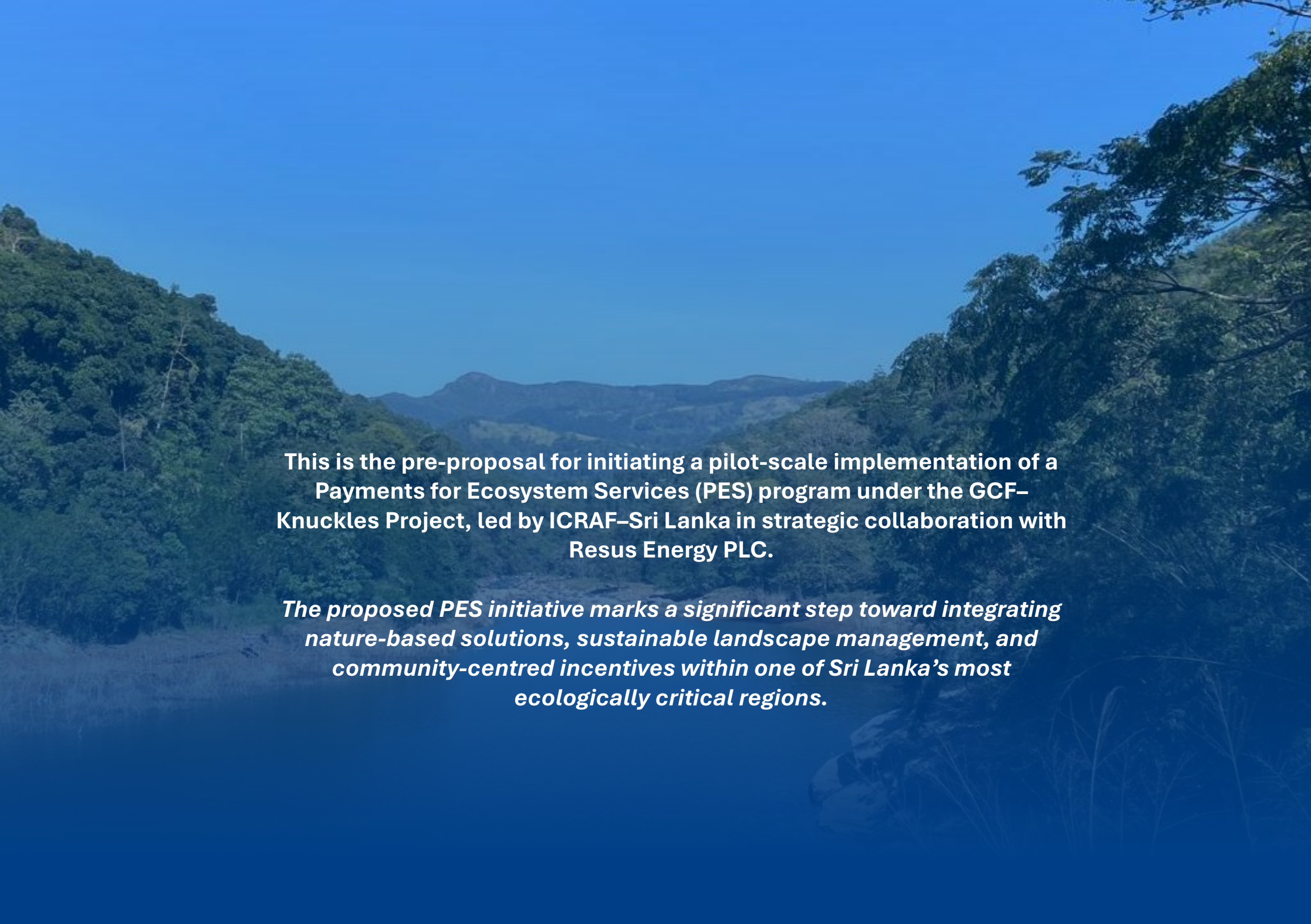




**An inclusive benefit sharing scheme for ecosystem resilience; a green business plan connecting community and Resus Energy PLC for sustainable management**

**ICRAF - World Agroforestry Centre**



**This is the pre-proposal for initiating a pilot-scale implementation of a Payments for Ecosystem Services (PES) program under the GCF–Knuckles Project, led by ICRAF–Sri Lanka in strategic collaboration with Resus Energy PLC.**

***The proposed PES initiative marks a significant step toward integrating nature-based solutions, sustainable landscape management, and community-centred incentives within one of Sri Lanka’s most ecologically critical regions.***

## The context

### What PES is ?

A performance-based conservation mechanism where beneficiaries of ecosystem services pay those who manage ecosystems to ensure continued service delivery.

### Why its applied?

- To provide sustainable financing for conservation and ecosystem restoration.
- To ensure long-term ecosystem resilience and climate adaptation by encouraging good environmental stewardship.
- To compensate upstream or on-ground managers for the costs of conservation that benefit others.
- To address failures of traditional conservation funding by creating direct, performance-based incentives.

### How are we going about?

GCF-Knuckles project will invest for restoration and conservation actions



Mini hydropower generators will provide regular incentives for maintaining conservation actions



Restore and promote healthy ecosystem



Guaranteed supply of ecosystem services ensure sustainable development of the business

*A vital step for long term sustainability...*

# Global experience on payment for ecosystem services



# Sumberjaya Watershed, Indonesia PLN-PLTA Way Besai (mini-hydro operator)

## What can be achieved;



Ensure long term sustainability of ES beneficiaries (eg; hydropower) while reducing environmental risk.



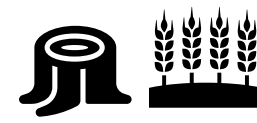
PES involves reciprocity and trust-building to foster social and financial co-investment among relevant stakeholders.



Initially, the primary focus of PES: achieving ecosystem service outcomes while benefiting all parties; a Win-Win situation.



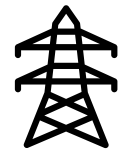
Shifting emphasis in tropical developing countries: PES as co-benefits for smallholders, who are the predominant managers of production landscapes (e.g. livelihood enhancements).



Deforestation & Agriculture



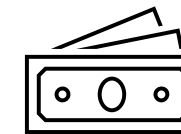
Siltation  
200,000 m3/yr



Reduced efficiency



CIFOR-ICRAF  
facilitation



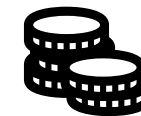
Funded by Way  
Besai (mini-hydro)



Farmers adopting  
SWC measures



20% Siltation reduced in  
the first year  
Water flow regulated  
Generation increased



Increased  
Income for both  
parties



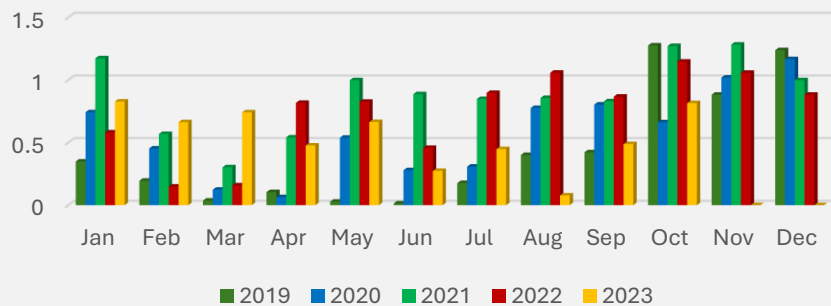
Enhanced eco  
system services

*Ensured the long-term sustainability of power generation by significantly reducing the siltation*

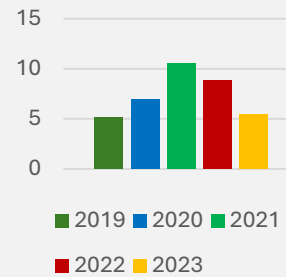
# How GCF Knuckles Helps to Secure your Business?

## The risk at present

GWh generation in Giddawa



Annual GWh Generation

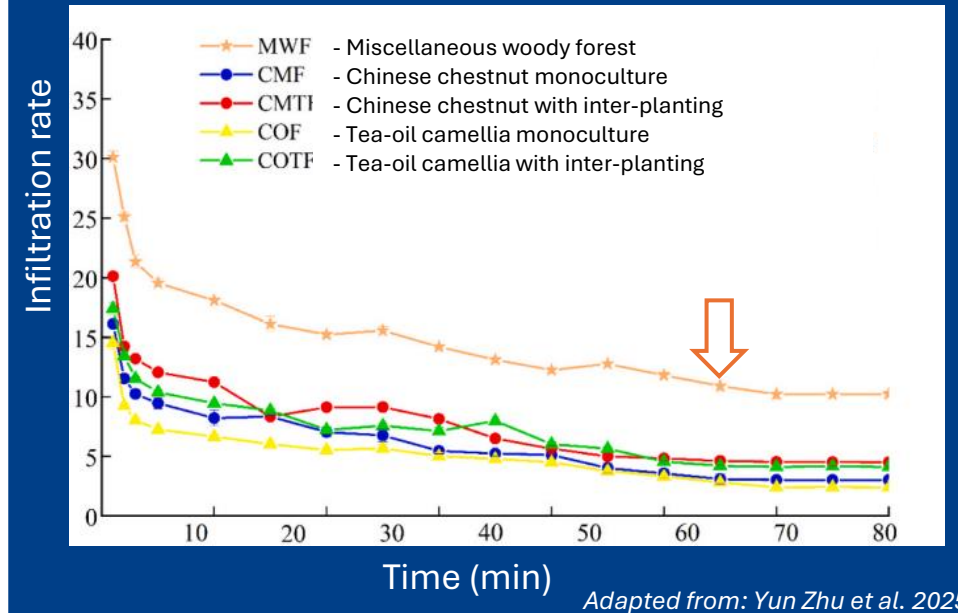


- Reduced power generation in dry season due to low flow rate
- Low power generation in high rainy seasons due to flash floods
- High maintenance cost in rainy season due to siltation

## Risk mitigation measure

GCF Knuckles project interventions ensures consistent flow of water by enhancing watershed buffering capacity and minimizing siltation

The proof: Closer to the natural vegetation, greater the infiltration rate and prevention of erosion



## How this improve hydropower generation?



Reduced fluctuations of flow rates → Near-constant power generation

## The impact of your contribution

### Contribution from the GCF Knuckles Project



Investment to establish necessary soil and water conservation measures

### Support from ICRAF



Foster piloting of PES process including fund management



Design and develop a performance-based environmental and socio-economic monitoring framework Capacity development of stakeholders for participatory performance-based monitoring system.

### Role and contribution of Resus Energy PLC



Partner with ICRAF in co-developing the PES and its monitoring framework



Support farmers with incentives to maintain conservation measures established by GCF Knuckles in Hulu Ganga watershed



**Branding as Sri Lanka's first-ever PES implementation partner !**

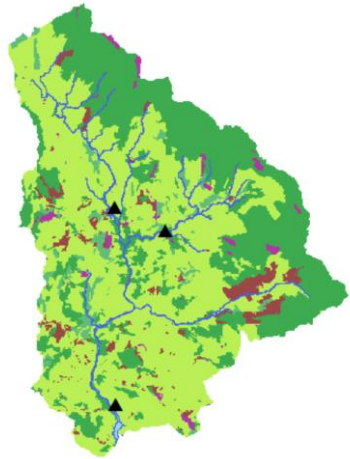
## Paying for impact; the indicators for performance evaluation

Criteria	Indicator	Method	Monitoring Interval
1. Increase and maintain vegetation cover	➤ Tree survival rate (%)	➤ Tree tagging and GPS-based monitoring (participatory)	3 months
	➤ % increase in forest/agroforestry cover	➤ Remote sensing (satellite or drone-based NDVI, EVI)	Annual
2. Improve soil infiltration and water retention	➤ Infiltration rate (mm/hr) ➤ soil moisture	➤ Double-ring infiltrometer tests ➤ Gravimetric soil moisture sampling or soil sensors	Baseline and then every 6 months
3. Regulate streamflow and enhance dry-season water availability	➤ Total discharge per unit rainfall (m <sup>3</sup> /s/mm) ➤ Seasonal flow variability (CV of monthly flows)	➤ Water flow meters (Participatory) ➤ Rainfall–runoff modeling	Monthly
4. Reduce sedimentation and turbidity	➤ Total suspended solids (TSS) ➤ Siltation depth at weir intake	➤ Sediment traps or grab sampling near hydropower intake (Participatory) ➤ Visual and volumetric surveys (Participatory)	Monthly during rainy season
5. Control soil erosion in agricultural areas	➤ Soil loss rate (t/ha/yr) ➤ Sediment yield from plots	➤ Erosion pins or sediment traps in representative sites ➤ LDSF based modeling	Quarterly during rainy seasons

## Gains you gain; the indicators for socio-economic benefits

Criteria	Indicator	Method	Monitoring Interval
1. Maintenance and functionality of SWC structures	<ul style="list-style-type: none"> <li>➤ % of SWC structures intact and functional</li> </ul>	<ul style="list-style-type: none"> <li>➤ Field inspections using standardized SWC monitoring checklist and photographic documentation with GPS tagging</li> </ul>	Bi-annually
2. Community participation and compliance	<ul style="list-style-type: none"> <li>➤ % of participating landowners implementing SWC/agroforestry</li> <li>➤ Number of training sessions and field days held</li> </ul>	<ul style="list-style-type: none"> <li>➤ Field verification visits</li> <li>➤ Farmer surveys and attendance records</li> </ul>	Bi-annually
3. Economic gain by hydropower	<ul style="list-style-type: none"> <li>➤ Number of GWh units generation</li> <li>➤ Maintenance cost (desilting)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Power Generation reports</li> <li>➤ Budget reports</li> </ul>	Monthly
4. Economic gain by local community	<ul style="list-style-type: none"> <li>➤ Total income (PES + Agriculture) per household</li> </ul>	<ul style="list-style-type: none"> <li>➤ Household surveys</li> </ul>	Bi-annually
5. Gender equity	<ul style="list-style-type: none"> <li>➤ Women involvement and perceived benefits for women</li> </ul>	<ul style="list-style-type: none"> <li>➤ Household surveys</li> </ul>	Bi-annually

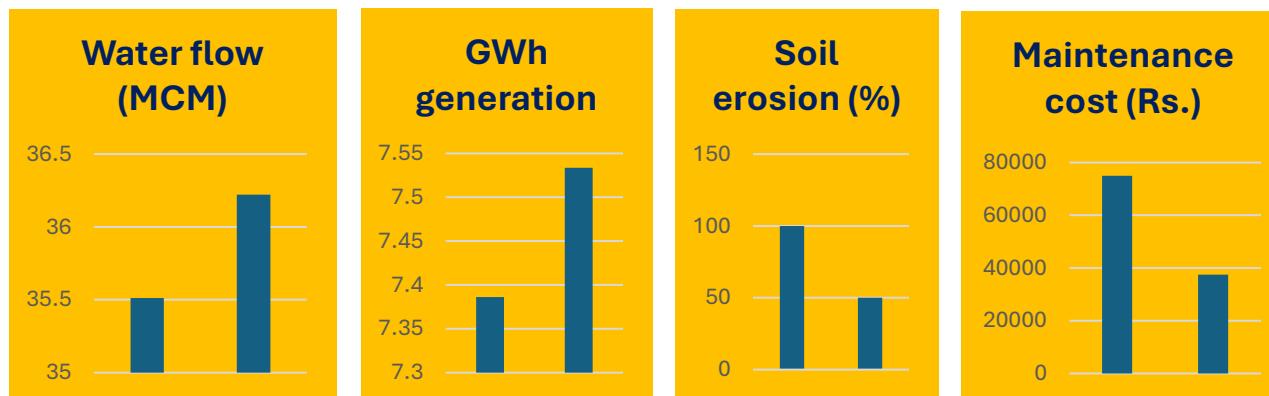
# Modeling the outcomes of co-investment for PES



Land use land cover in Hulu Ganga sub watershed

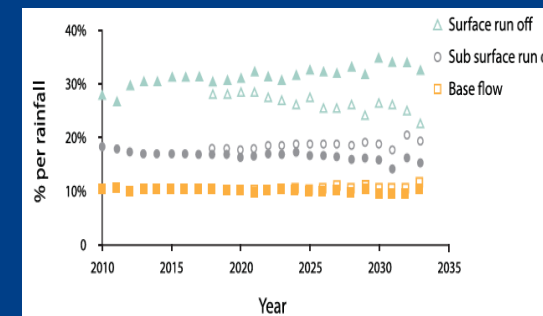
Land use	Area (ha)	%
Abandoned agriculture lands	557.19	4.18
Agriculture lands	7423.65	55.69
Commercial Forest plantations	447.39	3.35
Forest and grasslands	4573.71	34.31
Built-up areas	326.52	2.45
<b>Total</b>	<b>13328.46</b>	<b>100</b>

Modeled prediction for Giddawa hydropower project in 10 years with the evidence shown in Rejoso watershed, Indonesia



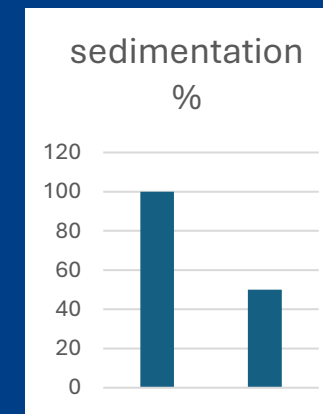
## Drawing insights from Rejoso Watershed, Indonesia

Prediction of surface flow, sub-surface flow and base flow of with and without PES scheme at four sub-watersheds



Scenario of 500 hectare tree planting	
Decreased surface run-off	2%
Increased of infiltration	1%

## Lessons learnt Sumberjaya, Way Besai Watershed



Starting small for the brighter future !

## Overall impact

### Impact for Resus Energy PLC



Economic gain from increased water yield and reduced maintenance cost.



Reduced environmental risk for long term sustainability



Proven corporate social responsibility while building trust among local community



National contribution; Reputation as a partner of Sri Lanka's first PES scheme

Enhanced ecosystem services



Improved rural livelihood

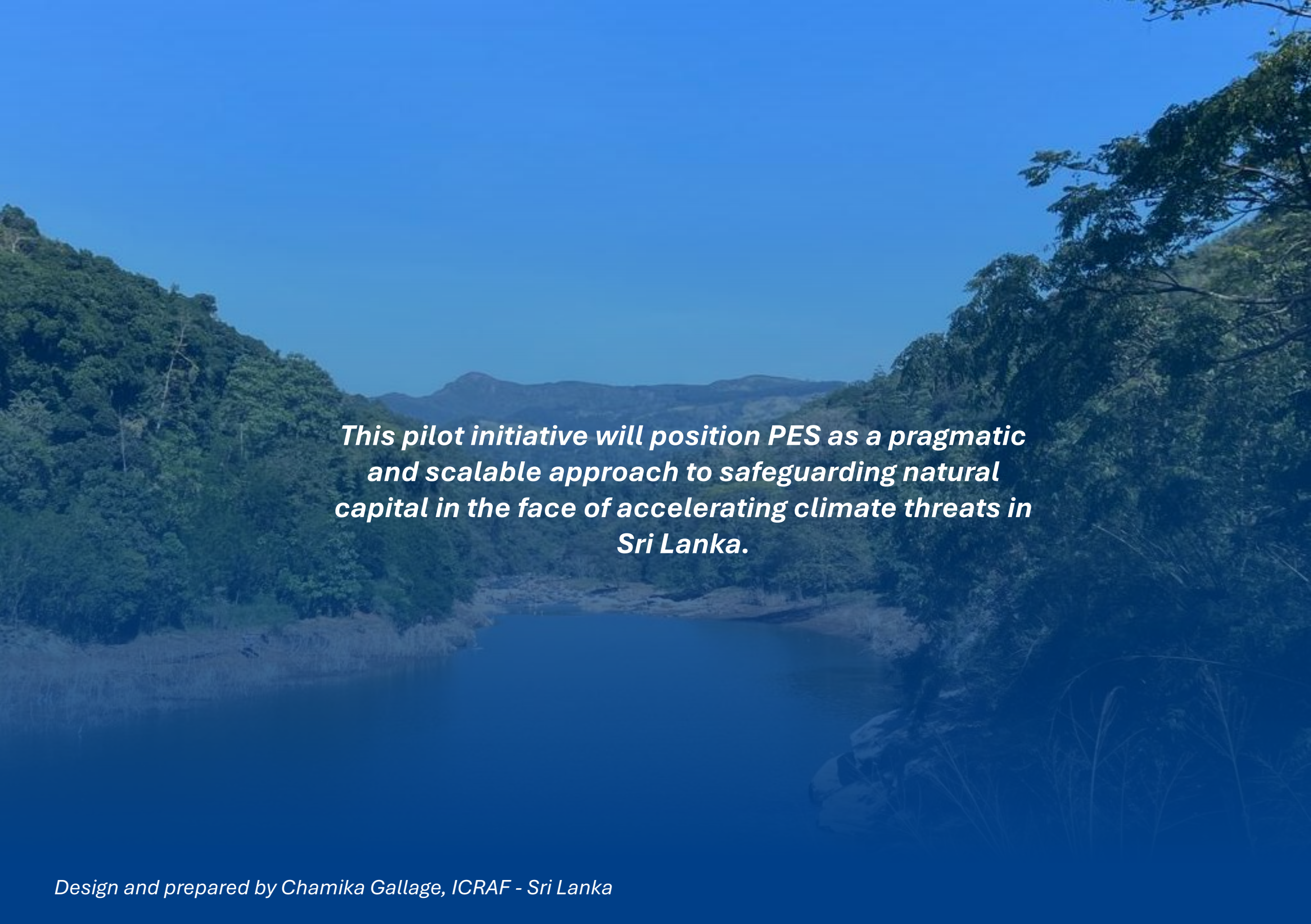


Impact for knuckles

Climate Change Mitigation and Adaptation



*The first step of a giant green leap in sustainability!*

A scenic landscape featuring a calm lake in the foreground, surrounded by lush green forested hills. In the distance, a range of mountains is visible under a clear, bright blue sky. The overall scene is peaceful and natural.

***This pilot initiative will position PES as a pragmatic and scalable approach to safeguarding natural capital in the face of accelerating climate threats in Sri Lanka.***



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