

「ツールシート事例紹介」は、ツールシート作成の元となった事例についてその概要を紹介しており、知恵と工夫、背景、知恵と工夫、実施プロセス、成果、課題、得られた教訓、参考資料等について簡潔にまとめたものである。日本語の後に英語訳を記載している。

The “Case Profile from the Tool Sheet” outlines the case example that informed the creation of the tool sheet, summarizing its background, innovative ideas and tips, implementation process, key achievements, challenges, lessons learned, and relevant references in a concise manner. The English version follows the Japanese text.

## ツールシート事例紹介

2026年2月

ツール名	生計多様化のための海藻養殖 Seaweed culture for livelihood diversification	ツール No.	C-2
国	セントルシア		
事例	JICA 技術協力プロジェクト「漁民と行政の共同による沿岸水産資源の保全管理強化プロジェクト (COAST FISH)」(2020年～2026年)		
要旨	セントルシアの沿岸住民の生計多様化と収入向上のため、水産局は COAST FISH プロジェクト支援の下、ショゼール (Choiseul) 地区、ミクー (Micoud) 地区及びグロズレイ (Gros Islet) 地区で筏式海藻養殖技術の導入を行った。地域住民に加えて教育機関も連携し、小規模生産者による海藻生産・加工 (乾燥)・販売が実現した。		
背景	セントルシア沿岸では、漁業資源の減少や気候変動の影響により、漁業依存型の生計が不安定化している。生計の多様化が急務であり、その手段として海藻養殖が有望と目されていたが、従来の養殖適地である浅海域はすでに満限利用状態であり、また高水温による成長遅延などの課題があり、新たな養殖水域 (深場) の開拓とそこに対応する養殖技術が求められていた。また、海藻の国内市場の飽和を背景に、収益化のためには輸出体制の整備が不可欠であった。		
知恵と工夫	<ul style="list-style-type: none"> <li>・ 筏式海藻養殖の導入によって、これまで養殖利用がなかった深場水域での海藻養殖を可能とした。あわせて水域利用に関する利害調整も実施した。</li> <li>・ 初期導入時の負担軽減や生産の持続性に鑑み、地元資材を利用した低コストの海藻養殖筏を導入した。</li> <li>・ 生産者団体の強化、あるいは団体の設立と法人化を促し、生産だけでなく米国への輸出を含めた販売面までを一貫して強化した (注：通常ユーケウマ海藻は加工原料としての輸出が主流だが、当国産の海藻は米国市場で健康食品として付加価値がついていたこともその背景にある)</li> <li>・ 教育機関との連携により、若年層への技術継承と制度化を実現し、地域内での持続的展開を促進した。</li> </ul>		
実施プロセス	<ol style="list-style-type: none"> <li>1. <b>養殖環境調査の実施</b>：海藻養殖候補海域において水質調査を実施し、養殖に適した環境であることを科学的に確認した (参考資料 1)。</li> <li>2. <b>水域利用に関する合意形成</b>：漁業者、水産局、観光業者、海事局などの利害関係者による現地立会確認を行い、養殖水域の利用に関する合意を形成した (参考資料 2)。</li> <li>3. <b>関係者会議の開催</b>：海藻養殖の実施に向けて関係者を集めた会議を開催し、役割分担や管理体制について協議した。</li> <li>4. <b>生産者団体の設立支援</b>：既存の団体が存在していないケースでは、海藻養殖者による団体の設立を支援し、法人化・納税者登録を実施した。</li> <li>5. <b>覚書の締結</b>：水産局・JICA・生産者団体間で覚書 (Memorandum of Understanding : MoU) を締結し、物品管理責任、継続義務、免責事項などを明文化した。</li> <li>6. <b>養殖管理規則の策定</b>：生産者団体内で養殖管理規則を策定し、参加者の資格、養殖筏管理方法、利益分配などを明記。署名による合意を得た。</li> <li>7. <b>筏養殖技術、加工技術の指導</b>：浅場不足への対応として、PVC パイプを用いた筏式養殖技術を導入。筏の設計・制作・植付・収穫・ハリケーン対策技術を現地資材を用いて指導した (参考資料 3, 4, 5)。乾燥台・加工エリアの制作、洗浄・漂白・乾燥技術を指導した。海藻養殖先進地域への訪問も行い、生産者同士の交流による学びの機会とした (参考資料 6)。</li> </ol>		

	<p>8. <b>海上安全技術訓練の実施</b>：船上作業に不安を抱える養殖者向けに、専門資格を有するダイビング指導者による泳法・ライフジャケット使用法などの実技訓練を実施（参考資料 7, 8）。</p> <p>9. <b>教育機関との連携</b>：地元高校にて筏養殖を職業訓練科目として導入（参考資料 9, 10）。東カリブ諸国機構（Organisation of Eastern Caribbean States：OECS）域内初の高校における海藻養殖職業訓練コース認証に向けて手続きを開始した。</p> <p>10. <b>輸出体制の構築</b>：自然食としての乾燥海藻の需要が高い米国への輸出に向け、アメリカ食品医薬品局（Food and Drug Administration：FDA）認証・植物検疫証明書・輸出証を取得。生産者とバイヤーとの会議も実施した（参考資料 11）。</p>
成果	<p>セントルシアのショゼール地区において、深場対応型の海藻養殖が開始され、海藻養殖適地（浅海域）不足を克服することが可能となった。漁業資源が減少する中、代替的な生計手段として海藻養殖から得られる確実かつ安定的な収入は重要であり、生産者の各家庭における家計の安定化に寄与している。サイトの1つでは、生産者団体の法人化と輸出体制の整備により、米国市場への販路が開拓された。また、地元高校との連携により若年層への技術継承も行われ、人材育成と産業基盤の強化が進んでいる。従来浅瀬で行われるロープ式海藻養殖と比較して、深場での筏式海藻養殖は、ハリケーンなどの自然災害に対する強靱性や、気候変動による海水温上昇への適応策としての優位性が期待されている。</p>
課題	<p>海藻養殖の法的整備が不十分であり、公共水域の利用に関する利害対立が依然として存在する。また、筏養殖は泳力や安全意識の不足が技術普及の障壁となる場合があり、特に女性が船上作業を躊躇する傾向が確認されている。加工・輸出に関しても、マーケティング力強化や品質管理やトレーサビリティの確保が求められ、認証取得や検疫対応には継続的な支援が必要である。さらに、生産者団体の運営には組織力や合意形成能力が不可欠であり、長期的な自立運営に向けた能力強化が課題として残る。生産者団体構成に関して言えば、海藻生産作業に携わる男女の比率はほぼ同数であるにもかかわらず、団体員として登録されている女性の割合が約2割にとどまっているケースも見られる。そのため、団体の意思決定がジェンダーバランスに配慮されたものとなっているか、研修機会が男女共平等に与えられているかについて、継続的に注視する必要がある。</p>
教訓	<ul style="list-style-type: none"> <li>・ 生産の支援（技術移転や機材提供）にとどまらず、制度整備・人材育成・市場連携など包括的な支援の提供が成果に繋がった。</li> <li>・ 持続性への適切な配慮（地元資材を活用した筏設計や教育機関との連携による次世代生産者の育成）は、地域内展開を担保する上で有効であった。</li> <li>・ 小島嶼国では国内市場は容易に飽和状態となるが、輸出市場の選定や認証取得などの制度的後押しが、新たな市場開拓と収益化を後押しした。</li> <li>・ 利害関係者との合意形成や MOU 締結など、導入前のプロセス設計が事業の安定運営に寄与した。</li> <li>・ 国外市場を視野に入れる上では、小規模生産者団体の組織強化が不可欠であり、これは事業の持続性を高める重要な要素となった。</li> </ul>
参考資料	<p>1. JICA Saint Lucia Office Facebook (2023) <i>Fecal coliform test in Praslin Bay</i> (<a href="https://www.facebook.com/share/p/1A3Jp1Xxwa/">https://www.facebook.com/share/p/1A3Jp1Xxwa/</a>)</p> <p>2. JICA Saint Lucia Office Facebook (2023) <i>Construction of sea moss farming raft in Piaye</i> (<a href="https://www.facebook.com/share/p/19KgMyLQsb/">https://www.facebook.com/share/p/19KgMyLQsb/</a>)</p> <p>3. JICA Saint Lucia Office Facebook (2023) <i>Sea-moss farming raft construction and deployment at Savannes Bay</i> (<a href="https://www.facebook.com/share/p/17GRMSMHj8">https://www.facebook.com/share/p/17GRMSMHj8</a>)</p> <p>4. JICA Saint Lucia Office Facebook (2023) <i>Construction and deployment of sea moss cultivation raft in Praslin Bay in Saint Lucia</i> (<a href="https://www.facebook.com/share/p/15j5z34jXs/">https://www.facebook.com/share/p/15j5z34jXs/</a>)</p> <p>5. JICA Saint Lucia Office Facebook (2023) <i>Improving sea-moss farming methods</i> (<a href="https://www.facebook.com/share/p/1Ad4ZEHUFH/">https://www.facebook.com/share/p/1Ad4ZEHUFH/</a>)</p> <p>6. JICA Saint Lucia Office Facebook (2023) <i>Choiseul Fishermen's Cooperative Society (CFCS) Visit to Praslin Bay</i> (<a href="https://www.facebook.com/share/p/1AyAkTDqJK/">https://www.facebook.com/share/p/1AyAkTDqJK/</a>)</p> <p>7. JICA Saint Lucia Office Facebook (2024) <i>Safety at Sea Training for Choiseul sea-moss farmers</i> (<a href="https://www.facebook.com/share/p/1AzvqXn46q/">https://www.facebook.com/share/p/1AzvqXn46q/</a>)</p>

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| <p>8. JICA Saint Lucia Office Facebook (2023) <i>Safety at Sea Training at Praslin Bay</i> (<a href="https://www.facebook.com/share/p/1ApYNV9YQ8/">https://www.facebook.com/share/p/1ApYNV9YQ8/</a>)</p> <p>9. JICA Saint Lucia Office Facebook (2023) <i>Choiseul Secondary School begins teaching sea-moss raft farming at Piaye Bay</i> (<a href="https://www.facebook.com/share/p/1B7xyD1VQb/">https://www.facebook.com/share/p/1B7xyD1VQb/</a>)</p> <p>10. JICA Saint Lucia Office Facebook (2023) <i>Choiseul Secondary School students harvested and processed sea-moss from their raft at Piaye</i> (<a href="https://www.facebook.com/share/p/1B3BVLPSno/">https://www.facebook.com/share/p/1B3BVLPSno/</a>)</p> <p>11. JICA Saint Lucia Office Facebook (2025) <i>The Choiseul Young Sea-moss Farmers expand their business to United States</i> (<a href="https://www.facebook.com/share/p/176DeH1nDe/">https://www.facebook.com/share/p/176DeH1nDe/</a>)</p> |
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## Case Profile from the Tool Sheet

February 2026

Tool Title	<b>Seaweed culture for livelihood diversification</b>	Tool No.	C-2
Country	Saint Lucia		
Case	JICA Technical Cooperation Project “The Project for Strengthening Sustainable Use and Management of Coastal Fisheries Resource in the CARICOM Countries (COAST FISH)” (2020-2026)		
Summary	To diversify livelihoods and improve incomes for coastal residents in Saint Lucia, the Department of Fisheries, with support from the COAST FISH Project, introduced raft-based sea moss farming technology in Choiseul, Micoud, and Gros Islet District. In addition to local residents, an educational institution also participated, enabling small-scale producers to farm, process, and market dried sea moss.		
Background	Along the coast of Saint Lucia, declining fishery resources and the impacts of climate change have destabilized fisheries-dependent livelihoods. The need for livelihood diversification has become urgent, and sea moss farming was identified as a promising alternative. However, suitable areas for sea moss farming – shallow coastal waters – are overcrowded, and challenges such as slow growth due to high water temperatures have emerged. As a result, the development of new farming zones in deeper waters and corresponding farming technologies have become necessary. Moreover, given the saturation of the domestic sea moss market, developing an export pathway was essential to ensure reliable income generation for producers.		
Innovative ideas and tips	<ul style="list-style-type: none"> <li>• The introduction of raft-based sea moss farming enabled cultivation in deeper water zones that had previously not been utilized. A consensus was reached by all stakeholders to determine the new farming area.</li> <li>• To reduce the burden during the initial introduction and ensure sustainable production, low-cost sea moss farming rafts made from locally available materials were introduced.</li> <li>• Efforts were made to strengthen existing producer organizations or to establish and incorporate new ones, thereby enhancing not only production but also sales, including exports to the United States. (Note: While sea moss (<i>Kappaphycus alvarezii</i>) is usually exported as a raw material for carrageenan extraction, Saint Lucian sea moss has gained added value in the U.S. market as a health food, which contributed to this strategy.)</li> <li>• Collaboration with educational institutions facilitated the transfer of technical skills to younger generations and institutionalized the process, promoting sustainable development within the region.</li> </ul>		
Implementation Process	<ol style="list-style-type: none"> <li>1. <b>Survey of Aquaculture Conditions:</b> Water quality surveys were conducted at sea moss farming candidate sites to scientifically confirm their suitability for farming (Reference 1).</li> <li>2. <b>Consensus on Area Use:</b> Agreement on the use of farming areas was reached through on-site verification by stakeholders including fishers, the Fisheries Department, tourism operators, and maritime agencies (Reference 2).</li> <li>3. <b>Stakeholder Consultation:</b> Meetings were held with relevant stakeholders to discuss role allocation and governance structures for the implementation of sea moss farming.</li> <li>4. <b>Producer Group Formation:</b> Where there is no existing group, a producer group was established with support from the project, and legal incorporation and taxpayer registration were completed.</li> <li>5. <b>Memorandum of Understanding (MoU):</b> Formal MoUs were signed between the Fisheries Department, JICA, and producer groups to clarify responsibilities for equipment management, project continuity, and liability.</li> <li>6. <b>Farming Management Rules:</b> Bylaws were developed within the producer group, outlining membership qualifications, raft management procedures, and profit-sharing arrangements, with formal agreement obtained through signatures.</li> <li>7. <b>Technical Training on Raft Farming and Processing:</b> To address the shortage of suitable shallow-water areas, raft-based sea moss farming technology using PVC pipes was introduced. Raft farming and processing techniques were taught, including the design, construction of rafts, planting, harvesting, and hurricane countermeasures (Reference 3, 4, 5). Drying tables and processing areas were prepared; and washing, bleaching, drying processes were instructed. Site visits to previously established farming areas were facilitated for peer learning (Reference 6).</li> </ol>		

	<p>8. <b>Safety at Sea Training:</b> Practical instruction in swimming and life jacket use was provided by certified instructors, addressing safety concerns among farmers working offshore (Reference 7, 8).</p> <p>9. <b>Collaboration with an Educational Institution:</b> Collaboration with a local secondary school was established, integrating raft sea moss farming into vocational training (Reference 9, 10). The process to formalize the first sea moss farming course within a secondary school in the Organisation of Eastern Caribbean States (OECS) has started.</p> <p>10. <b>Export Pathway Development:</b> The U.S. has a high demand for dried sea moss as a natural health food. Thus, an export pathway to the U.S. was developed, including support for obtaining Food and Drug Administration (FDA) certification, phytosanitary certificates, and an export permit for dried sea moss (Reference 11). Producer-buyer meetings were also organized to establish direct commercial relationships.</p>
Key Achievements	<p>In the Choiseul District, sea moss raft farming has begun, overcoming the shortage of suitable shallow-water sites. As fishery resources decline, reliable and stable income from sea moss farming has become a vital alternative livelihood, contributing to household financial stability. At one of the project sites, legal incorporation of the producer group and the development of an export pathway have opened access to the U.S. market. Collaboration with a local secondary school has also enabled knowledge transfer to younger generations, strengthening human resources and the industrial base. Compared to conventional bottom-line sea moss farming in shallow waters, raft-based cultivation is expected to offer greater resilience to natural disasters such as hurricanes, as well as advantages as an adaptation measure to rising sea temperatures caused by climate change.</p>
Challenges	<p>Legal frameworks for sea moss farming remain underdeveloped, and conflicts over public space persist. Since raft farming requires offshore work, limited swimming ability and low awareness of safety can pose barriers to the dissemination of the technology. In particular, there is a tendency among women to hesitate to work on a boat. In processing and export, ongoing support is needed to strengthen marketing skills and to ensure quality control and traceability, including certification and inspection procedures. Moreover, producer group operations require organizational capacity and consensus-building skills, and strengthening these capabilities remains a challenge for long-term self-reliance. Regarding the composition of producer groups, although the ratio of men to women engaged in sea moss production activities is nearly equal, there are some producer groups where women account for only around 20% of registered group members. Therefore, it is necessary to continuously monitor whether decision-making within the groups reflects gender balance and whether training opportunities are provided equally to both women and men.</p>
Lessons Learned	<ul style="list-style-type: none"> <li>• In addition to production assistance such as technology transfer and materials provision; institutional development, human resource training, and market integration contributed to successful outcomes.</li> <li>• Appropriate consideration for sustainability, such as raft design using locally available materials and collaboration with educational institutions to train the next generation of producers, proved effective in ensuring sustainability.</li> <li>• Small island nations often face domestic market saturation, but support in selecting overseas markets and obtaining export certifications has helped develop new markets and increase revenue.</li> <li>• Pre-implementation process design, including consensus-building with stakeholders and the signing of MOUs, contributed to stable activities operations.</li> <li>• When targeting overseas markets, strengthening the organizational capacity of small-scale producer groups was essential and became a key factor in enhancing the sustainability of the initiative.</li> </ul>
References	<p>1.JICA Saint Lucia Office Facebook (2023) <i>Fecal coliform test in Praslin Bay</i> (<a href="https://www.facebook.com/share/p/1A3Jp1Xxwa/">https://www.facebook.com/share/p/1A3Jp1Xxwa/</a>)</p> <p>2.JICA Saint Lucia Office Facebook (2023) <i>Construction of sea moss farming raft in Piaye</i> (<a href="https://www.facebook.com/share/p/19KgMyLQsb/">https://www.facebook.com/share/p/19KgMyLQsb/</a>)</p> <p>3.JICA Saint Lucia Office Facebook (2023) <i>Sea-moss farming raft construction and deployment at Savannes Bay</i> (<a href="https://www.facebook.com/share/p/17GRMSMHj8">https://www.facebook.com/share/p/17GRMSMHj8</a>)</p> <p>4.JICA Saint Lucia Office Facebook (2023) <i>Construction and deployment of sea moss</i></p>

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