In the activity at Wajimazaki on 19 June, 2 teachers and 13 students of a high school in the city took part. The income was a total of 5.377 million yen, including a national subsidy of 2.98 million yen, 1 million yen from the prefecture and 1 million yen from the city. The Association's name does not appear in the report, but the places and dates match the title of the Association's monitoring report for fiscal 2023, and the city's 1 million yen also matches the amount the city paid to the Association, so the removal of sea urchins and others, the removal of rubbish, and the monitoring are thought to record the Association's activities (this paper's view). The report also records the release of seed of abalone at Wajimazaki and Sosogi, of turban shells at Najimi, and of black sea bream at Nishiho (by staff of the cooperative and others), but these are not written as being the Association's. The "other" income of 397,000 yen is the same amount as the cost of purchasing seed. [S13, S26, S20]

The Association's monitoring records from before the earthquake also became the baseline for comparison after the earthquake. The diving survey (6 June 2025, Wajimazaki) in the report of the Kanazawa Association of Corporate Executives (March 2026) states that, compared with the Association's survey of June 2023, the Sargassum species had hardly changed and the tsuruarame kelp had decreased markedly (the decrease in tsuruarame kelp is covered in R7-B11). The Association's 2023 report has not been made public, and this paper read it through the quotation in the report of the Kanazawa Association of Corporate Executives. [S26]

Region (Sotoura): the seaweed beds that disappeared in the earthquake and heavy rain, and the usual activities that stopped

After the earthquake of 1 January 2024 and the heavy rain of September, the state of the Association's seaweed beds was recorded as something different from that of the other districts. In the table of intensive-support districts in the report of the nationally commissioned project (March 2026), the Association is "Ishikawa Prefecture, Wajima City, Association for Protecting the Satoumi of Wajima", the beds are "tsuruarame kelp / Sargassum beds", the area under the agreement is 81 ha, and the present state is "earthquake, flood damage". The state of the other 3 districts in the same table (Tsushima City, Nagasaki Prefecture, 9 ha; Minami Town, Tokushima Prefecture, 27 ha; Furubira Town, Hokkaido, 6 ha) is "barren ground (isoyake)" in every case. The report writes that "owing to the earthquake and heavy rain of 2024 (Reiwa 6), the seaweed beds of this area disappeared on a large scale", but it does not write the area or the proportion that disappeared. [S1]

The reasons the seaweed beds disappeared are uplift and mud. The coast of Sotoura was uplifted by the earthquake (R7-B01 "Earthquake uplift on the Sotoura coast"), and the shallow seaweed beds were left dry (R7-B08 "The shallow seaweed beds left dry by uplift, and the decrease in the area of seaweed beds on the Sotoura coast"). From around the rainy season after the earthquake, mud from the rivers came in, and it built up further in the heavy rain of September (R7-B09 "The mud and turbidity that keep entering from river mouths (the seaweed beds and rocky-shore fishing grounds of the Wajima coast)"). [S1, S14]

In the year of the earthquake, the Association's usual activities stopped. The report for fiscal 2024 (waters off Wajima City) that the Ishikawa Prefecture Fisheries Cooperative submitted under the Fishery Act states that "the usual activities could not be carried out owing to the effects of the 2024 (Reiwa 6) Noto Peninsula Earthquake",

and records instead the activities of the national fishing ground restoration support project. In this project, from April 2024 to February 2025, a cumulative total of 9,128 people took part in the removal of drifted matter and the like, the culling of sea urchins and others on 5 days in September (Wajimazaki and Najimi), the surveys of the fishing grounds, and the report meeting, and the income was a national subsidy of about 259 million yen and a prefectural subsidy of 1.5 million yen (the number of people is this paper's calculation. This project and the income are covered in R7-B24 "The income of affected fishers, and the gaps in support"). [S13]

This national project is thought to have been carried out in a form separate from the Association. According to the prefecture's explanation (February 2024), the target of the project is "activity groups whose members are fishers and others (coordinated by the branches of the fisheries cooperative)", the national government bears the whole of the personnel costs, boat charter fees and so on, and it also supports the removal of floating and deposited matter that is bad for the seaweed beds and activities to restore the seaweed beds that disappeared through uplift and the tsunami. The report of the Kanazawa Association of Corporate Executives gives the author of the report of the fiscal 2024 survey as the "Ishikawa Prefecture wide-area activity group". For that reason, the activities of fiscal 2024 are thought to have been carried out not under the Association's name but by the activity group for this project (this paper's view. How many of the Association's members took part is not in the materials). [S9, S26]

News reports of October 2024 say that, under the national project, the ama divers' survey of the fishing grounds of Nanatsujima carries a daily allowance and is a support for their livelihood. The lives of the ama divers and the reopening of the fishery are covered in R7-B25 "The ama diving fishery of Wajima (numbers, reopening and the passing on of skills)". [S32]

The view that the hands of local people alone are not enough has been put forward by the expert who supports the Association. Ryoko Ishikawa, who from February 2024 surveyed the seaweed beds of Wajima under this project with fishers, mainly ama divers, writes at the end of the 2025 journal report that, while the restoration of the foundations of living and work is not going as hoped, the situation is one in which it is difficult for local people alone to carry out sufficient surveys and efforts to improve the environment. The report of the nationally commissioned project describes the people of the Association as "the exhausted members of the activity group". We found neither the decrease in the number of people in the Association nor the number of people who gave up the activities. [S14, S1]

The city's support for the Association was also not used in fiscal 2024 and fiscal 2025. The city's explanatory documents on the settlement of accounts have no item for the "rich seaweed beds support project" for fiscal 2024 and fiscal 2025. The initial budget for fiscal 2025 had 1.47 million yen (the recipient of the grant is the prefecture's regional council for the programme to bring out the multiple functions of fisheries; of this, 270,000 yen is money coming in from the prefecture), but in the supplementary budget of February 2026, 1.2 million yen was cut as having "no prospect of being spent". The nationally commissioned project supported the Association as a seaweed-bed activity group in fiscal 2025, but the grant of the city's share is thought not to have been made in fiscal 2025 (this paper's view). [S20, S1]

Region (Sotoura): the intensive support of fiscal 2025, and making fertiliser from sea urchins

In fiscal 2025, the nationally commissioned project made the Association 1 of the 4 districts for intensive support. Intensive support gives priority support to groups that have been actively carrying out activities to conserve seaweed beds up to fiscal 2025. The report states that the 2 districts of Tsushima and Minami were supported with the target of increasing cover in roughly 2 years, and that for the 2 districts of the Association and Furubira, in fiscal 2025 "the present situation was grasped and, on that basis, the plan was improved and planning was done". In other words, the support for the Association in fiscal 2025 was not to increase the seaweed beds, but to rebuild the plan. [S1]

According to the report, the Association made fertiliser from the removed sea urchins. Many of the sea urchins that are removed have poor roe content, and the present situation is that, unless there is somewhere to move them to, they are crushed in the sea and disposed of. Sea urchin shells have long been used as fertiliser for coastal fields, but they smell strongly when dumped on land and are hardly used now. The report states that, to support the exhausted people of the Association, fertiliser was made from the sea urchins that had no use, together with an expert stationed locally (the expert's name is not written). [S1]

The fertiliser trial was carried out in a small field. In July 2025, sea urchin compost was made in a simple garden compost container and left for 1 month or more. On 3 and 5 October, in a field at the family home of a member (commonly called the "ama field"), ridges with sea urchin fertiliser and ridges without it were made, and pak choi, turnips, Chinese cabbage, stem broccoli and others were planted (the sea urchin fertiliser was 1.2 L per 1 m^2, and 2 times that. The 2 plots with sea urchin fertiliser had 28 plants each, and the plot without it had 14 plants. Ordinary fertiliser was put into every plot). The figure in the report states that, in the comparison plots, the fertiliser was ploughed in during the soil preparation of 17 September, and that an "additional cultivation plot", in which daikon radish, mizuna (mizuna greens), cabbage and others are grown with sea urchin fertiliser, was also set up in a place in the same field that had not been used until then. On 12 November, the members, the expert and students of Noto High School harvested the vegetables, and on 10 December, in a meeting room of the Wajima fisheries cooperative, 19 people, namely students, staff of the cooperative, members and the expert, held a comparative tasting. The turnips of the plot with sea urchin fertiliser were rated the most delicious, and the Chinese cabbage of the plot without sea urchin fertiliser was rated highly (these are values that put together the answers of the 19 people, and no statistical test to confirm the difference was done). There was also an answer that the leaves from the plot with 2 times the sea urchin fertiliser tasted bitter. This is a trial of vegetables, not a trial that measures the recovery of the seaweed beds (this paper's view). [S1]

Noto High School took part as a local high school. The report states that "students of the local Noto High School and others" took an interest. What the students took part in was the harvest and the comparative tasting. In June 2023, before the earthquake, teachers and students of a high school in the city had also taken part in the seaweed bed activities at Wajimazaki (whether it is the same school is not known). [S1, S13]

A newspaper reports the same effort as an effort of the ama divers' preservation society. The Hokkoku Shimbun (30 November 2025) reported that the society for preserving and promoting the ama diving fishery of Wajima had made fertiliser from removed purple sea urchins and had begun growing vegetables in a field in the hills. According to the article, purple sea urchins have little meat and cannot be sold, and their disposal also costs money, so they had long been a worry for the ama divers. To protect the seaweed that had become scarce, the ama divers began full-scale culling in the summer of 2025, received advice from an expert in the spring, mixed 100 sea urchins, shells and all, with natto bacteria and leaf mould and fermented them, and the fertiliser was ready in October. The fertiliser was used in a field at Kumano-machi in Wajima City for salt-tolerant daikon radish, mizuna, cabbage and others, and the article describes it as an effort that also looks ahead to becoming a new source of income for the ama divers. The national report carries the printed page of this article in a figure, and the 2 materials are thought to write about the same effort under the names of different organisations (this paper's view. Chapter 5). [S29, S1]

The use of sea urchins is also part of the national scheme. The grant's activity items include the use of culled living things (the development of techniques, processing into food, and finding outlets for sale) and efforts in education and learning (under which item the Association applied is not in the materials). In a survey of the 330 people registered to take part in the national council on measures against barren ground (December 2025 to January 2026, multiple answers allowed; a provisional tally as of 5 January), 116 people had hopes for techniques that make use of removed herbivorous animals (living things that eat seaweed). The national guidelines write that sea urchin shells contain much nitrogen, phosphorus and so on and have been used as

fertiliser and as a material for improving soil, that they rot easily and give off a strong smell and so are mixed with leaf mould, and so on. [S4, S6, S7]

Region (Sotoura): the plan for fiscal 2026, and the new support from the prefecture and the city

The Association plans to carry out new activities from fiscal 2026. The report of the nationally commissioned project states that, having received intensive support, the Association is planning, from fiscal 2026, an effort that links the use of the removed sea urchins with environmental learning. It further states that, as a result of discussing the effects of the earthquake disaster with the expert and the prefecture, the Association plans "the production of kajime kelp seedlings and the transplanting of parent seaweed and seedlings", and will newly carry out "the cleaning of mud on the bedrock caused by the build-up (1 cm or more) of earth and sand that flowed in from the land". For the new activities, information is to be shared with the expert, the prefecture and the national government while monitoring is done regularly. The national government states that in fiscal 2026 too it will give intensive support as necessary, looking at the Association's requests and at the progress of the projects for restoration and reconstruction after the earthquake disaster. [S1]

Which seaweed the "kajime" of the plan refers to is not written. According to the prefecture's public relations magazine, the seaweeds called "kajime" in Noto are 2 species, tsuruarame kelp and kurome kelp, and tsuruarame kelp is a particularly important food for abalone. The beds under the Association's agreement are "tsuruarame kelp / Sargassum beds", and the Association's material from around 2016 uses "kajime-type kelps" as a term that includes tsuruarame kelp. This paper writes "kajime", in the words of the plan. [S17, S1, S15]

The mud of "1 cm or more" is the same yardstick as the one measured in the summer after the earthquake. The 2025 journal report states that in early August 2024, before the heavy rain of September, creamy mud had built up to a maximum of 30 cm near the mouth of the Fukami River, and that the extent with a thickness of 1 cm or more reached about 1 km from the river mouth (water depth 15 m). The journal report states that it is highly likely that the landslides caused by the earthquake were left unrepaired until the rainy season and increased the mud from the rivers, and that after the heavy rain of 21–22 September, new mud mixed with many plant fragments of a size visible to the eye built up on top of it (the mud is covered in R7-B09). [S14]

The prefecture states that from fiscal 2026 it will support the ama divers' activities to protect the seaweed beds. The prefecture's initial budget for fiscal 2026 (announced on 20 January 2026) includes 3.5 million yen as "support for rebuilding the ama diving fishery", and its content is "support for seaweed bed conservation activities such as the removal of inflowing timber and the propagation of seaweed". At the press conference on the same day, the governor said that in the ama divers' fishing grounds of Sotoura there is damage in which earth and sand and driftwood entered the seaweed beds in the earthquake and heavy rain, and that, together with the national government and Wajima City, the prefecture would support activities such as the planting of seaweed seedlings (kajime) and the removal of driftwood. A newspaper advertisement by the prefecture's Fisheries Division (Hokkoku Shimbun, 22 February 2026) states that, after the earthquake, the people connected with the ama diving fishery have, under the national emergency subsidy project, surveyed how the mud has built up in the fishing grounds and removed driftwood, and that from fiscal 2026 the prefecture, together with the national government and Wajima City, will support the activities by ama divers to protect the seaweed beds. The removal of driftwood is covered in R7-B15 "The driftwood, debris and large rocks left in fishing grounds and ports". [S21, S22, S23]

Wajima City also put a project with a new name into its fiscal 2026 budget. The city's draft initial budget for fiscal 2026 (material of 30 January 2026) includes 3.27 million yen for "emergency measures support project costs for the ama diving fishing grounds". The content is the culling of sea urchins and other herbivorous living things and the propagation of kajime kelp, and the removal of driftwood and other floating and deposited matter, and the

shares of the cost are national government 70%, prefecture 15% and city 15%. The "rich seaweed beds support project costs", which existed until fiscal 2025, are not in the fiscal 2026 budget. These shares and this content match the form of the national grant, so the support for the ama divers' seaweed beds in fiscal 2026 is thought to have been put together in the form of the national grant (this paper's view. The name of the grant is not written in the material). Whether the new project will be carried out through the Association is not written in the material. Of the city's 3.27 million yen, 270,000 yen is written as money coming in from the prefecture (earmarked revenue). In the seaweed bed projects of the fiscal years up to then, too, 270,000 yen coming in from the prefecture was in the budget, and it was the same as the amount of the administrative costs (the part borne in full by the national government) in the city's explanatory documents. Since it is not known how far the prefecture's 3.5 million yen and the city's 3.27 million yen overlap, this paper does not add the 2 together. The relationship between the shares of the cost (national government 70%, prefecture 15%, city 15%) and the amount in the city's budget is also not known from the materials. [S20, S1]

Table 2 Support for the activities to protect the seaweed beds of Wajima in fiscal 2026 (budgets and plans)

Provider	Name and amount	Content	Material and point in time
National grant	Programme to strengthen fishing-ground productivity and the multiple functions of fisheries (nationwide budget of 1.35 billion yen)	Priority on the conservation of seaweed and seagrass beds. The priority activities include producing seaweed seedlings, placing parent seaweed, cleaning bedrock and so on	Outline of the national budget and the grant guidelines (last amended 7 April 2026)
Nationally commissioned project	Intensive support (amount not written)	As necessary, looking at requests and at the progress of the earthquake disaster projects	Report of the commissioned project (March 2026)
Ishikawa Prefecture	Support for rebuilding the ama diving fishery (3.5 million yen)	Activities to protect the seaweed beds, such as the removal of inflowing timber and the propagation of seaweed	Initial budget (20 January 2026)
Wajima City	Emergency measures support project costs for the ama diving fishing grounds (3.27 million yen; national government 70%, prefecture 15%, city 15%)	The culling of sea urchins and others and the propagation of kajime kelp, and the removal of driftwood and the like	Material on the draft initial budget (30 January 2026)
Association for Protecting the Satoumi of Wajima	Plan of activities from fiscal 2026 (amount not written)	The use of sea urchins and environmental learning, the production of kajime kelp seedlings, the transplanting of parent seaweed and seedlings, and the cleaning of mud (1 cm or more) on the rocks	Report of the commissioned project (March 2026)

Note: All of these are budgets and plans. As of 12 November 2026, we found no material showing that grants had actually been paid or activities actually carried out. The city's 3.27 million yen includes 270,000 yen coming in from the prefecture, and the amounts of the prefecture and the city may overlap in part, so they are not added together. [S3, S4, S1, S21, S20]

The prefecture's materials also contain support for which it is not known which organisation it is for. The table of progress of the prefecture's Creative Reconstruction Plan (May 2026) states that, as support for the districts that protect the component assets of the Globally Important Agricultural Heritage System site, "efforts to bring about the recovery of the seaweed beds that are the fishing grounds of the ama divers of Wajima" and others were

supported through a fund and other means (11 projects adopted in all; the assessment is "as planned"). Which organisation's efforts they are, and what kind of efforts, is not written. [S25]

The movements found in 2026 are those of the ama divers and the Preservation Society. At the national ama summit held in Toba City, Mie Prefecture, on 24 February 2026, the chair of the society for preserving and promoting the ama diving fishery of Wajima introduced efforts to keep the fishery going, such as "the propagation of kajime kelp" (news report). On 20 June 2026, ama divers of Wajima removed the sea urchins that eat the seaweed that is food for abalone and turban shells (news report. The number of people, and which organisation's activity it was, are not written). The Ishikawa District Forest Office of the Forestry Agency listed the "society for preserving and promoting the ama diving fishery of Wajima" among the participants in the forest regeneration effort (tree planting at the site of erosion control works, and so on) to be held at Mii-machi in Wajima City on 17 October 2026 (an announcement of a planned event. The connection between the mountains and the sea is covered in R7-B09). The study committee (1st meeting on 4 September 2026) for the new vision for the promotion of the fishing industry that the prefecture is to draw up by around the end of fiscal 2026 includes the chair of the Preservation Society as a member. [S31, S30, S27, S24]

3. Existing measures, and how they are assessed

The efforts given in the materials this paper looked at are 4: the removal of sea urchins and the placing of parent seaweed (from before the earthquake), the surveys and removal under the national temporary project after the earthquake, the rebuilding of the plan under the national intensive support, and the seedlings, transplanting and cleaning of mud from fiscal 2026 (a plan). We found no assessment that compared the merits and demerits of each effort by setting up comparison plots.

Removal of sea urchins and placing of parent seaweed (before the earthquake)

The effect of the activities before the earthquake is shown in numbers only by the number of sea urchins in shallow water. According to the Association's material from around 2016 and the 2020 profile, the sea urchins in the Association's districts decreased from 0.7–1.0 individuals per 1 m^2 before the activities to 0.0–0.3 individuals after the activities. The cover of seaweed was stable at 60–100% throughout, before and after the activities. However, the material itself states that, because there were relatively dense Sargassum beds from before the activities, it is difficult to discuss the effect of the activities by cover. The parent seaweed that was placed extended its holdfasts and put out new blades. No comparison plot against a place without activities was set up. [S15, S16]

The other assessments are statements or outlooks. The assessment in the city's explanatory document is only the statement that "the conservation of the seaweed beds was achieved". The decrease of 80 ha in the prefecture's seaweed bed vision is an outlook for the case in which there were no activities. The groups of Ishikawa Prefecture are not included in the nationwide comparison of cover (fiscal 2019 and fiscal 2023) of the nationally commissioned project. The Association's 2023 monitoring report has not been made public. [S20, S18, S1, S26]

The density of sea urchins in the Association's districts was lower than the national rule of thumb. The table for the operation of the national grant states that, in places where there are 5–10 or more sea urchins per 1 m^2 and no large seaweeds are seen, the removal of sea urchins is given top priority. The density before the activities in the Association's districts (0.7–1.0 individuals) is lower than this, and this fits with the Association having taken the policy of removing only enough to keep the present density (this paper's view). [S4, S15]

The way of placing parent seaweed had its labour and its weak points. According to the public relations magazine of the prefecture's Fisheries Research Center (January 2017), at first a method was tried in which

zoospores (swimming spores) were attached to string and the young plants raised from them were placed in the sea, but the raising period was long, and after being placed they were eaten by small sea snails, and it did not go well. The method of attaching the holdfast to a natural stone with cable ties does little damage to the parent seaweed and is easy for the ama divers to work on, but, compared with seaweed growing naturally, it is weak against waves and easily washed away, so places with weak waves need to be chosen. This method was tried with the ama divers from December 2015, and the stones were set in place at Hegurajima in May 2016. [S17]

Table 3 The Association for Protecting the Satoumi of Wajima, and developments concerning its seaweed beds

Time	Who	What was done	How the effect is known
2012	Ama divers, fishers, people connected with the fisheries cooperative, and residents	Founded the Association at Najimi	—
2013	The Association	Extended to Hikariura	—
Around fiscal 2015	The Association and the prefecture's Fisheries Research Center	The placing of parent seaweed of tsuruarame kelp begins, with the Association taking the lead	The holdfasts extended and new blades came out
Up to around 2015	The Association	Removed about 2.5–3.6 t of sea urchins a year (a cumulative total of about 700 people, 6 sessions a year) and 5–7 t of rubbish a year	Sea urchins went from 0.7–1.0 individuals per 1 m^2 to 0.0–0.3 individuals. Cover was stable at 60–100%. There is no comparison plot
Fiscal 2020–2023	Wajima City	1 million yen to the Association every year	The city's assessment is a statement only
March 2022	Ishikawa Prefecture	Put the Association's 80.5 ha into the seaweed bed vision	An outlook of a decrease of 80 ha without the activities
Fiscal 2023	Ishikawa Prefecture Fisheries Cooperative (thought to be the Association's activities)	Removed a total of 780 kg of sea urchins and others and 6,560 kg of rubbish, and monitored 6 times	A record of amounts only. The monitoring report has not been made public
Fiscal 2024	Fishers and ama divers (the national fishing ground restoration support project)	In place of the usual activities, removal, culling and surveys (a cumulative total of 9,128 people)	The survey report has not been made public
Fiscal 2025	The Association and the expert (national intensive support)	Grasping the present situation and rebuilding the plan. Sea urchin fertiliser and the field trial	Only the results of the comparative tasting of vegetables. There are no values for the seaweed beds
Fiscal 2026	The Association (plan); the prefecture and the city (budgets)	Production of seedlings, transplanting of parent seaweed and seedlings, cleaning of mud on the rocks. Prefecture 3.5 million yen, city 3.27 million yen	As of 12 November 2026, there is no material on what was actually done

Note: Compiled by this paper from the Association's material, the website of the national programme, the prefecture's public relations magazine, the city's explanatory documents and budgets, the prefecture's seaweed bed vision, the report of the Ishikawa Prefecture Fisheries Cooperative, and the report of the nationally

commissioned project. The 780 kg, the 6,560 kg and the cumulative total of 9,128 people are this paper's calculations. [S15, S16, S17, S20, S18, S13, S1, S21]

The national temporary project after the earthquake

The national fishing ground restoration support project supported, from just after the earthquake, the surveys of the fishing grounds and the removal work by fishers. According to a Fisheries Agency material (November 2024), in order to bring back the functions and productivity of the affected fishing grounds, this project supports, at a fixed amount, from the national government through the regional council (the fisheries cooperative and others) to the activity groups, the surveys of the fishing grounds, the removal of drifting and deposited matter and so on carried out by fishers and others. In Wajima City, from February 2024, surveys of the fishing grounds in the sea and on land, surveys of turban shells and others by ama divers, and the confirmation that the seaweed in the uplifted places had died were carried out (as of September 2024). The national government decided in the Cabinet to allocate to this project from the reserve funds, as the amount for the whole of the area affected by the Noto Peninsula Earthquake, 900 million yen on 26 January 2024, 200 million yen on 1 March, and 1.78 billion yen on 23 April (the amount for Wajima is not written). [S8]

The results of this project have not yet been made public. The report of the Kanazawa Association of Corporate Executives draws on the report of the fiscal 2024 survey of the seaweed beds of Wajima, but the report itself has not been made public. In the interviews by the Kanazawa Association of Corporate Executives (report of March 2026), there was a request that this project be continued, because it was due to end in fiscal 2025. Whether it continued in fiscal 2026 could not be confirmed in this paper (covered in R7-B24). [S26]

Intensive support, and the rebuilding of the plan

The results of the intensive support of fiscal 2025 are a plan and the results of a small trial. The report of the nationally commissioned project has no values for the cover of the Association's seaweed beds or for the number of sea urchins, and the results shown are the comparative tasting of vegetables and the plan for fiscal 2026. [S1]

In the other districts of the same intensive support, the seedlings and transplants were at the mercy of water temperature, grazing and stormy seas. According to the report, at Tsushima, with the method of putting parent seaweed into bags and sinking them (spore bags), young plants (1.5 cm on average) of a seaweed (yoremoku) were seen in February 2026 at a cover of 5% within a radius of 4–5 m. At Minami, days on which the seawater temperature exceeded 29°C continued for a long time in the summer of 2025, and the kajime kelp was down to 1 plant in November and was no longer seen in February. At Furubira, the fall in water temperature was late, so obtaining kombu kelp seedlings was delayed, and the work could not be done because of stormy seas. The planting of kajime kelp that the Association plans is thought to carry the same kind of risk (this paper's view. The water temperature of Sotoura is covered in R7-B12 "High water temperatures in summer (the shallow sea of Sotoura)"). [S1]

Seedlings, transplanting and the cleaning of mud (the plan from fiscal 2026)

The Association's plan is in line with the yardstick of the national grant. The checklist for the operation of the national grant gives, where the cause of the barren ground is "an increase in suspended matter", "the removal of floating and deposited matter" for places where fluid mud (fine mud) has accumulated on the seabed and seaweed cannot attach, "the cleaning of bedrock" for places where fluid mud has built up on the surface of the seaweed, and the production and putting in of seaweed seedlings for places where the seawater is turbid, and states that on the Sea of Japan side seaweeds that are resistant to turbidity and mud, such as tsuruarame kelp, are to be chosen. The Association's plan (the cleaning of mud on the rocks, kajime kelp seedlings, and transplanting) matches the measures in this table (this paper's view). On the other hand, the national guidelines

explain "the cleaning of bedrock" as the scraping off of living things that compete with seaweed for space (coralline algae, serpulid tube worms, sea squirts and so on), and do not write that it is the cleaning of the mud itself. Under which item the Association will carry it out is not in the materials. [S4, S7, S1]

Cutting off the source of the mud lies outside this grant. The checklist for the operation of the national grant places identifying the source of the turbidity and preventing the outflow outside the scope of this programme, and states that information is to be shared with the prefecture's fisheries department and others and long-term measures considered. Devising shapes on which mud does not easily accumulate is also outside the scope, and it states that a response is to be considered through public works and the like. The national guidelines state that fluid mud is sticky and is not easily swept away by currents, and that the seeds of seaweed do not easily settle on fluid mud, and that the spores of arame kelp, kajime kelp and others are about 5 μm long, so that when fluid mud with a grain size of 1 mm builds up, its thickness is 200 times that of a spore. The report of the Kanazawa Association of Corporate Executives states that removing by human hands the mud and deposits on a wide seabed is extremely difficult. The discussions among the Forestry Agency, the Fisheries Agency and the prefecture on holding back the outflow of earth and sand from the mountains are covered in R7-B09. The matter of building a disposal site in the sea with the dredged sediment of Wajima Port and creating seaweed beds is covered in R7-B18 "Where the dredged sediment of Wajima Port goes (a disposal site built in the sea and the creation of seaweed beds)". [S4, S7, S26]

4. What is changing

The activities of the Association that protects the seaweed beds stopped in fiscal 2024, the plan was rebuilt in fiscal 2025, and from fiscal 2026 they are about to move to a new scheme of support (as of 12 November 2026). Much of what this chapter covers is budgets, plans and schedules of the national government, the prefecture and the city.

National schemes

- Fiscal 2025: The grant became the "programme to strengthen fishing-ground productivity and the multiple functions of fisheries", and the 5-year period of fiscal 2025–2029 began (the next period brought forward by 1 year). With priority on the conservation of seaweed and seagrass beds, monitoring and the dispatch of experts are strengthened. [S4, S1]
- Fiscal 2025: The nationally commissioned project made the Association 1 of the 4 districts for intensive support. For the Association, grasping the present situation and rebuilding the plan. [S1]
- March 2026: Report of the nationally commissioned project. It gave the state of the Association's seaweed beds as "earthquake, flood damage" and carried the Association's plan from fiscal 2026. [S1]
- 7 April 2026: Last amendment of the grant guidelines and their operation. [S4]
- Fiscal 2026: National budget of 1.35 billion yen. Targets of increasing the amount of living things by 20% and bringing the conserved area of seaweed and seagrass beds to 6,200 ha by fiscal 2029. [S3]
- Fiscal 2026: Intensive support is to be given as necessary, looking at the Association's requests and at the progress of the earthquake disaster projects. [S1]
- The national fishing ground restoration support project (Noto): It was said to be due to end in fiscal 2025 (report of the Kanazawa Association of Corporate Executives, March 2026). Whether it continued is covered in R7-B24. [S26]

Prefecture and city

- 20 January 2026: 3.5 million yen for "support for rebuilding the ama diving fishery" in the prefecture's initial budget for fiscal 2026. The governor said at the press conference that, together with the national government and Wajima City, the prefecture would support the planting of kajime kelp and the removal of driftwood. [S21, S22]
- 30 January 2026: 3.27 million yen for "emergency measures support project costs for the ama diving fishing grounds" in the material on Wajima City's draft initial budget for fiscal 2026 (national government 70%, prefecture 15%, city 15%). [S20]
- February 2026: In Wajima City's supplementary budget, the "rich seaweed beds support project costs" for fiscal 2025 were cut by 1.2 million yen as having "no prospect of being spent". [S20]
- 22 February 2026: Newspaper advertisement by the prefecture's Fisheries Division. From fiscal 2026, together with the national government and Wajima City, it will support the activities by ama divers to protect the seaweed beds. [S23]
- May 2026: The table of progress of the prefecture's Creative Reconstruction Plan. Efforts to bring about the recovery of the seaweed beds of the fishing grounds of the ama divers of Wajima and others were supported (the organisation is not written). [S25]
- 4 September 2026: Study committee for the prefecture's new vision for the promotion of the fishing industry (1st meeting). The chair of the Preservation Society is a member. The vision is to be drawn up by around the end of fiscal 2026. [S24]
- The conservation coastal fishing ground under the Fishery Act (Ho No. 1, waters off Wajima City): until 31 August 2033. The report on the activities of fiscal 2025 had not been posted on the prefecture's page as of 12 November 2026 (in the previous year it was posted in mid-November). [S12, S13]

The Association and the ama divers

- July–December 2025: The Association made sea urchin fertiliser, tried it in a field, and harvested and held a comparative tasting with students of Noto High School (according to the report of the nationally commissioned project). [S1]
- Summer 2025: The ama divers began full-scale culling of sea urchins (according to a news report). [S29]
- 24 February 2026: At the national ama summit, the chair of the Preservation Society introduced "the propagation of kajime kelp" and others (news report). [S31]
- Fiscal 2026: The Association plans to begin the use of sea urchins and environmental learning, the production of kajime kelp seedlings, the transplanting of parent seaweed and seedlings, and the cleaning of mud on the rocks. [S1]
- 20 June 2026: Ama divers of Wajima removed sea urchins (news report). [S30]
- 17 October 2026: The Preservation Society was listed as a participant in the Forestry Agency's forest regeneration effort (an announcement of a planned event). [S27]

5. What is not yet known

Things for which there are no figures

- We found neither the number of members of the Association after the earthquake, nor the numbers of people who gave up the activities and who newly joined. The only numbers for the people of the Association are the little over 250 people in the material from around 2016 and the 314 people in the 2020 profile, and both are numbers from before the earthquake. [S15, S16]

- We found no cover or sea urchin density measured in the area under the Association's agreement in 2024–2026. They are neither in the report of the nationally commissioned project nor in the city's explanatory documents. The prefectural fisheries cooperative's report on conservation activities for fiscal 2025 had not been posted as of 12 November 2026. [S1, S20, S13]
- We found no material showing that the Association's plan for fiscal 2026 (production of seedlings, transplanting, cleaning of mud) was carried out, or that the prefecture's 3.5 million yen and the city's 3.27 million yen were granted and used. [S1, S21, S20]
- Which national programme the new city project uses, and through which organisation it is carried out, are not written in the material. [S20]
- We did not find whether the Noto Peninsula Earthquake and the Oku-Noto heavy rain were designated as disasters (disasters separately designated by the Director-General of the Fisheries Agency) for which emergency activities can be supported under the national grant as an exception to the requirements. [S4]
- We found neither a record that the council of the prefecture's seaweed bed vision was held, nor the organisation and content of the "efforts to bring about the recovery of the seaweed beds that are the fishing grounds of the ama divers of Wajima" in the table of the prefecture's reconstruction plan. [S18, S25]
- The report of the fiscal 2024 survey of the seaweed beds of Wajima under the national fishing ground restoration support project, and the data annex (results of monitoring and so on) of the report of the nationally commissioned project, have not been made public. [S26, S1]
- We found no report or notice of the activities after the earthquake issued by the Association itself.

Limits of the comparisons

- The effect before the earthquake is the number of sea urchins and the cover in shallow water down to a water depth of 5 m, according to a material written by the expert who supports the Association, and there is no comparison plot. The amounts for fiscal 2023 (780 kg of sea urchins and others, 6,560 kg of rubbish) are records of the amounts removed, not amounts of seaweed bed. [S15, S13]
- The cumulative total of 9,128 people and the about 259 million yen of fiscal 2024 are numbers for a separate national project, and differ in both project and scale from the numbers for the Association's usual activities (a national subsidy of 2.98 million yen in fiscal 2023) (about 259 million yen is about 87 times 2.98 million yen. This paper's calculation). [S13]
- The nationwide comparison of cover uses values surveyed by the activity groups themselves, and there is no comparison with places without activities. The 870 ha of Hainan (2018, analysis of a satellite image) and the cover of the activity group (fiscal 2019 and fiscal 2023; the places surveyed are not written) differ in the method of measurement, the place and the time. [S1, S40, S33]
- The examples from the world and from Japan differ in both cause and period (Table 1). For the papers on the Great East Japan Earthquake and the review article on kelp, we read only the abstracts. [S34, S35, S36]

Figures that do not agree

- The area of the seaweed beds under the agreement is 80.5 ha in the prefecture's seaweed bed vision (2022) and 81 ha in the report of the nationally commissioned project (2026). It is thought to be the area under the same agreement, rounded (this paper's view). The way the type of bed is written also differs: "mixed beds of arame kelp and Sargassum" and "tsuruarame kelp / Sargassum beds". [S18, S1]
- The beginning of the Association is its founding in 2012 in the material from around 2016, and, in the 2025 journal report, that it has continued "since 2013" as an activity group under the national programme. 2013 is the year it extended to Hikariura, and is also the year the national programme to bring out the multiple functions of fisheries began. It is thought to be the difference between the founding and the year it became an activity group under the national programme. [S15, S14, S7]

- The Association's districts were the 2 of Najimi and Hikariura around 2016 and are the 3 of Hikariura, Wajimazaki and Najimi in the 2025 journal report, and in fiscal 2023 it also removed sea urchins and monitored at Nanatsujima. It is thought to have widened over time. [S15, S14, S13]
- The number of people in the Association is "a little over 250 people took part in the activities in the 2 districts" in the material from around 2016, and "membership … 314 people" in the 2020 profile. It is thought to be the difference between the number of people who took part in the activities and the number of members, and a difference in time. [S15, S16]
- The making of sea urchin fertiliser is written as an effort of the Association (the activity group) and the expert in the report of the nationally commissioned project, and as an effort of the society for preserving and promoting the ama diving fishery of Wajima in the Hokkoku Shimbun. The report carries the printed page of that article in a figure, and in both the field is a field at the family home of a member or of a director of the Preservation Society. They are thought to be the same effort, but how far the members of the 2 organisations overlap is not known from the materials. [S1, S29]
- The vegetables of the fertiliser trial differ at first sight in the 2 materials, but they overlap. The national report writes in a figure that, besides the comparison plots (pak choi, turnips, Chinese cabbage, stem broccoli), daikon radish, mizuna (mizuna greens), cabbage and others were grown with sea urchin fertiliser (2.4 L per 1 m^2) in the "additional cultivation plot" of the same field (Figure 1-5-33). The daikon radish, mizuna and cabbage of the Hokkoku Shimbun match the vegetables of this plot. On the other hand, the time when the fertiliser was ready is October in the Hokkoku Shimbun, but in the figure of the national report it has already been ploughed in during the soil preparation of the comparison plots (17 September). The soil preparation of the additional cultivation plot is 3 October. [S1, S29]
- As for the time of the culling of sea urchins, in the report of the prefectural fisheries cooperative it was carried out in September 2024 at Wajimazaki and Najimi (the national fishing ground restoration support project), and the Hokkoku Shimbun states that the ama divers began full-scale culling in the summer of 2025. The project and the scale are thought to differ, and it cannot go so far as to be called a disagreement. [S13, S29]
- The shares borne by the national and local governments are, in the figure of the outline of the grant, "a fixed amount (equivalent to 1/2)" from the national government to the regional council; in the Fisheries Agency's answer at the training session, "national government : local governments = 7 : 3"; and in the city's budget, "national government 70%". This paper wrote the answer at the training session and the shares in the city's budget. The unit amounts of the grant (the national 319,200 yen, and the 456,000 yen where the local government pays in step with it) also correspond to 7 : 3 (this paper's calculation). [S3, S1, S20, S4]
- The prefecture's explanation (February 2024) gives the cost borne for the national fishing ground restoration support project as "none (the national government bears the full amount)", but the income in the prefectural fisheries cooperative's report for fiscal 2024 has, besides the national subsidy of 259,447,951 yen, a prefectural subsidy of 1,500,000 yen. What the prefecture's part was used for is not written. [S9, S13]
- The national projects named "fishing ground restoration support project" are, for the Great East Japan Earthquake (the collection of debris by specialist contractors; continuing even now) and for Noto (the activities of activity groups of fishers and others; fiscal 2024–2025), separate projects with different content. [S10, S9]
- The Ishikawa Prefecture Fisheries Cooperative's report for fiscal 2024 gives the number of days of the removal of drifted matter and the like in July as "12 days in total", but the dates listed amount to 20 days, and the month is also missing from the date of the report meeting. This paper did not write the number of days and used only the cumulative number of people. [S13]
- For the seaweed beds of Hainan, the 2020 paper states that "about 870 ha" of kelp came back, and in the prefecture's seaweed bed vision the 870 ha is a value that includes beds of small seaweeds (species

unknown). The extent of the original beds also differs: 8,000 ha in the paper and 7,891 ha for the prefecture (a national survey of fiscal 1989–1991). [S33, S40]

Reliability and the standpoint of the materials

Reliability differs from item to item. That the Association has removed sea urchins and placed parent seaweed is consistent across the Association's material, the website of the national programme and the prefecture's seaweed bed vision, and the removal of sea urchins and others and the monitoring are also in the city's explanatory documents, so the reliability can be called high (the founding in 2012 rests on the Association's material alone). That the seaweed beds of this area disappeared on a large scale in the earthquake and heavy rain of 2024 rests on a statement in the report of the nationally commissioned project, and there is no value for the area. It points the same way as the materials on the uplift and mud of Sotoura (R7-B08 and R7-B09), but how much disappeared in the area under the Association's agreement is not known, so the reliability is medium. That in fiscal 2024 the usual activities could not be carried out in the fishing grounds off Wajima City, including the Association's districts, is written in the report of the prefectural fisheries cooperative under the Fishery Act, and the reliability can be called high. The Association's name does not appear in the report, and to regard it as the Association's activities is this paper's view (because the places and dates of the fiscal 2023 record match the title of the Association's monitoring report). That the national report describes the people of the Association as "exhausted" is a single word in the report only, with no numbers, so the reliability is medium. That the intensive support and the making of sea urchin fertiliser of fiscal 2025 were carried out has dates and numbers of people in the national report, and the reliability is high, while the fertiliser trial is small and its relationship with the recovery of the seaweed beds has not been measured. It is certain that there are a plan for fiscal 2026 and budgets of the prefecture and the city, but whether they were carried out is not known, and on that point the reliability can be called low. As for the effect of the activities before the earthquake, only the number of sea urchins is shown in numbers, there is no comparison plot, and it rests on a material by a person who supports the Association, so the reliability can be called low. The proportions for the challenges of activity groups nationwide come from a national survey with a response rate of 77%, but they are the views of the groups that answered, and the reliability is medium. The examples from the world and from Japan rest on papers and government reports, but the causes and periods differ, and the reliability is medium.

Care is also needed over the standpoint of the materials. Many of the materials on the Association before and after the earthquake were written by, or involved, Ryoko Ishikawa, the expert who supports the Association (the material from around 2016, the 2025 journal report, and the leader of the interview team for the report of the Kanazawa Association of Corporate Executives). Of the 61 experts for fiscal 2025 registered in the report of the nationally commissioned project, the only 1 person from Ishikawa Prefecture is Ryoko Ishikawa (Wajima Seaweed Lab), but the report does not write the name of the "expert stationed locally", and this paper does not link the names. The materials that write of the Association's effect were written by a person who supports the Association. The report of the nationally commissioned project is a report compiled by the organisations that support the national programme (JF Zengyoren (National Federation of Fisheries Co-operative Associations) and others), it is not peer-reviewed, and the cover is the activity groups' self-assessment. Daisuke Fujita is the chair of the committee for the national guidelines (3rd edition), the leader of the survey team for the report of the Kanazawa Association of Corporate Executives, an author of the Japan section of the 2020 paper, and also a co-author of the review article on kelp, so these cannot be called confirmations independent of one another. The report of the Kanazawa Association of Corporate Executives is the report of a survey that the Kanazawa Association of Corporate Executives, a business association, carried out with a grant from The Nippon Foundation and the special cooperation of the Hokkoku Shimbun, and it is not peer-reviewed. We also read the Hokkoku Shimbun article of November 2025 and the prefecture's advertisement on the printed pages carried in the report of the nationally commissioned project and the report of the Kanazawa Association of Corporate Executives. The Association's name does not appear in the report of the prefectural fisheries cooperative, and to

regard it as the Association's activities is this paper's view. We read only the abstracts of the papers on the Great East Japan Earthquake and of the review article on kelp, and we read the account of the Sanriku diver in a blog.

The publisher of this paper (SeatecHIROSHIMA Ltd.) runs a business that controls the attachment of living things by surface treatment of materials. This covers both preventing fouling from attaching (antifouling) and making it easier for eelgrass (a kind of seagrass) to take root for the restoration of seaweed and seagrass beds. It is also developing a system that identifies the positions of oyster rafts and informs ships of them. This paper does not cover the company's own technology or results. This paper covers local efforts to protect and bring back seaweed beds, such as the removal of sea urchins, the transplanting of parent seaweed and seedlings, and the cleaning of mud on the rocks, and the restoration of seaweed and seagrass beds overlaps with the publisher's field of business. The relationships with the organisations taken up in this paper and with organisations active in Sotoura are as follows (as of 5 November 2026; based on information the publisher has made public, the publisher's contracts and records, and the research for this paper). With Ishikawa Prefecture, there is the relationship of having been selected for the prefecture's (Commerce, Industry and Labour Department, Industrial Policy Division) "survey project for attracting start-ups to Noto" (fiscal 2025 [Reiwa 7]) (September 2025). In this project, specialists accompany and support the selected companies in drawing up business plans and building connections in Noto (according to the prefecture's announcement). Many of the materials that this paper draws on are budgets and plans of the prefecture and Wajima City. In October 2026, in the "Start-up Business Plan Contest Ishikawa 2026" run by Ishikawa Prefecture and the public interest incorporated foundation Ishikawa Sunrise Industries Creation Organization, the publisher received the top entrepreneur award for a plan on the theme of Nanao Bay (according to the announcement on the Organization's website). The Organization's website states that this award comes with a subsidy, the free use for 3 years of a facility that rents rooms to newly founded companies, and other benefits. In Noto, the publisher has concluded non-disclosure agreements and is working together with Nanaibe LLC and Yamaguchi Suisan of Nanao City, Atsumasa Nakamura of Kanazawa University, and the Noto council for raising fisheries earnings. With the Ishikawa Prefecture Fisheries Cooperative (which also has branches in Sotoura, and whose representative senior managing director is a member of the study committee for the prefecture's new vision for the promotion of the fishing industry), there is the relationship that the publisher secured a site for its demonstration through Nanaibe LLC, its partner in the collaboration. This paper draws on the reports on conservation activities that the same cooperative submitted under the Fishery Act, and the Wajima branch of the same cooperative also takes part in the Association for Protecting the Satoumi of Wajima that this paper takes up. The publisher is not a member of the Noto council for raising fisheries earnings. The area in Ishikawa Prefecture with which the publisher has been involved is mainly Nanao Bay, and Nanao Bay is covered in R7-A (Nanao Bay) of this series. The publisher is not active in Sotoura (Shika Town, Wajima City, and the north coast of Suzu City as far as Jike). In the study committee for the prefecture's new vision for the promotion of the fishing industry that this paper draws on, 1 of the members is a person of Kanazawa University. The name of Atsumasa Nakamura does not appear in the list of members of this committee. With Hiroshima University, the publisher has participated since October 2025, as one company in a consortium, in a research centre of the university (JST COI-NEXT). Michio Imai, the publisher's co-representative CEO, has served since 1 November 2026 as a researcher (part-time) at a research institute of the same university (the institute for the future of ocean and maritime affairs) (concurrently with his post as the publisher's co-representative CEO). In addition, the publisher joined joint research under the Town & Gown initiative of Kure City and Hiroshima University (an initiative in which the city and the university work together) (the research period is October 2025 to August 2026, with the contract concluded in March 2026). This joint research is funded by a research grant from Kure City, and the publisher received an allocation of research funds from that grant (April 2026). It has also been selected for the research grant from Kure City for the 2nd year (from September 2026). This paper does not use the data or results of this joint research. Apart from the above, there are no relationships between the publisher and the organisations taken up in this paper (national government bodies, the prefecture and the city, universities and research institutes, the organisations

that compiled the report of the nationally commissioned project, the business association and its survey team, the local association and the Preservation Society, the high school, the companies and organisations named in this paper, overseas governments, universities and research institutes, and others) or the organisations active in Sotoura (fisheries cooperatives, local groups and others) that would affect the content of this paper. Relationships here means transactions, funding, joint research, and officers or employees of the publisher concurrently serving as employees or officers of the organisation. This is the publisher's judgement, made after checking the information the publisher has made public, the publisher's contracts and records, and the research for this paper.

6. Sources

We examined materials that had been published by 12 November 2026. Focusing on materials of the national government, the prefecture and the city, reports under the Fishery Act, peer-reviewed papers and reports of research institutes, we used figures that a separate researcher had checked against the very materials listed as sources (for some of the English-language papers, the abstract only. Where we used values that have not been checked, we have said so in the text). What this paper made from the values in the sources is marked "this paper's calculation" or "this paper's compilation", and this paper's own thinking read from the materials is marked "this paper's view". Reliability: A = laws and regulations, statistics, materials of the national government, the prefecture and the city; B = papers, reports of research institutes and government bodies that state their method; C = explanatory materials for general readers, descriptions by organisations, reports of business associations, advertisements; D = news reports, blogs.

ID	Material (publisher, year)	Type	Reliability	Where this material is used
S1	JF Zengyoren (National Federation of Fisheries Co-operative Associations), the national federation of inland water fisheries cooperatives, the national association for promoting the creation of rich seas, the fisheries civil engineering and construction technology centre, and Suidosha: Survey report of the commissioned project to support the programme to strengthen fishing-ground productivity and the multiple functions of fisheries, fiscal 2025 (Reiwa 7) (in Japanese) (a project commissioned by the Fisheries Agency, March 2026. The nationwide comparison of cover is on pp. 2–8, Table 1-5-1 on intensive support on p. 17, the part on the Association on pp. 26–33, the bringing forward of the next period on p. 36, the shares of the cost on p. 64, the list of experts on pp. 107 and 113, and the plan for fiscal 2026 on p. 144. Printed page numbers)	Report	A	Chapters 1–5
S2	Same as above: Survey report of the commissioned project to support the programme to bring out the multiple functions of fisheries, fiscal 2024 (Reiwa 6) (in Japanese) (March 2025. The title at the case-report meeting)	Report	A	Chapter 2
S3	Fisheries Agency: Programme to strengthen fishing-ground productivity and the multiple functions of fisheries (outline) (in Japanese) (fiscal 2026 budget)	Budget	A	Chapters 2, 4, 5
S4	Notice by order of the Administrative Vice-Minister of Agriculture, Forestry and Fisheries: Guidelines for the award and so on of grants for the programme to strengthen fishing-ground productivity and the multiple functions of fisheries; notice of the Director-General of the Fisheries Agency: Operation of the same guidelines (16 May 2013, last amended 7 April 2026. The activity items are in Appended Table 1, the unit amounts and requirements in Appended Table 2, and the checklist in Attachment 4 to Attached Form No. 6); Fisheries Agency: List of regional councils (in Japanese)	Notice	A	Chapters 2–5

ID	Material (publisher, year)	Type	Reliability	Where this material is used
S5	Fisheries Agency: Vision for Seaweed and Seagrass Beds and Tidal Flats (in Japanese) (revised December 2023)	Plan	A	Chapter 2
S6	Fisheries Agency: material of the national council on measures against barren ground, "Trends in the Fisheries Agency's policies on seaweed and seagrass beds" (fiscal 2024, 24 January 2025; fiscal 2025, 30 January 2026) (in Japanese) (the survey of activity groups was in July–August 2024)	Meeting	A	Chapters 1, 2
S7	Fisheries Agency: Guidelines on Measures against Barren Ground (Isoyake), 3rd edition (in Japanese) (March 2021. The "national guidelines" of this paper. The chair of the committee is Daisuke Fujita)	Guidelines	A	Chapters 2, 3, 5
S8	Fisheries Agency, Fishing Port and Fishing Ground Development Department: Noto Peninsula Earthquake: support for restoration and reconstruction (in Japanese) (material for the 22nd national research presentation meeting on fishing port and fishing ground development technology, November 2024. The fishing ground restoration support project is on slide 23, and the reserve funds on slide 38)	Material	A	Chapter 3
S9	Ishikawa Prefecture, Fisheries Division: Menu of support for fisheries (material for the briefing on support measures for fishers) (in Japanese) (February 2024. The fishing ground restoration support project is in items 5 and 6)	Material	A	Chapters 1, 2, 5
S10	Ministry of Agriculture, Forestry and Fisheries (Fisheries Agency): Fishing ground restoration support project (budget request for fiscal 2027) (in Japanese) (August 2026. The project for the Great East Japan Earthquake)	Budget	A	Chapters 2, 5
S11	Fishery Act (in Japanese) (Article 60, paragraph 8, and Articles 109–116. e-Gov law search)	Law	A	Chapter 2
S12	Ishikawa Prefecture: Ishikawa sea-area fishing ground plan (matters concerning conservation coastal fishing grounds) (publicly notified on 24 March 2023); Ishikawa Prefecture Fisheries Cooperative: Coastal fishing ground management rules (in Japanese) (in force from 1 September 2023)	Notification	A	Chapters 2, 4
S13	Ishikawa Prefecture Fisheries Cooperative (coastal fishing ground management body): reports on the state of implementation of conservation activities by the coastal fishing ground management body (Ho No. 1, waters off Wajima City), for fiscal 2023; for fiscal 2024 (in Japanese) (made public by the prefecture. The Association's name is not stated)	Report	A	Chapters 1–5
S14	Ryoko Ishikawa (Wajima Seaweed Lab): On the changes in seaweed bed resources accompanying the uplift of the Wajima coast in the Noto Peninsula Earthquake (in Japanese) (Fisheries Engineering 62(1): 39-42, 2025. A journal report. A survey under the national fishing ground restoration support project)	Report	B	Chapters 1, 2, 5
S15	Ryoko Ishikawa (Kaiyo Planning Co., Ltd.): On the efforts of the Association for Protecting the Satoumi of Wajima (in Japanese) (no date stated. The PDF was created in February 2016)	Explanatory	C	Chapters 1–3, 5
S16	Information website of the programme to bring out the multiple functions of fisheries (hitoumi.jp): Profile of an activity group: Association for Protecting the Satoumi of Wajima (Wajima City, Ishikawa Prefecture) (in Japanese) (posted on 29 September 2020. A website of the Fisheries Agency's programme)	Explanatory	C	Chapters 1–3, 5
S17	Takahiko Ikemori (Ishikawa Prefecture Fisheries Research Center): The placing of parent seaweed of kajime (tsuruarame kelp) (in Japanese) (Fisheries Research Center newsletter No. 51, January 2017)	Explanatory	C	Chapters 2, 3

ID	Material (publisher, year)	Type	Reliability	Where this material is used
S18	Ishikawa Prefecture: Ishikawa Prefecture seaweed and seagrass bed vision (Ishikawa Prefecture seaweed and seagrass bed creation plan) (in Japanese) (March 2022. The part on the Association is on pp. 29, 31 and 32 of the PDF, and the monitoring and the council on pp. 36 and 37)	Plan	A	Chapters 1–3, 5
S19	Ishikawa Prefecture: Ishikawa vision for the promotion of the fishing industry (pp. 33–40) (in Japanese) (2017)	Plan	A	Chapter 2
S20	Wajima City: Explanatory documents on the results of main policy measures (fiscal 2021–2025); materials on the draft initial budgets and draft supplementary budgets (in Japanese) (the initial budgets for fiscal 2022, 2023 and 2025, the February supplementary budget for fiscal 2025 [February 2026], and the initial budget for fiscal 2026 [30 January 2026])	Budget	A	Chapters 1–5
S21	Ishikawa Prefecture: Main projects of the initial budget for fiscal 2026 (Reiwa 8) (in Japanese) (20 January 2026)	Budget	A	Chapters 1, 2, 4, 5
S22	Ishikawa Prefecture: Summary of the governor's press conference (20 January 2026); press conference material (in Japanese) (slide 15)	Briefing	A	Chapters 1, 2, 4
S23	Ishikawa Prefecture, Agriculture, Forestry and Fisheries Department, Fisheries Division: advertisement "Support for the reconstruction of Noto's fishing industry" (in Japanese) (Hokkoku Shimbun, PR feature page of 22 February 2026. We read it as reproduced as a printed page on p. 198 of the data annex of S26)	Advertisement	C	Chapters 2, 4
S24	Ishikawa Prefecture: Study committee for drawing up the new "Ishikawa vision for the promotion of the fishing industry" (meeting material of the 1st meeting; list of members) (in Japanese) (the 1st meeting was on 4 September 2026)	Meeting	A	Chapters 2, 4
S25	Ishikawa Prefecture: State of progress of the "short-term" part of the Ishikawa Prefecture Creative Reconstruction Plan (list) (in Japanese) (May 2026. Effort No. 137, p. 29)	Material	A	Chapters 2, 4, 5
S26	Kanazawa Association of Corporate Executives, special committee for the survey of the effects of the earthquake disaster on the coast of the Noto Peninsula: Report of the survey of the effects of the earthquake disaster on the coast of the Noto Peninsula, fiscal 2025 (Reiwa 7) (in Japanese) (issued 24 March 2026. The leader of the survey team is Daisuke Fujita. A grant from The Nippon Foundation and the special cooperation of the Hokkoku Shimbun. The comparison at Wajimazaki is on pp. 114–115, the report drawn on is on pp. 130–131, the interviews on pp. 155–157, and the overall summary on p. 204)	Report	C	Chapters 2, 3, 5
S27	Forestry Agency, Kinki Chugoku Regional Forest Office, Ishikawa District Forest Office: Effort for forest regeneration created together with the community (announcement) (in Japanese) (7 October 2026. Planned for 17 October)	Announcement	A	Chapters 2, 4
S28	Wajima district regional fisheries revitalisation committee (ama divers' section): Plan for Revitalising Fishing Communities (Hama Plan) (in Japanese) (fiscal 2015–2019)	Plan	A	Chapter 2
S29	Hokkoku Shimbun: Wajima's ama divers in the field business: home-made fertiliser from sea urchins, the natural enemy of abalone (in Japanese) (30 November 2025. The printed page is also carried in Figure 1-5-34 of S1)	News	D	Chapters 2, 4, 5
S30	Hokkoku Shimbun: From hairdresser to ama diver, the challenge of a 24-year-old in the disaster area: Wajima (in Japanese) (23 June 2026)	News	D	Chapters 2, 4
S31	Chunichi Shimbun: Ama divers from all over the country gather in Toba: 90 people concerned exchange views at the summit (in Japanese) (28 February 2026. The publicly available part)	News	D	Chapters 2, 4

ID	Material (publisher, year)	Type	Reliability	Where this material is used
S32	Hokuriku Chunichi Shimbun: Report on the fishing ground survey (part 1): Nanatsujima, "We want to fish", the wish of the ama divers (in Japanese) (6 October 2024)	News	D	Chapter 2
S33	Eger et al.: Financial and Institutional Support Are Important for Large-Scale Kelp Forest Restoration (Frontiers in Marine Science 7, 2020. A perspective paper. The Japan section is by Masatoshi Hasegawa and Daisuke Fujita)	Paper	B	Chapters 2, 5
S34	Eger et al.: Global kelp forest restoration: past lessons, present status, and future directions (Biological Reviews 97(4), 2022. A review article. Abstract only checked)	Review	B	Chapters 2, 5
S35	Muraoka et al.: Effects of the 2011 Great East Japan Earthquake and tsunami on two kelp bed communities on the Sanriku coast (Fisheries Oceanography 26(2), 2017. Abstract only checked)	Paper	B	Chapters 2, 5
S36	Takami et al.: Impacts of the 2011 mega-earthquake and tsunami on abalone Haliotis discus hannai and sea urchin Strongylocentrotus nudus populations at Oshika Peninsula, Miyagi, Japan (Fisheries Oceanography 22(2), 2013); Effects of macroalgal expansion triggered by the 2011 earthquake and tsunami on recruitment density of juvenile abalone Haliotis discus hannai at Oshika Peninsula, northeastern Japan (same journal 26(2), 2017). For both, abstract only checked	Paper	B	Chapters 2, 5
S37	New Zealand Ministry for Primary Industries: Kaikōura earthquake research results presented (announcement of 28 June 2018. Reposted on Scoop)	Announcement	B	Chapter 2
S38	McCowan and Neubauer (Fisheries New Zealand): Pāua population monitoring in areas affected by the November 2016 Kaikōura earthquake, February 2023 update (New Zealand Fisheries Assessment Report 2023/26)	Report	B	Chapter 2
S39	Allen + Clarke: Evaluation of Kaikōura Marine Guardians — Final report (commissioned by the New Zealand Department of Conservation and Fisheries New Zealand, August 2025)	Report	B	Chapter 2
S40	Shizuoka Prefecture: Hainan sea area seaweed bed vision (in Japanese) (March 2022. The table of areas is on pp. 6–7, and the organisations on p. 12)	Plan	A	Chapters 2, 5
S41	PADI blog: The successes and challenges of seaweed bed restoration activities, and the challenge for the future (in Japanese) (October 2025. An article by a diver active in Sanriku)	Blog	D	Chapter 2

Related materials: R2 Seaweed and seagrass beds and the living things of the sea, R6 What is changing (why now), R7-A26 The suspension of activities to restore eelgrass beds (the earthquake), R7-B01 Earthquake uplift on the Sotoura coast, R7-B08 Shallow seaweed beds dried out by uplift, and the decrease in the area of seaweed beds in Sotoura, R7-B09 Mud and turbidity that keep entering from river mouths (the seaweed and seagrass beds and rocky-shore fishing grounds of the Wajima coast), R7-B11 Barren ground (isoyake) that has continued since before the earthquake, and the decline of the seaweed beds of the offshore islands, R7-B12 High water temperatures in summer (the shallow sea of Sotoura), R7-B13 The mass death of abalone and turban shells, and the fall in catches that continues for some years, R7-B15 The driftwood, debris and large rocks left in fishing grounds and ports, R7-B18 Where the dredged sediment of Wajima Port goes (a disposal site built in the sea and the creation of seaweed beds), R7-B23 The decrease in fishers and crew (the workforce), R7-B24 The income of affected fishers, and the gaps in support, R7-B25 The ama diving fishery of Wajima (numbers, reopening and the passing on of skills), R7-B27 Hegurajima and Nanatsujima (the fishing grounds of the offshore islands and life on the islands), I1 List of assessments