



# Experience-sharing by Seychelles on national TA on Agrivoltaic technology for controlled environment crop production

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# Content of the Presentation

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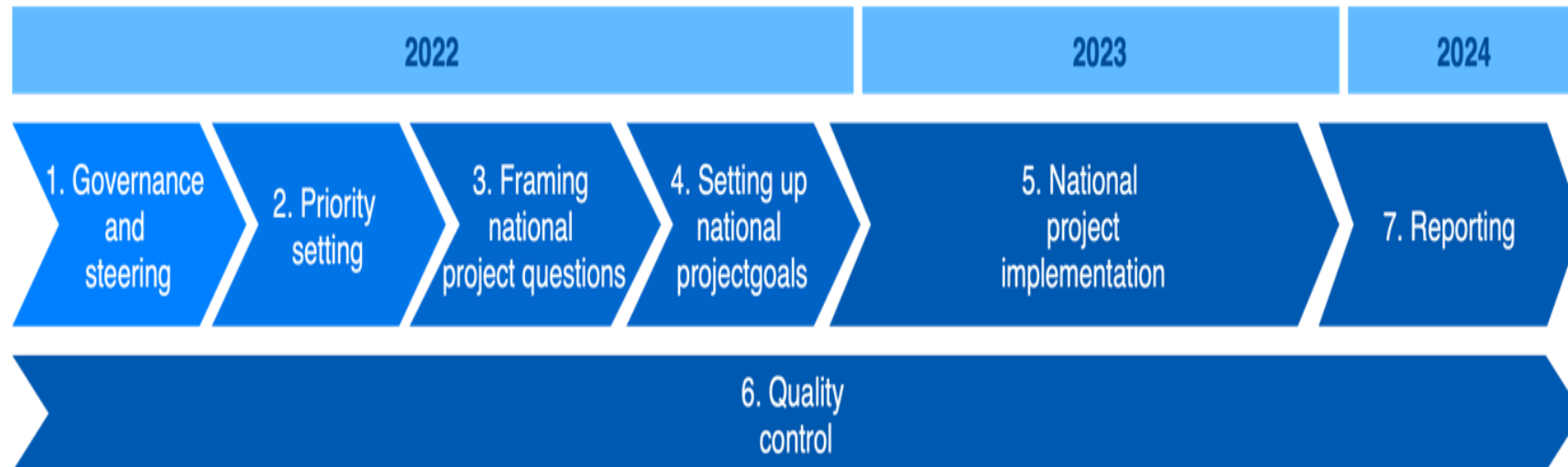
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# Overview of the Technology assessment (TA) process in Seychelles

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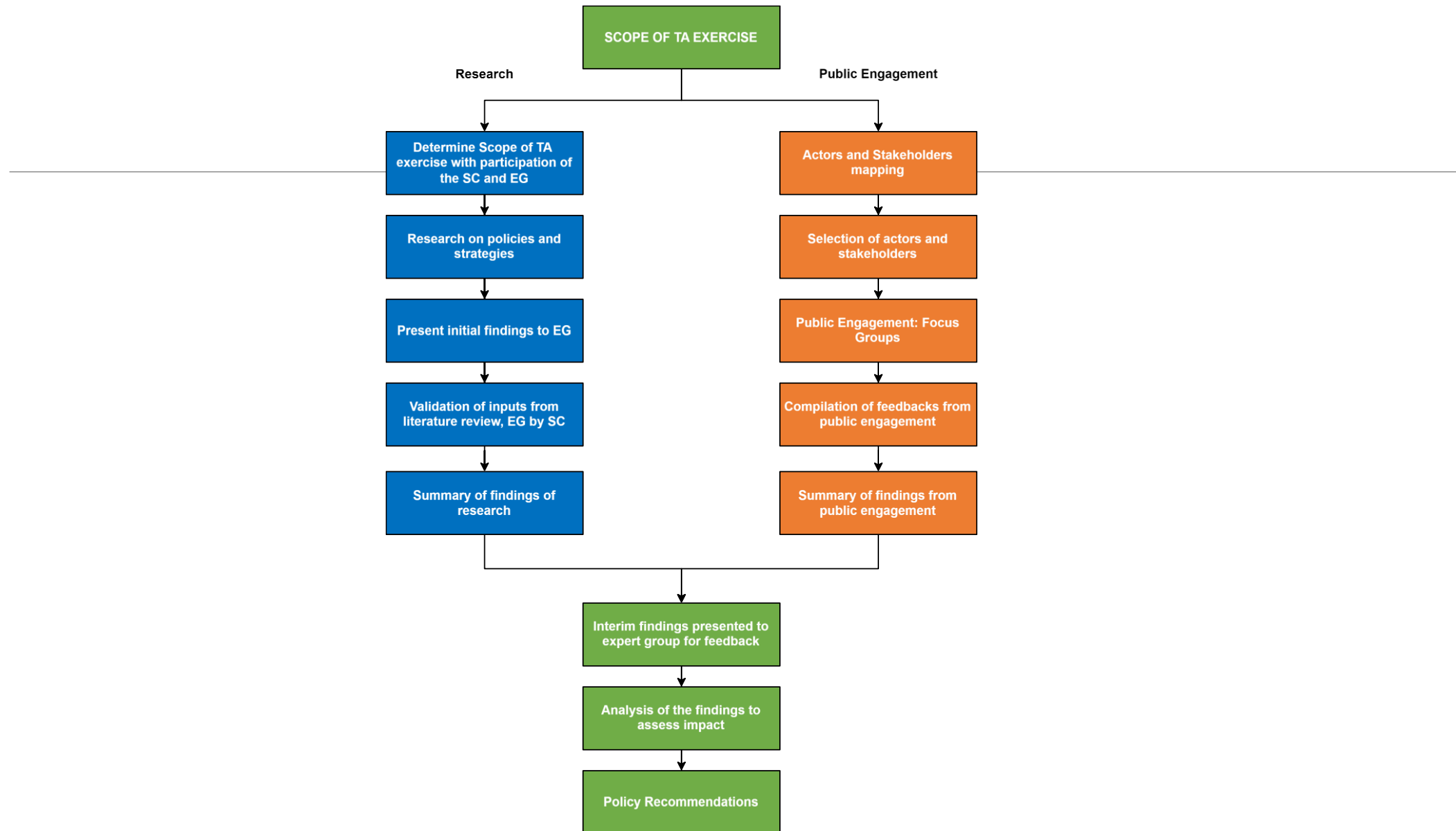
- ❑ The technology assessment (TA) for agrivoltaics in Seychelles is part of a pilot project from 2021 to 2024 led by UNCTAD in three sub-Saharan African countries: South Africa, Seychelles and Zambia.
- ❑ The project was officially launched in March 2022 with the first stakeholder workshop in Seychelles, organized jointly by UNCTAD and the Division on Science, Technology and Innovation (DSTI) of the Ministry of Investment, Entrepreneurship and Industry.
- ❑ The TA process involved various tools, including literature review on agrivoltaics, SWOT analyses of the agricultural and energy sectors, mapping the National Innovation System (NIS), analyzing the interconnectivity of NIS actors, and assessing the barriers to implementing the technology.

# *TA Exercise in Seychelles. Steps and Timeline.*



*Source: UNCTAD (2022)*

# TA Process: Selection of agrivoltaics stakeholders and actors in Seychelles.



Source: UNCTAD (2024).

# Main Documents Reviewed

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Policies and Strategies Reviewed Include

- ❑ Seychelles Energy Policy 2010 – 2030
- ❑ Food and Nutrition Security 2013
- ❑ Science, Technology & Innovation Policy & Strategy 2016 – 2025
- ❑ National Development Strategy 2019 – 2023
- ❑ Climate Smart Agriculture Strategy 2019

# Rationale for selecting Agrivoltaics for controlled-environment crop production (ACE) technology

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- ❑ The TA pilot project considers the selected technology's supply and demand.
- ❑ Note, as a small island developing State (SIDS), Seychelles faces challenges due to adverse climatic conditions that negatively impact local crop production throughout the year.
- ❑ On the demand side, it is mainly related to the existing national policy and strategic frameworks aiming to achieve energy independence through renewable energy sources by 2050, as well as food and nutrition security.
- ❑ On the supply side, controlled-environment crop production, particularly hydroponics, has been tested in Seychelles over the last three decades.

# Action plan developed through the TA

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**Addressing Regulatory Gaps:** Form a national task force to re-evaluate existing regulatory frameworks to integrate photovoltaic (PV) systems into agriculture

**Reviewing Energy Policies:** Update the Seychelles Energy Policy 2010–2030 to accommodate new technologies like agrivoltaic-controlled environment (ACE) production

**Improving Institutional Capacity:** Strengthen research and development (R&D) capacity, conduct audits on facilities, and collaborate regionally and internationally

**Enhancing the Land Allocation System:** Set up a mechanism for efficient land management and re-evaluate land allocated for agriculture to integrate high-tech systems

**Funding Mechanisms:** Develop funding schemes to support the piloting and scaling of agrivoltaic technologies, with startup funds provided through national incubators

**Ensuring Inclusivity:** Execute a national census to include marginalized groups such as women and low-income farmers, and develop training programs



**Building Public Awareness:** Collaborate with media to educate the public and dispel misconceptions regarding new agricultural technologies

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**Ensuring a Reliable Supply Chain:** Develop smart procurement systems and measures to compensate losses from technology adoption interruptions

# Reflections on the broader national policy implications

## *Economic and Energy Policy Implications*

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**Enhanced Energy Security:** Integration of solar photovoltaic (PV) systems with agriculture (agrivoltaics) can reduce Seychelles' dependency on imported fossil fuels. This aligns with Seychelles Energy Policy 2010-2030, which aims for 15% renewable energy by 2030

**Economic Diversification:** Agrivoltaics provides dual revenue streams—selling electricity and agricultural products. It promotes sustainable agriculture and energy production, reinforcing economic resilience in line with national development strategies

**Infrastructure Development:** Requires investment in smart grid systems to handle renewable energy inputs. Policies must evolve to support land allocation and infrastructure upgrades to facilitate agrivoltaic projects

**Incentives and Financing:** Policymakers must create financial schemes for start-up investments and incentivize farmers to adopt agrivoltaic technology

# Social and Environmental Policy Implications

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**Food and Nutrition Security:** Agrivoltaics addresses Seychelles' high import dependence for food (72% of food is imported). The technology can increase local food production while protecting crops from extreme weather, aligning with the Food and Nutrition Security Policy 2013.

**Climate Change Adaptation:** It promotes climate-smart agriculture by utilizing land efficiently, reducing greenhouse gas emissions, and mitigating the effects of climate change on agriculture

**Inclusion and Social Equity:** Policymakers should ensure that marginalized groups, such as women and low-income farmers, benefit from agrivoltaic technologies through inclusive policies, training, and capacity building

**Regulatory Frameworks:** A need for regulatory reforms to integrate PV technology in agriculture and ensure efficient land use. Policy recommendations include setting up task forces to reassess existing frameworks

# Specific Considered taken by the government as a result of the TA

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- ❑ Final Report only just finalised
- ❑ Broad Focus of Government
- ❑ Review of Energy Policy to promote and facilitate greater adoption of renewable energy sources
- ❑ Promotion facilitation of Technology in the agricultural sector
  - ❑ Improve production efficiency, including year-round production and competitiveness of local production
  - ❑ Improvement in quality and consistency of local products
- ❑ Greater application of the Skills and Knowledge gathered in TA
  - ❑ Business Technology Incubator support in technology selection and adoption
- ❑ Application to potential broader projects
  - ❑ Orbital Satellite technology for vessel tracking
  - ❑ Weather station technology for startups and business.

# Key outcomes from the TA process

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**Regulatory Framework Improvements:** Address regulatory gaps to integrate photovoltaic (PV) systems into agriculture by forming a national task force to revise policies. This also includes accommodating agrivoltaics in the Seychelles Energy Policy 2010–2030

**Land Allocation System:** Reassess the land allocation system to better integrate agrivoltaic systems into agriculture. A new agricultural land management system was recommended to support high-tech agriculture.

**Supply Chain Efficiency:** Measures to ensure a reliable supply chain for the technology were identified, including the application of artificial intelligence (AI) for smart inventory and the establishment of mechanisms to manage supply disruptions

**Funding Mechanisms:** Access to funding for agrivoltaic pilot projects before scaling up to commercial ventures, providing startup funds through the DSTI's Business, Technology and Innovation Incubator

**Inclusivity in Adoption:** Ensure that the technology is accessible to women, traditional, and low-income farmers. This includes conducting a census to assess capacity and introducing training and incentive schemes to support marginalized groups

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**Public Engagement and Awareness:** Educate the general population about the safety and benefits of agrivoltaics to dispel myths, particularly concerning the consumption of crops grown using the technology

**Capacity Building:** Strengthen institutional capacities for training, research and development, and regional/international collaboration to support technology adoption

**Technology Impact Assessment:** Perform quantitative evaluations of agrivoltaics' impacts on the economy, society, culture, and environment, ensuring sustainability for Seychelles' pristine natural environment

# Reference

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Seychelles Technology Assessment Report

Link : <https://unctad.org/publication/agrivoltaics-technology-assessment-seychelles>

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Thank you

