



Biomass Value Chain Development

Investment Thesis and Theory of Change



UNDP Technical Assistance

| Challenges | Recommendations |
|---|---|
| Strengthen government capabilities and capacity within the MoF based on identified areas for investment. | Detailed external assessment and feasibility study for a national-level blended financing facility. |
| Strengthen the enabling environment and financial system to capitalise on innovative financial instruments. | Engagement with key stakeholders on positioning of the facility, scope of investments, and financial support available. |
| Define a Theory of Change that creates incentives for participation an expansion of a blended financing facility. | Identify bankable, feasible projects to be supported by blended financing. |
| Actions: <u>Identify and design an initial project</u> to build the foundations for blended financing in Sri Lanka. <u>Work with development partners to improve structural capacity</u> for a national-level facility in the medium/long-term. | |



Evolution of the Blended Financing Approach

| Initial Approach | New Approach |
|--|--|
| Approach development partners to support a national-level blended financing facility . | Identify specific sub-sectors that may require a blended financing approach and position these priority areas to development partners. |
| Secure financial commitments from development partners to support establishment of the facility. | Build an attractive investment thesis that incentivises private sector commitments in line with development partners' strategic priorities. |
| Outline development and environmental outcomes to development partners for the agriculture sector. | Define a clear Theory of Change for the implementation of a blended financing facility in the agriculture sector. |

Biomass in the National Energy Supply

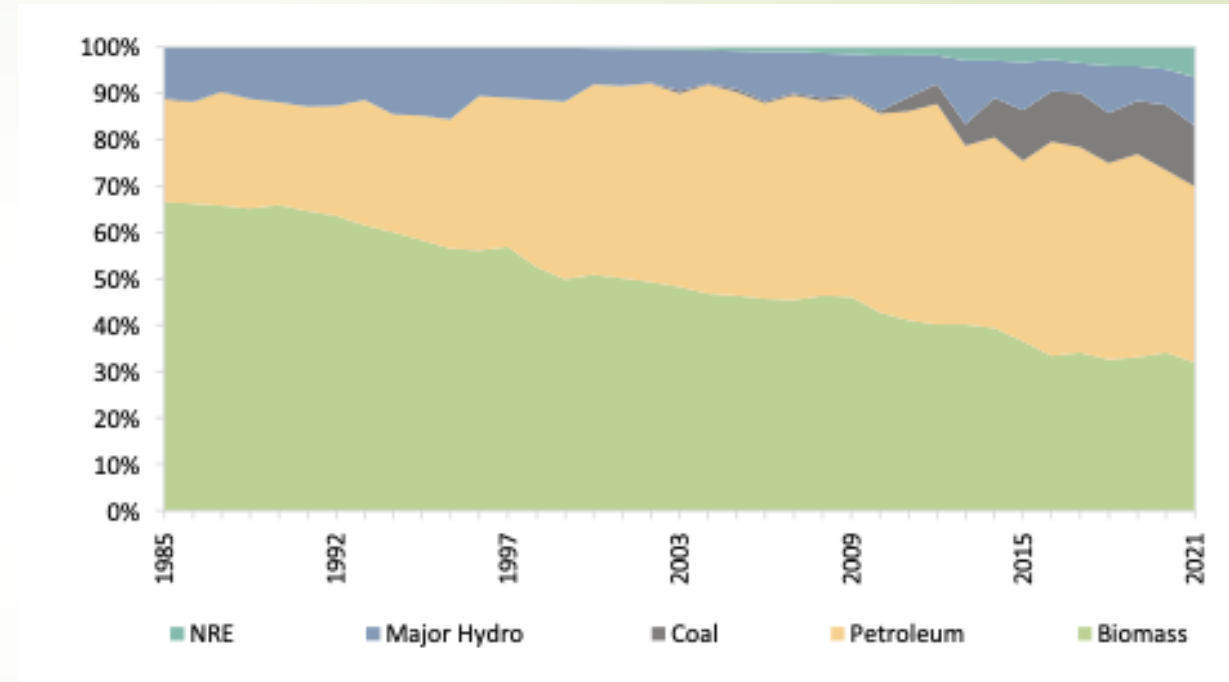
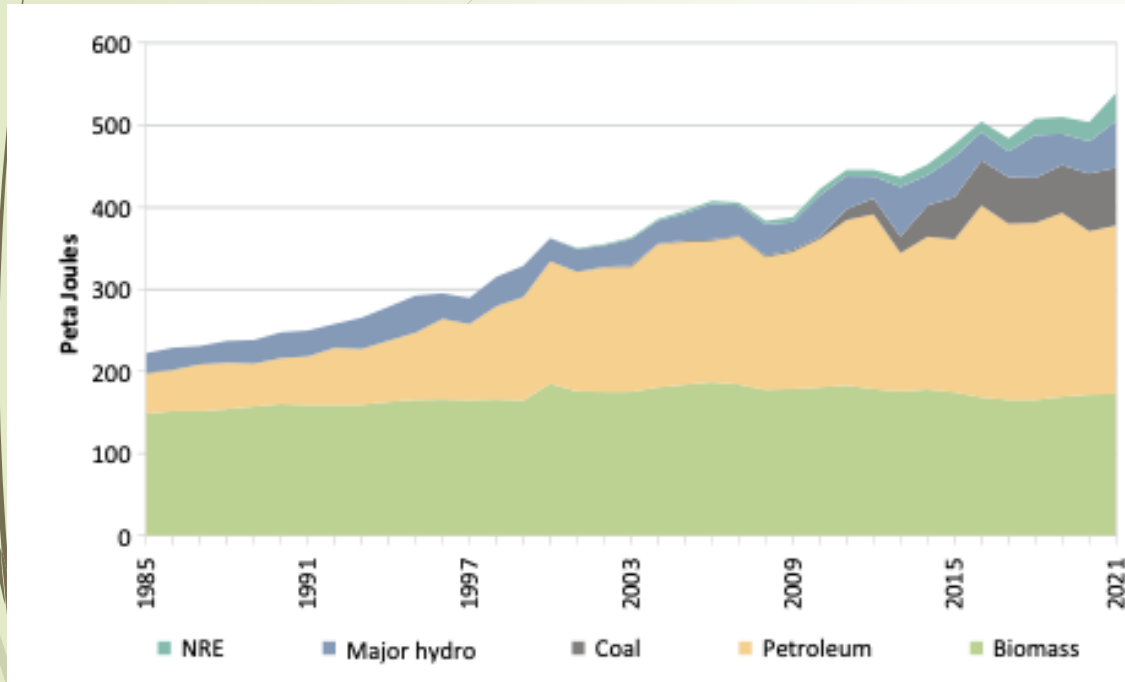


Figure 1 (Left): The Evolution of Energy Supply Sources Between 1985 and 2021

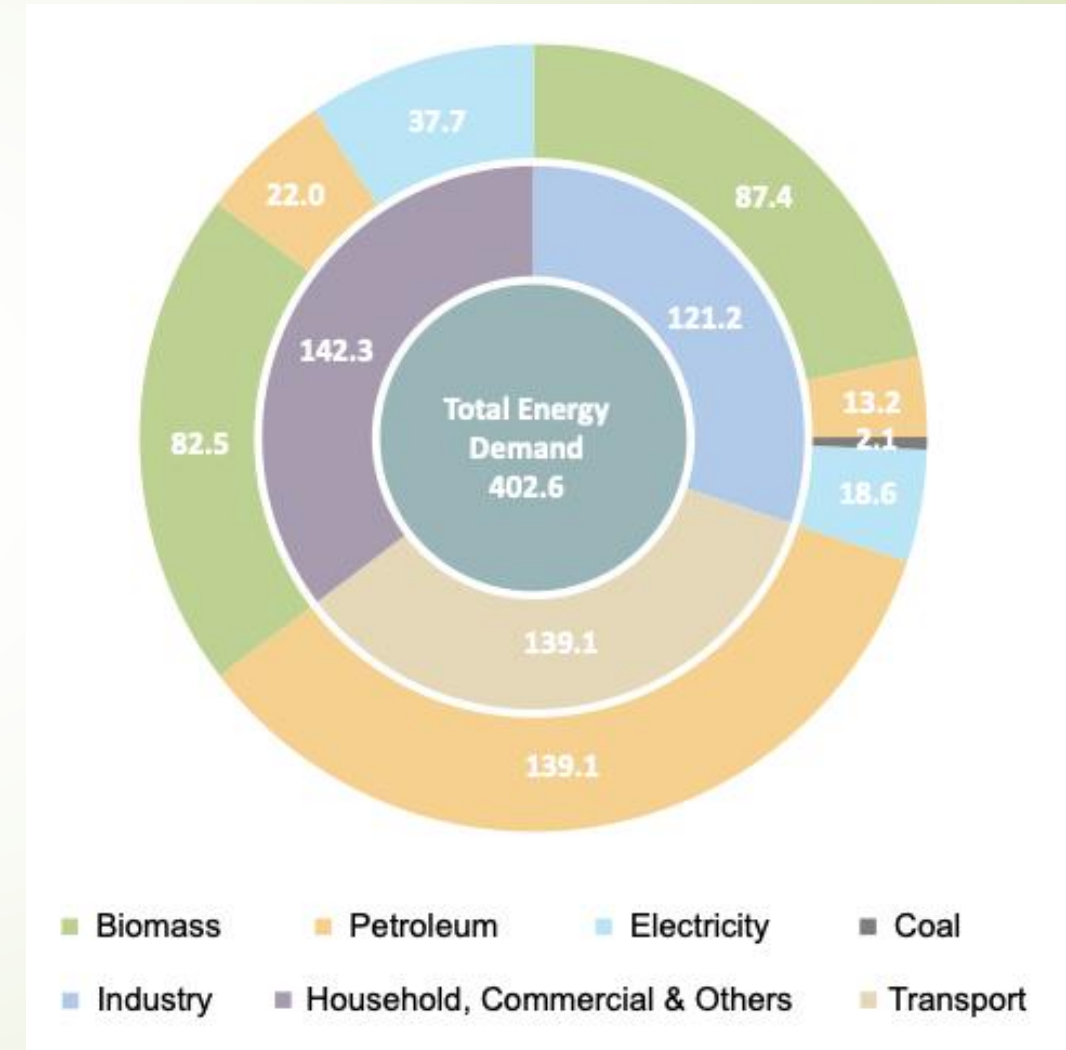
Figure 2 (Right): The Percentage Share of Primary Energy Supply Between 1985 and 2021

What do these tell us?: The supply of biomass has remained relatively constant over time, but its share of total energy supply has decreased due as supply increases have not matched corresponding demand increases.

Biomass in the National Energy Supply

| Sector | Energy Source | Energy Share |
|----------------------------------|---------------|--------------|
| Industry | Biomass | 72% |
| | Petroleum | 11% |
| | Electricity | 15% |
| | Coal | 2% |
| Household, Commercial and Others | Biomass | 58% |
| | Petroleum | 15% |
| | Electricity | 27% |
| Transport | Petroleum | 100% |

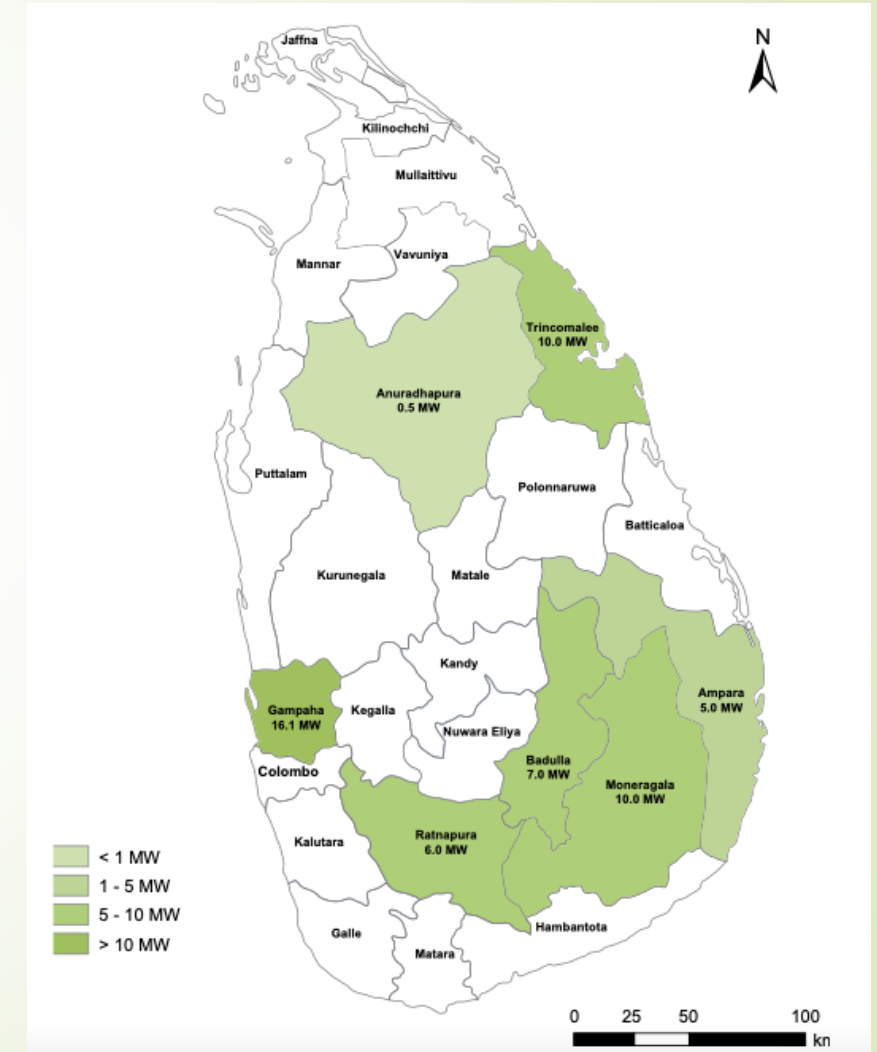
“A growing industrial demand without an expansion of supply is causing shortages, which erodes the economic gains of conversion.”



Source: Energy Balance (SEA, 2021)

Cumulative Capacity Additions of Biomass (2021)

- "There are possibilities to further increase the use of biomass for energy in the country, especially for thermal energy supply in the industry sector" – Energy Balance (SEA, 2021)
- Many sources of biomass, such as Gliricidia, are very resilient and can be cultivated across the country.
- Cumulative capacity additions are shown in **Figure 3 (Right)**. Therefore, strong supply chains and distribution networks within these high-potential regions is crucial to build capacity for biomass elsewhere in the country.



Previous Biomass Projects in Sri Lanka



Between 2014 and 2018, UNDP Sri Lanka and FAO conducted a project titled *"Promoting Sustainable Biomass Production and Modern Bio-Energy Technologies"*

- The project focussed on shifting away from fossil fuels and biomass substitution in the industrial sector.
- The project reduced the barriers to increasing sustainable biomass production and adopt efficient, clean energy technologies.

Ownership was transferred to the Sustainable Energy Authority and there has been no monitoring and evaluation of the project since 2018.

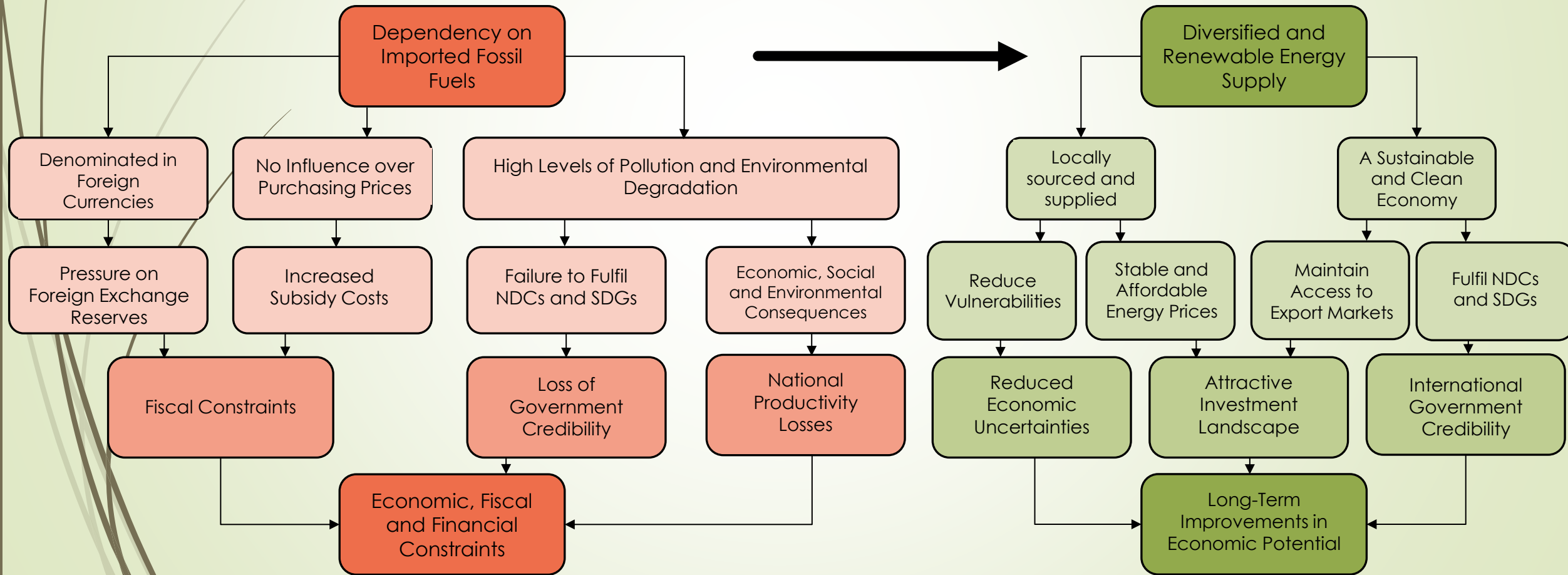
- The programme fell short of its physical and financial targets at year-end 2019 due to government constraints and economic disruptions.
- Inefficiencies and bureaucratic hurdles limit the effectiveness of such innovative projects; this project demonstrates that there is a role for private sector finance to generate recurring returns and create incentives to maintain and monitor development.



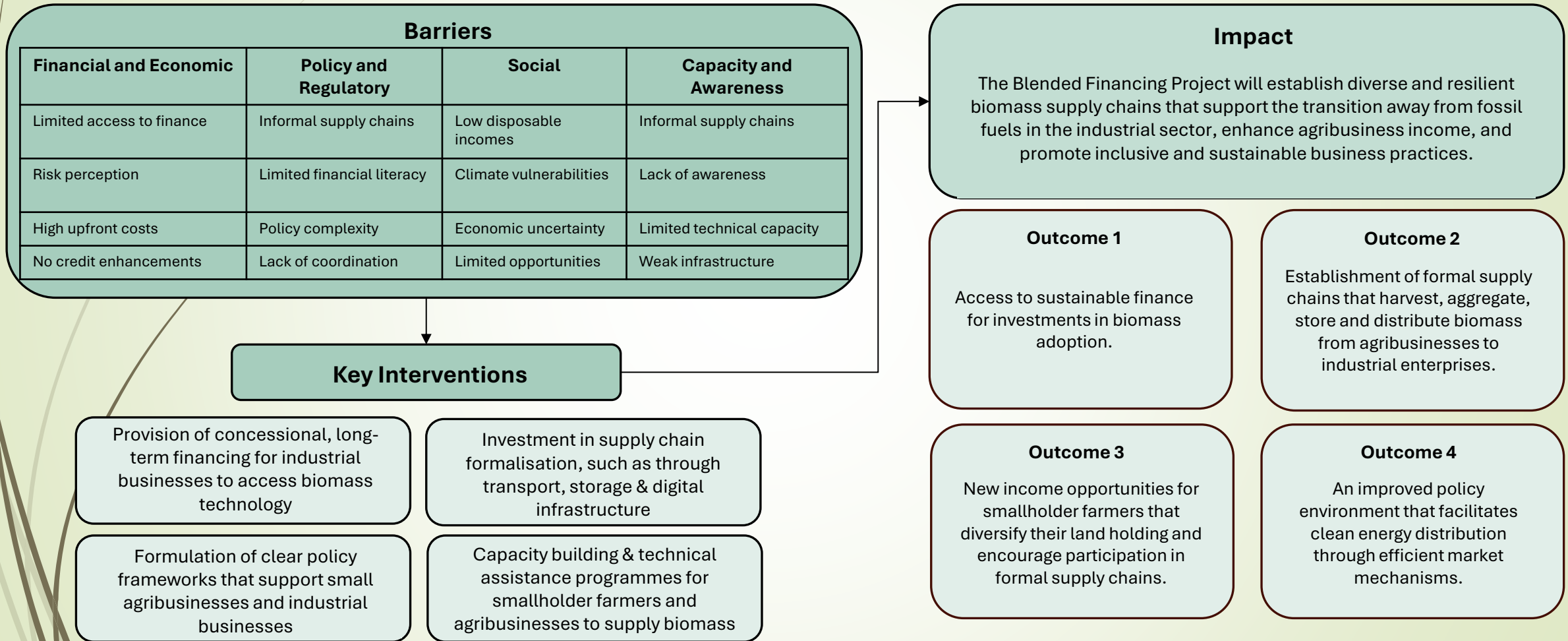
Sri Lanka
Sustainable Energy Authority

Sri Lanka's Green Transition

By transitioning away from fossil fuels and towards a locally-sourced renewable energy supply, Sri Lanka's economy experiences multidimensional benefits.



Theory of Change



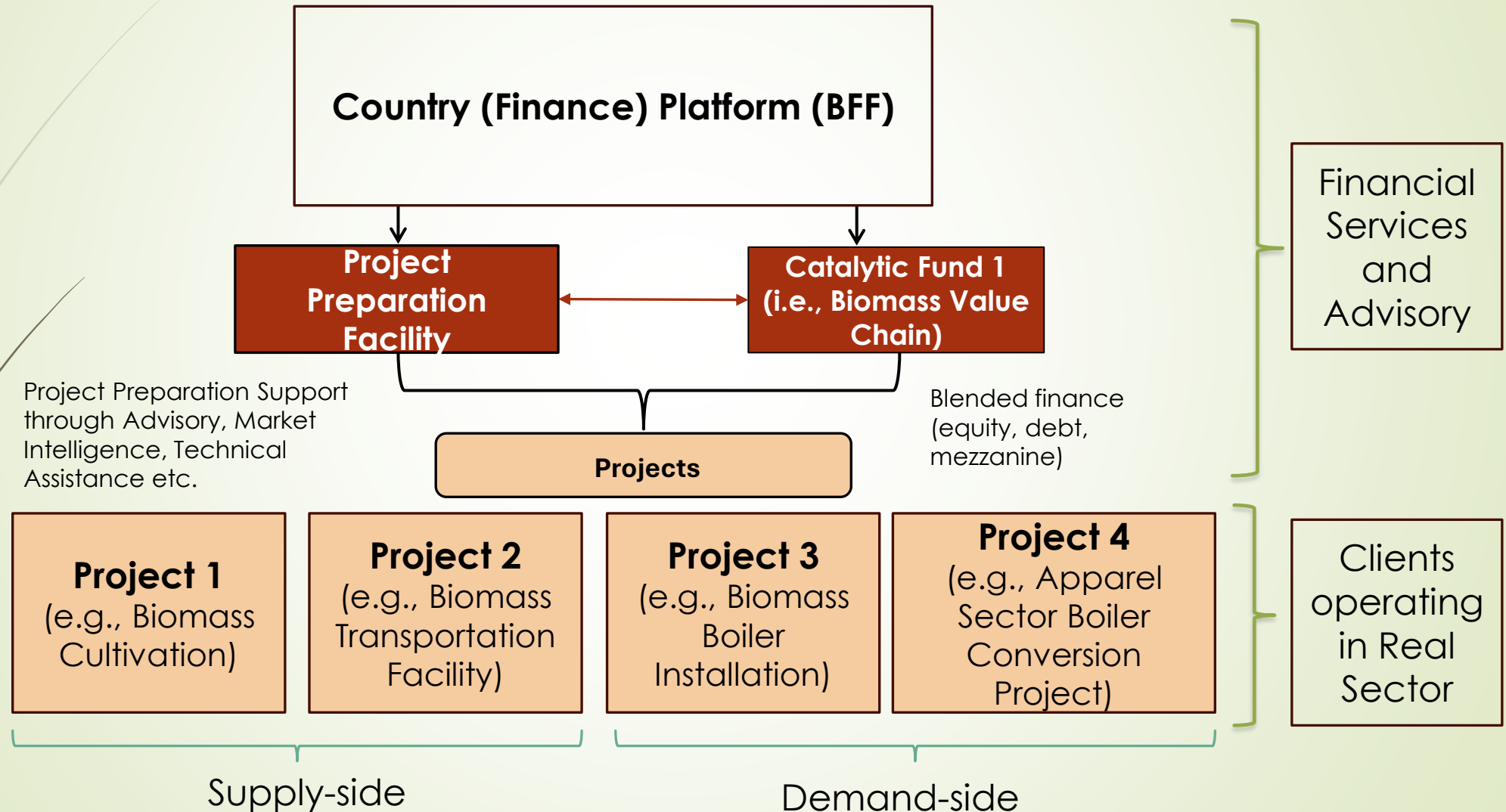
Targeted Investments - Grants

| Targeted Investment | Beneficiaries | Type of Financing | Financier | Rationale for Investment |
|---|---|-------------------|---------------------------------------|--|
| Capacity Building and Technical Assistance. | Smallholder Farmers | Grant | Multilateral Development Organisation | Smallholder farmers receive support through programmes funded by development partners to increase their knowledge, productivity and economic potential through sustainable agriculture practices and participation in formal value chains. |
| Lowering Cost of Capital | Small & Medium Enterprises Private Banks | | Multilateral Development Organisation | By reducing the cost of capital for SMEs, businesses can access finance to invest in their operations and establish longer-term priorities. Private banks can extend credit to new consumers and invest in high-return sectors. |
| Technology and digital infrastructure to support supply chain formalisation and supply-demand matching. | Smallholder Farmers Small & Medium Enterprises | | Multilateral Development Organisation | Investments in infrastructure provide the capacity for supply chains to strengthen and become efficient. By matching demand with supply through technological and digital advancements, smallholder farm supply can be aggregated and supplied to SMEs through hubs. |

Targeted Investments – Concessional Finance

| Targeted Investment | Beneficiaries | Type of Financing | Financier | Rationale for Investment |
|---|------------------------------|----------------------|---|--|
| Access to inputs for biomass production | Smallholder Farmers | Concessional Finance | Development Banks or Subsidised Private Banks | Smallholder farmers invest in themselves and their operations at accessible rates to expand production and diversify incomes. |
| Access to finance for industrial infrastructure | Small and Medium Enterprises | | | Concessional loans will enable businesses in the industrial sector to invest in biomass-related infrastructure and technology, such as biomass boilers and processing machinery. This will facilitate the integration of biomass into existing production systems. |
| Access to finance for transportation & distribution companies | | | | Concessional loans will support logistics and transportation companies in scaling up their operations to move biomass efficiently from suppliers to buyers. Affordable loans will enable them to invest in transportation fleets and related infrastructure. |
| Finance for nursery management companies | | | | Concessional loans will be made available to nursery management companies that produce and supply biomass seedlings, particularly Gliricidia. Loans will help these companies expand capacity, improve operations, and meet the growing demand for seedlings. |
| Investment in storage & terminal facilities | | | | Concessional loans will be provided for the development of storage and terminal facilities to prevent post-harvest losses. These facilities will ensure that harvested biomass is stored and handled efficiently before it is transported to industrial buyers. |

Legal and Governance Structure



Focus, Sustainability & Next Steps

| Focus | Sustainability |
|---|--|
| Private sector-led value chain | Continuous revenue generation and increase in market size. |
| Exporters' access to a conditional destination market | Businesses maintain practices to ensure access to markets |
| Regenerative supply and continuous demand | Businesses continue to require the output, and farmers can continuously supply it. |

Next Steps

- Finalise the formal governance framework and establish the foundations of the blended financing facility.
- Conduct a formal supply-and-demand assessment to understand market composition and potential returns.
- **Work with development partners to understand their sector-level priorities**, and the financial and technical support available for implementation.