MINISTRY OF FINANCE
GOVERNMENT OF PAKISTAN

CVF V20
CLIMATE VULNERABLE FORUM
VULNERABLE TWENTY GROUP

PAKISTAN CLIMATE PROSPERITY PLAN

Investor Book

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I EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Pakistan Climate Prosperity Plan (CPP) is a bold national roadmap that transforms Pakistan's extreme climate vulnerability into a story of resilience, investment, and shared prosperity, covering eight sectors across all Provinces. Pakistan, which contributes less than 1% to global greenhouse gas emissions, yet ranks among the most climate-vulnerable nations, has paid a steep price through recurring floods, droughts, and economic shocks. The CPP reframes this challenge as an opportunity by presenting a pipeline of bankable, climate-aligned projects that can attract international finance, generate clean energy, and create green jobs. Pakistan CPP received hundreds of project submissions, but to streamline the selection process, we applied a strict screening criterion, choosing only those that aligned most closely with Pakistan's national priorities, NDCs, NAP, NBSAP, and URAAN 2025. As a result, a total of 69 projects have been selected to date.

The Pakistan CPP pipeline provides a strong foundation for the recommended Pakistan Country Platform, with projects worth over PKR 1.366 trillion (USD 4,877.42 Billion), and the ambition to increase the total in the coming months. The project list spans hydropower, solar investments in Khyber Pakhtunkhwa, Sindh, and Balochistan, innovative waste-to-energy ventures, and climate-smart agriculture solutions that conserve water, boost yields, and open new carbon market revenues. Community initiatives, including clean cookstoves, smart digital villages, and the conversion of polluting brick kilns, ensure that prosperity reaches households at the grassroots. Collectively, the CPP pipeline is designed to complement the target of 60-65 GW of renewable energy by 2040, reduce one M tons of CO_2 annually, decrease costly fossil fuel imports, and create tens of thousands of dignified green jobs, particularly for youth and women. Financially, the portfolio demonstrates strong viability, with an average IRR of 31-34%, an EIRR of 22-24%, a total of 120,000-130,000 green jobs, robust NPVs, and average paybacks of 4.8-5.2 years.

Photo credit: Wind power plant in Jhimpir, Pakistan, April 2024 | Q World | Shutterstock

II

CPP PROJECT PORTFOLIO

The CPP envisions a climate-resilient economy by setting highly ambitious targets and projects in priority sectors of Pakistan, including Energy Optimization & Just Transition, EV Industry & Transport, Climate-Resilient Agriculture, Green Economic Zones (GEZs), Climate-Resilient Infrastructure, Financial Protection Mechanisms, Nature-Based Solutions for Protecting Natural Capital, and the Circular Economy. This CPP investor book provides sector-wise, detailed information related to the flagship projects, early-stage projects, and grant-based projects.

I) SECTOR WISE BREAKDOWN

RANK	SECTOR	AMOUNT (USD M)	PERCENTAGE (%)
1	**Energy Optimization & Just Transition**	1,312.24	26.90%
2	**Green Economic Zones**	686.90	14.08%
3	**EV & Transport**	559.73	11.48%
4	**Circular Economy**	1205.86	25.30%
5	**Climate Resilient Infrastructure**	350.25	7.18%
6	**Climate Resilient Agriculture**	337.85	6.93%
7	**Nature-Based Solutions**	275.14	5.64%
8	**Increasing Access to Financial Mechanisms**	121.45	2.49%
Total		**4,850.1**	**100%**

II) THEMATIC AREA WISE BREAKDOWN

RANK	SECTOR	NO OF PROJECTS	AMOUNT (USD M)	PERCENTAGE (%)
1	**Mitigation**	34	3792.7	77.8%
2	**Adaptation**	15	536.9	11.0%
3	**Resilience (Cross-cutting to both themes)**	20	547.8	11.2%

Photo credit: Wind power plant in Jhimpir, Pakistan, April 2024 | Q World | Shutterstock

III) FINANCIAL INSTRUMENTS WISE BREAKDOWN[1]

SR	SECTOR	AMOUNT (USD M)	PERCENTAGE (%)
1	**Multilateral/Vertical/ Blended Concessional Financing**	2,736.9	56.43%
2	**Private Capital**	1,505.5	21.66%
3	**Federal Funds**	162.8	3.36%
4	**Provincial Funds**	279.8	5.57%
5	**Grants**	620.40	12.79%
Total		**4,850**	**100%**

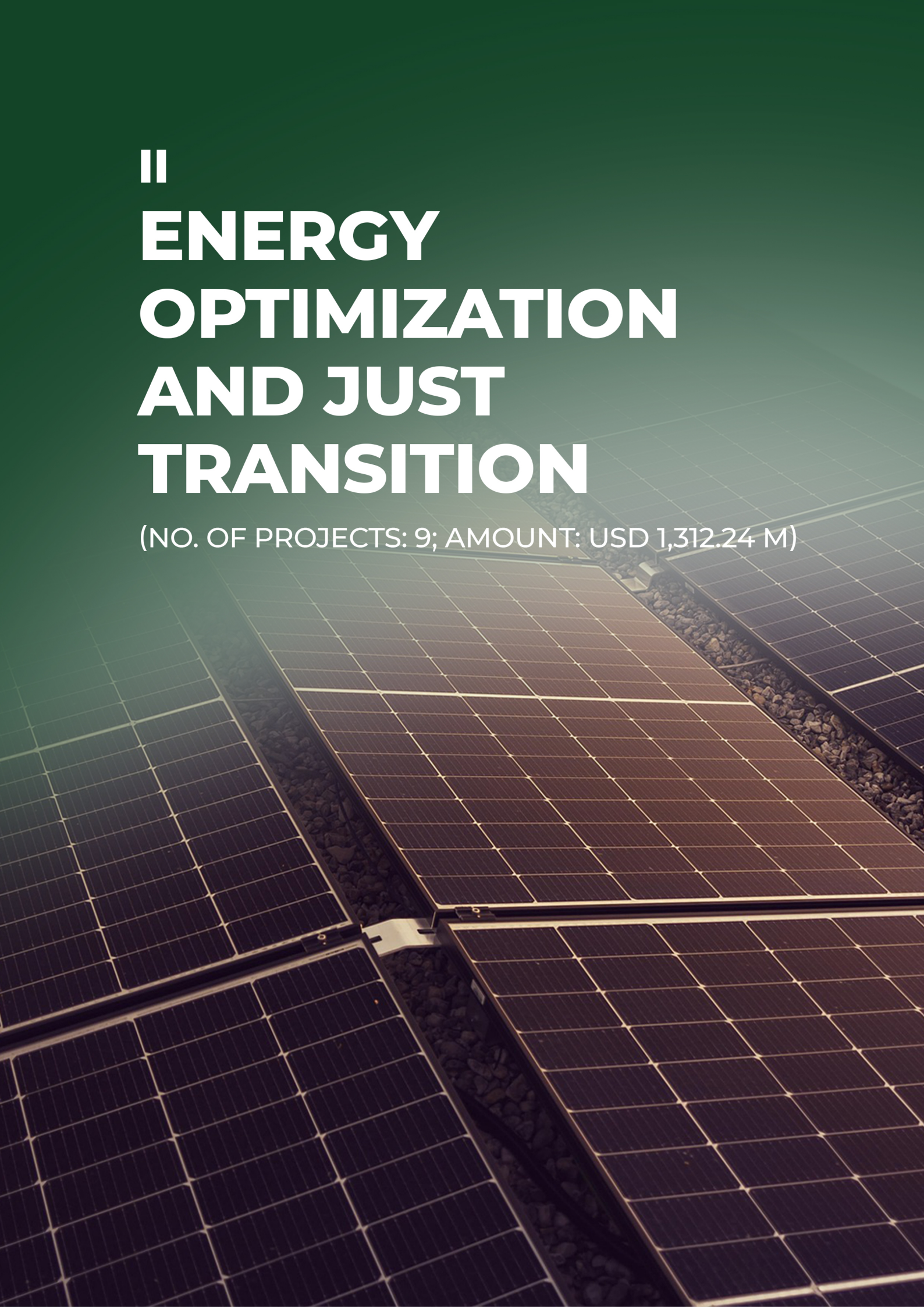
[1]The estimations in the table are proposed by the project proponents. The projects will be refined further under country platform. The dynamic nature of CPP will support the addition of new initiatives and projects at regular intervals as we continue to progress.

Photo credit: Wind power plant in Jhimpir, Pakistan, April 2024 | Q World | Shutterstock

II

ENERGY OPTIMIZATION AND JUST TRANSITION

(NO. OF PROJECTS: 9; AMOUNT: USD 1,312.24 M)



1. FLOATING SOLAR POWER PROJECT

SECTION	DETAILS
Project Title	Floating Solar Power Project
Project Overview	500 MW floating PV supplying K-Electric from Keenjhar Lake.
Team Overview	Go Energy, part of Gas & Oil Pakistan Ltd.
Proponents & Structure	Turnkey EPC, PPA with K-Electric.
Value Proposition and Market Opportunity	Solar on water avoids land competition, supports KE's renewable shift.
Location	Keenjhar Lake, Thatta, Sindh
Policy & Regulatory Context	Solar belt exploitation and grid integration.
Business Model & Go-to-Market Strategy	PPA-backed sales to KE; EPC delivery.
Current Stage & Implementation Plan or Milestones	LOI secured from KE, EPC under bidding.
Key Metrics for Success	861.91 GWh/year, 19.6% CF, IRR 13.94%
Funding Needs	USD 243.63 M
Use of Proceeds	EPC, transmission, O&M
Investment Structure	**Debt:** USD 182.72 M, **Equity:** USD 60.91 M
Financial Highlights	IRR 13.94%, tariff 3.98 USD /kWh
Exit Strategy & Potential	Asset sales or IPP refinancing
Monetized Carbon & Nature Co-Benefits	GHG reduction and lake preservation
SDG Alignment with KPIs	**SDG 7** - Affordable and Clean Energy: Affordable, efficient energy solutions **SDG 9** - Industry, Innovation, Infrastructure: Development of the modern domestic appliance industry **SDG 13** - Climate Action: Significant GHG reduction.
Job Creation	Construction and technical O&M

2. NATIONAL ENERGY EFFICIENT APPLIANCES MARKET TRANSFORMATION PROGRAM

SECTION	DETAILS
Project Title	National Energy Efficient Appliances Market Transformation Program
Project Overview	The National Energy Efficiency and Conservation Authority (NEECA) proposes a national-scale intervention to transform Pakistan's appliance market towards high-efficiency products. The residential sector is the largest consumer of electricity, with inefficient appliances especially air conditioners, refrigerators, and fans, contributing to chronic peak demand and dependence on fossil fuel–based power generation. The project leverages Minimum Energy Performance Standards (MEPS) and a national Labelling Scheme to permanently phase out inefficient appliances, reduce household electricity bills, and mitigate greenhouse gas emissions.
Team Overview	Led by NEECA with participation from Pakistan Standards & Quality Control Authority (PSQCA), financial institutions, appliance manufacturers, and power utilities. Submitting Entity: NEECA, Ministry of Energy (Power Division), Government of Pakistan.
Proponents & Structure	Executing Partners: PSQCA, Commercial Banks/Financial Institutions, Appliance Manufacturers and Importers Association, DISCOs, Retailers.
Value Proposition and Market Opportunity	○ Appliance replacement is the largest single source of electricity savings in Pakistan's residential sector. ○ A shift in the market towards efficient products will deliver 15 TWh of cumulative savings and reduce import dependence. ○ Manufacturers benefit from higher-margin products, while consumers benefit from lower bills.
Location	Nationwide
Policy & Regulatory Context	Aligned with NEECAP 2023–2030, the National Energy Efficiency and Conservation Act, and Pakistan's Climate Prosperity Plan (CPP). Supports enforcement of MEPS, labelling, and consumer rebate policies.
Business Model & Go-to-Market Strategy	Policy-driven Public-Private Partnership (PPP) combining regulatory enforcement of MEPS and labeling, consumer incentives (rebates, exchange programs), manufacturer support (retooling and R&D), awareness campaigns to build consumer demand.

Current Stage & Implementation Plan or Milestones	**Phase I (2026–2027)**: Policy adoption, pilot rebate program, launch of labeling scheme. **Phase II (2028–2030)**: Full market transformation; 75% market share for efficient appliances.
Key Metrics for Success	16000 GWh of electricity savings by 2030. Peak load reduction of 2,000 MW. Annual consumer savings of USD 1.5 billion. Avoided fuel imports of USD 500 M annually.
Funding Needs	**Estimated Total Investment**: USD 120 M. **Required Concessional**: USD 50 M (consumer rebates, awareness, SME support, lab upgrades).
Use of Proceeds	**USD 30 M**: Consumer rebate program. **USD 10 M**: Technical assistance & R&D. **USD 10 M**: Testing labs and enforcement.
Investment Structure	**Government**: 40% **Private Sector**: 60% (R&D, retooling, supply chain)
Financial Highlights	Payback driven by avoided energy subsidies and lower household bills. Macroeconomic benefit: ~USD 500 M annual fuel import reduction.
Cap Table Snapshot	**Government (NEECA/Federal/Provincial)**: USD 10 M (10%) policy enforcement, oversight, co-finance. **Private Sector**: USD 110 M (90%) factory retooling, R&D, supply chain, consumer rebates, awareness, SME support, labs. **Total**: USD 120 M (100%)
Exit Strategy & Potential	Exit through sustained consumer demand for efficient appliances and avoided energy subsidies. Long-term private sector–led market transformation.
Monetized Carbon & Nature Co-Benefits	**Avoided emissions**: ~5 $MtCO_2$ annually by 2030. Improved urban air quality. Lower strain on the national power grid.
SDG Alignment with KPIs	**SDG 7** - Affordable and Clean Energy: Affordable, efficient energy solutions **SDG 9** - Industry, Innovation, Infrastructure: Development of the modern domestic appliance industry **SDG 13** - Climate Action: Significant GHG reduction.
Job Creation	**Direct**: ~10,000 jobs (testing, QC, installation, repair). **Indirect**: ~30,000 jobs (manufacturing, supply chain, retail).

3. 300 MW BALAKOT HYDROPOWER PROJECT

SECTION	DETAILS
Project Title	300 MW Balakot Hydropower Project
Project Overview	BTHPP (300 MW) is a public sector donor-funded national-level hydropower energy project to provide clean energy and jobs, including livelihood initiatives for local communities
Team Overview	BTHPP (300 MW) Project Implementation Unit (PIU) of PEDO, Project Management Consultants (PMC), Safeguard team of the ADB and AIIB
Proponents & Structure	Pakhtunkhwa Energy Development Organization (PEDO); Construction of 300 MW Balakot Hydropower Project with annual energy output of 1143 GWh.
Value Proposition and Market Opportunity	Sale of electricity to the national grid, contribution to the renewable energy mix, and reduction of fossil fuel dependency.
Location	Balakot, District Mansehra, Khyber Pakhtunkhwa
Policy & Regulatory Context	Regulated under ADB and AIIB Safeguards policies; Legal frameworks of the Khyber Pakhtunkhwa Environmental Protection Agency; NEPRA licensing, and PEDO renewable energy framework. Support of NDCs and clean energy production.
Business Model & Go-to-Market Strategy	Electricity sales through the NEPRA-regulated tariff
Current Stage & Implementation Plan or Milestones	Construction work is in progress, with the EPC Contractor having achieved 21.33% progress as of August 31, 2025. The project is scheduled for completion by the end of December 2027.
Key Metrics for Success	Minus 754380 tons of GHG emissions. Approximately 2600 plus Jobs created (direct and indirect, including skilled and unskilled)
Funding Needs	**Estimated project cost**: USD 342.38 M
Use of Proceeds	Project construction, commissioning, and achieving the goals of a clean and sustainable energy supply.
Investment Structure	**Sale of electricity**. Revenue-based through the long-term sale of electricity
Financial Highlights	USD 342.38 M

Exit Strategy & Potential	Stable revenue through electricity sales
Monetized Carbon & Nature Co-Benefits	Minus 754,380 tons of GHG emissions as compared to thermal, biodiversity conservation, slope protection, and livelihood enhancement.
SDG Alignment with KPIs	**SDG 1** - No Poverty **SDG 8** - Decent Work & Economic Growth **SDG 12** - Responsible Consumption & Production **SDG 13** - Climate Action **SDG 15** - Life on Land
Job Creation	Approximately 1600 jobs, including direct jobs collectively during construction and operations phases, and indirect opportunities in associated industries.

4. 157 MW MADYAN, SWAT RIVER HYDROPOWER PROJECT

SECTION	DETAILS
Project Title	157 MW Madyan, Swat River Hydropower Project
Project Overview	A Public sector donor-funded national-level hydropower energy project to provide clean energy and jobs, including livelihood initiatives for local communities.
Team Overview	Gabral Kalam HPP PMU, KHRE PMO, and Project Implementation Consultants, with technical oversight from KHRE PMO and PEDO.
Proponents and Structure	Pakhtunkhwa Energy Development Organization (PEDO) Construction of 157 MW HPP GWH.
Value Proposition and Market Opportunity	Sale of electricity to the national grid and contribution to KP's renewable energy mix; reduction of fossil fuel dependence.
Policy and Regulatory Context	It is regulated under the World Bank's Operational Policies (OPs), the Environmental Protection Agency's (EPA) KP and KP legal framework, NEPRA licensing, and the PEDO renewable energy framework. Support of NDCs and clean energy production
Business Model and Go-to-Market Strategy	Electricity sales through NEPRA-regulated tariff.
Current Stage and Implementation Plan or Milestones	**Pre-construction phase**. One-third of the total land required is completed, and feasibility and detailed design studies are also complete. Procurement and contractor mobilization are in process.

Key metrics for Success	Minus 28 M tons of GHG emissions Approximately 1400 Jobs created (direct and indirect, Skilled and unskilled)
Funding Needs/Current Status	USD 284.14 M
Use of Proceeds	Project construction, commissioning, and achieving the goals of a clean and sustainable energy supply.
Investment Structure	**Sale of electricity**. Revenue-based through long-term sales
Financial Highlights	**EIRR**: 16.92% **Benefit-Cost Ratio**: 1.3
Exit Strategy and Potential	Stable revenue through electricity sales; potential long-term concession or divestment through public-private partnerships
Monetized Carbon and Nature Co-Benefits	Approximately minus 28 M tons as compared to thermal, Biodiversity conservation, soil protection, water sustainability, and livelihood enhancement.
SDG Alignment with KPIs	**SDG 1** - No Poverty **SDG 8** - Decent Work & Economic Growth **SDG 12** - Responsible Consumption & Production **SDG 13** - Climate Action **SDG 15** - Life on Land
Job Creation	Approximately 1400 including (direct jobs during construction and operations, indirect opportunities in associated industries).

5. 88 MW GABRAL KALAM HPP AT GABRAL RIVER

SECTION	DETAILS
Project Title	88 MW Gabral Kalam HPP at Gabral River
Project Overview	A Public sector donor-funded national-level hydropower energy project to provide clean energy and jobs, including livelihood initiatives for local communities.
Team Overview	Gabral Kalam HPP PMU, KHRE PMO, and Project Implementation Consultants, with technical oversight from KHRE PMO and PEDO.

Proponents and Structure	Pakhtunkhwa Energy Development Organization (PEDO) Construction of 88 MW HPP 334.5 GWH.
Value Proposition and Market Opportunity	Sale of electricity to the national grid and contribution to KP's renewable energy mix; reduction of fossil fuel dependence.
Policy and Regulatory Context	It is regulated under the World Bank's Operational Policies (OPs), the Environmental Protection Agency's (EPA) KP and KP legal framework, NEPRA licensing, and the PEDO renewable energy framework. Support of NDCs and clean energy production
Business Model and Go-to-Market Strategy	Electricity sales through NEPRA-regulated tariff.
Current Stage and Implementation Plan or Milestones	Construction at the colony site is in progress, and procurement for the weir and power house is underway. Land acquisition, feasibility, and design studies completed. Procurement and contractor mobilization in the pipeline.
Key Metrics for Success	Minus 7.12 M tons of GHG emissions Approximately 850 Jobs created (direct and indirect, including skilled and unskilled)
Funding Needs/Current Status	USD 130.11 M
Use of Proceeds	Project construction, commissioning, and achieving the goals of a clean and sustainable energy supply.
Investment Structure	**Sale of electricity**. Revenue-based through the long-term sale of electricity
Financial Highlights	**EIRR**: 16.69% **Benefit-Cost Ratio**: 1.2
Exit Strategy and Potential	Stable revenue through electricity sales
Monetized Carbon and Nature Co-Benefits	Minus 7.12 tons of GHG emissions as compared to thermal, Biodiversity conservation, soil protection, water sustainability, and livelihood enhancement.
SDG Alignment with KPIs	**SDG 1**: No Poverty **SDG 8**: Decent Work & Economic Growth **SDG 12**: Responsible Consumption & Production **SDG 13**: Climate Action **SDG 15**: Life on Land
Job Creation	Approximately 850 jobs, including direct positions during construction and operations, as well as indirect opportunities in associated industries.

6. 84 MW GORKIN MATILTAN HPP AT OSHU RIVER

SECTION	DETAILS
Project Title	84 MW Gorkin Matiltan HPP at Oshu River, Kalam District, Swat, Khyber Pakhtunkhwa
Project Overview	A Public sector national-level hydropower energy project to provide clean jobs, including livelihood initiatives for local communities
Team Overview	Gorkin Matiltan HPP PMU, Management Consultants
Proponents & Structure	Pakhtunkhwa Energy Development Organization (PEDO), Construction of 84 MW HPP 346 GWh.
Value Proposition and Market Opportunity	Sale of electricity to the national grid and contribution to KP's renewable energy mix; reduction of fossil fuel dependence.
Location	District Swat, Khyber Pakhtunkhwa
Policy & Regulatory Context	Govt. of KPK, Environmental Protection Agency (EPA) KP, and KP legal framework, NEPRA licensing, and PEDO
Business Model & Go-to-Market Strategy	Electricity sales through NEPRA-regulated tariff.
Current Stage & Implementation Plan or Milestones	Construction in Progress 86% completed.
Key Metrics for Success	Annual Benefit CO_2 Emission /GWh 400 tonnes Approximately 700 Jobs created (direct and indirect, skilled and unskilled)
Funding Needs	USD 127.71 M
Use of Proceeds	Completion of remaining Civil & E&M works, Construction of transmission line, Commissioning, and achieving goals of clean and sustainable energy supply.
Investment Structure	Sale of electricity Revenue-based through long-term sale of electricity (Power Purchase Agreement model).
Financial Highlights	EIRR: 21.6 % Benefit-Cost Ratio: 2.24:1
Exit Strategy & Potential	Stable revenue through electricity sales; potential long-term concession or divestment through public-private partnerships

Monetized carbon and nature co-benefits	Approximately CDM Benefits of USD 2.97 M (830.4 M Rupees)
SDG alignment with KPIs	**SDG 1**: No Poverty **SDG 8**: Decent Work & Economic Growth **SDG 12**: Responsible Consumption & Production) **SDG 13**: Climate Action **SDG 15**: Life on Land
Job creation	Approximately 700 jobs created (direct and indirect, skilled and unskilled)

7. CONVERSION OF TRADITIONAL BRICK KILNS TO ZIG ZAG TECHNOLOGY

SECTION	DETAILS
Project Title	Conversion of Traditional Brick Kilns to ZigZag Technology
Project Overview	The project will convert 400 traditional brick kilns to Zigzag technology, reducing coal use, cutting greenhouse gas and black carbon emissions, and improving air quality. This transition supports climate change mitigation, enhances worker health, and promotes cleaner, more sustainable brick production.
Team Overview	Project Management Unit at EPA Head Office, along with the Regional Staff of the Project
Proponents & Structure	Environmental Protection Agency, Khyber Pakhtunkhwa
Value Proposition and Market Opportunity	Lower fuel requirements and associated costs, improved quality and quantity of bricks, and environmentally friendly production.
Location	Khyber Pakhtunkhwa Province of Pakistan
Policy & Regulatory Context	Khyber Pakhtunkhwa Environmental Protection Act, 2014, Khyber Pakhtunkhwa Climate Change Policy, 2022, and Khyber Pakhtunkhwa Brick Kilns Registration Ordinance, 2024.
Business Model & Go-to-Market Strategy	Since private owners own the brick kilns, the government shall only assist in its conversion to Zig Zag technology by providing the necessary items/equipment required for the conversion. The desired conversion will result in substantial financial, environmental, and climate change benefits to society.

Current Stage & Implementation Plan or Milestones	Converting 400 traditional brick kilns to zig-zag technology shall result in substantial financial, environmental, and climate change benefits. The project shall be implemented in 03 years, i.e., from 2026-27 to 2028-29.
Key Metrics for Success	Four hundred traditional brick kilns have been converted to Zig-Zag technology. Reduction in fuel usage for the baking process. Reduction in greenhouse gas emissions.
Funding Needs	The project shall be implemented on a cost-sharing basis. USD 4 M
Use of Proceeds	Procurement of equipment required in the conversion of traditional brick kilns to Zig Zag technology. Administrative and Operational costs. Provision of logistics support to the project team.
Investment Structure	The Government of Khyber Pakhtunkhwa, under the project, shall provide the items/equipment required by brick kiln owners for the conversion of traditional brick kilns to zigzag technology.
Financial Highlights	Reduction in fuel costs associated with the making and baking process. Reduction of health costs due to reduced air pollution and airborne diseases associated with brick kiln pollution. Improvement in the quality and quantity.
Exit Strategy & Potential	Private owners own all the brick kilns. The Government. Shall only provide the desired items/equipment required for the conversion of brick kilns to Zig-Zag technology.
Monetized Carbon & Nature Co-Benefits	Converting 400 kilns to zig zag technology can cut an estimated 120,000–180,000 tons of CO_2e emissions each year, creating a potential carbon credit value of US D 0.6–1.8 M annually, approximately (based on conservative carbon prices). Alongside financial returns, the project delivers nature co-benefits by improving air quality, reducing smog-related health risks, slowing glacier melt from black carbon, lowering coal demand, and safeguarding agriculture and local ecosystems.
SDG Alignment with KPIs	The project aligns with multiple SDGs by improving public health (SDG 3: Good Health and Well-being) through cleaner air, enhancing energy efficiency with reduced coal use (SDG 7: Affordable and Clean Energy), creating safer and more productive workplaces (SDG 8: Decent Work and Economic Growth), and modernizing industry with cleaner technology (SDG 9: Industry, Innovation and Infrastructure). It also contributes to sustainable urban environments (SDG 11: Sustainable Cities and Communities), supports climate action by avoiding up to 180,000 tons of CO_2e annually (SDG 13: Climate Action), and safeguards land and ecosystems from pollution (SDG 15: Life on Land).
Job Creation	14 direct job creations proposed.

8. CLEAN COOKSTOVE PROJECT PILOT INITIATIVE

SECTION	DETAILS
Project Title	Clean Cookstove Project Pilot Initiative
Project Overview	Pilot clean cookstove initiative to deploy 2,200 improved biomass cookstoves that will generate significant carbon emission reductions and household-level health and economic benefits.
Proponents & Structure	Resources Future
Location	Sindh, Pakistan
Policy & Regulatory Context	It responds to Pakistan's climate commitments and clean cooking policy objectives. Linkage with the Gold Standard Methodology and aligns with Article 6.2 mechanisms of the Paris Agreement.
Business Model & Go-to-Market Strategy	Donor-funded pilot with monetization of carbon credits over time.
Current Stage & Implementation Plan or Milestones	Pilot phase initiated
Key Metrics for Success	2,200 stoves deployed 5,500–6,500 tCO_2 annual carbon reduction PM2.5 and CO reduction by 60% 5–7 hours/week saved in fuelwood collection USD 35 - 50 saved annually per household on fuel 38,500 - 45,500 tCO_2 carbon credits over 7 years Reduced deforestation (2,750 tonnes of wood saved annually)
Funding Needs	USD 300,000
Use of Proceeds	Feasibility study Pilot roll-out of 2,200 cookstoves Community awareness and training Project validation and registration
Investment Structure	Grant-based pilot, potential future revenue from carbon markets (via Article 6.2)
Financial Highlights	**Cost per Stove**: USD 40 **Carbon Credit Price (estimated)**: USD 8/tCO_2 **Revenue from Credits (7 years)**: USD 308,000 – 364,000 **Potential Financial Savings per Household**: USD 35–50/year

Exit Strategy & Potential	Scale-up potential based on pilot success and carbon credit revenue
SDG Alignment with KPIs	SDG 3: Good Health and Well-being SDG 7: Affordable and Clean Energy SDG 13: Climate Action

9. 100 MW CHAGAI SOLAR PARK

SECTION	DETAILS
Project Title	Chaghi 100 MW Utility-Scale Solar Park (Chagai Solar Park)
Project Overview	Development, commissioning, and operation of 100 MWdc utility-scale solar PV in Chagai District, Balochistan. Provides renewable power to mining operations and the provincial grid, displacing fossil fuels. Contributes ~193 GWh of clean energy annually, avoiding ~96 kt CO_2 per year.
Team Overview	Lead: Government of Balochistan – Energy Department Partners: UNDP/ADB/World Bank (as Accredited Entity), private IPP/EPC developers, NEPRA, NTDC/DISCO for grid integration
Proponents & Structure	Government of Balochistan: 15% co-financing (land, permits, limited equity/guarantee) Accredited Entity: To be confirmed (e.g., UNDP/ADB/World Bank) Climate Finance Funders: 85% (GCF, Adaptation Fund, bilateral, multilateral donors)
Value Proposition and Market Opportunity	Leverages high solar potential in Balochistan Provides reliable, clean energy to the mining anchor load Demonstrates replicable provincial-scale renewable model Reduces dependence on imported fossil fuels
Location	Chagai/Chaghi District, Balochistan – Reko Diq mining hinterland (final site after solar & grid studies)
Policy & Regulatory Context	NDC 2.0: 60% renewable/alternative energy in power by 2030 NDC 3.0: Focus on resilient, renewable-based infrastructure post-2030 National green growth and energy diversification policies
Business Model & Go-to-Market Strategy	Public–private partnership (PPP) Electricity supply to mining companies (anchor customers) and provincial/national grid under long-term PPAs

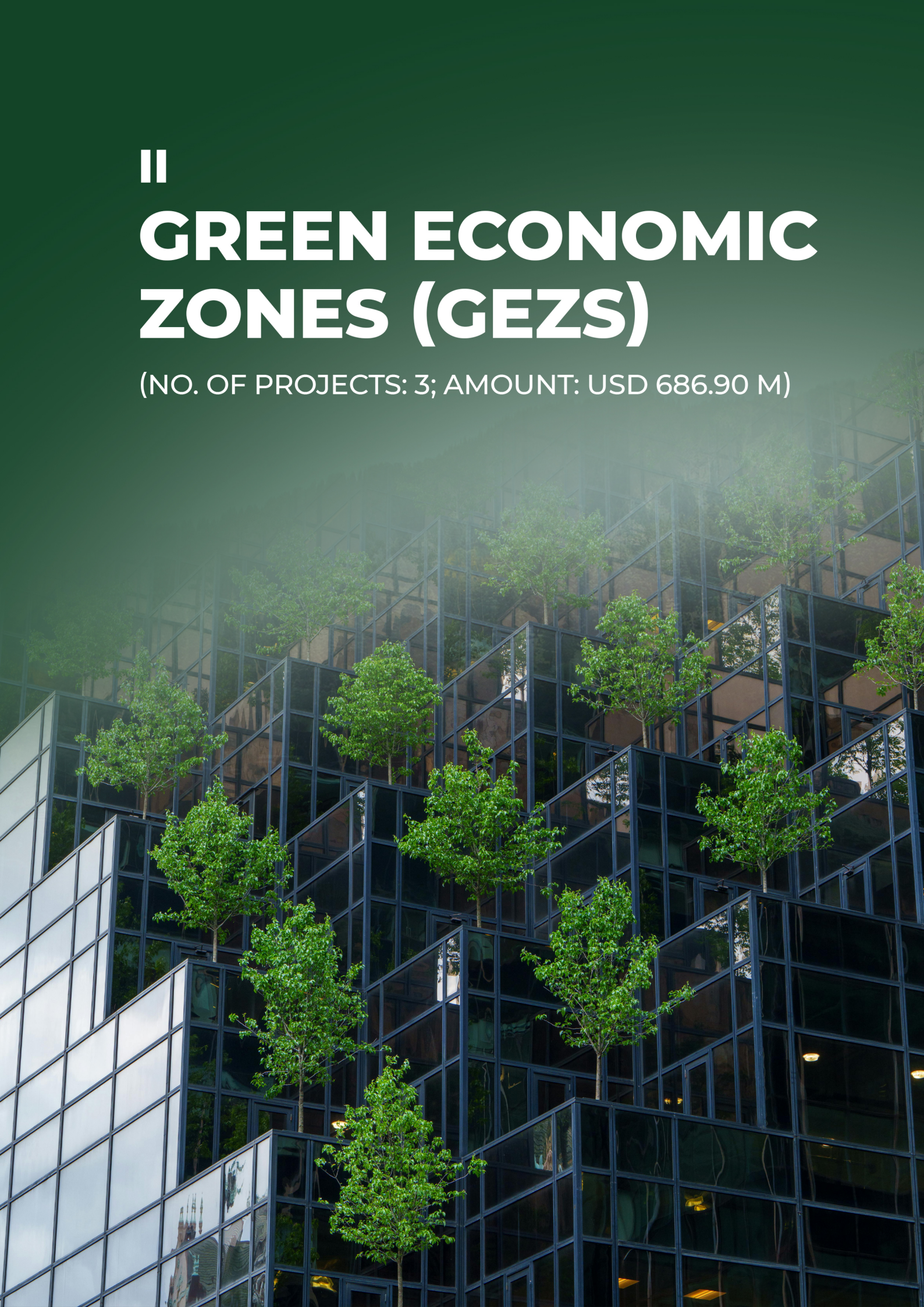
Current Stage and Implementation Plan or Milestones	**Stage:** Concept / early development **Milestones:** (i) solar and grid studies, (ii) site selection & permitting, (iii) financial structuring & AE confirmation, (iv) EPC/IPPs procurement, (v) construction & commissioning
Key Metrics for Success	**Installed renewable capacity:** 100 MWdc **Annual generation:** ~193 GWh Annual CO_2 avoided: ~96 $ktCO_2$
Funding Needs/Current Status	USD 60 M
Use of Proceeds	Construction, grid integration, EPC contracts, local capacity building, stakeholder engagement, future e-waste & BESS management
Investment Structure	**Blended finance:** 85% concessional climate finance + 15% government equity/guarantee
Financial Highlights	feasibility and financial structuring stage)
Exit Strategy and Potential	Options include IPP takeover, refinancing, or government/utility integration
Monetized Carbon and Nature Co-Benefits	~96 $ktCO_2$ avoided annually Supports renewable energy transition and cleaner mining operations

Photo credit: Keenjhar Lake in Sindh, Pakistan, October 2020 | A. Savin | Wikipedia

II

GREEN ECONOMIC ZONES (GEZS)

(NO. OF PROJECTS: 3; AMOUNT: USD 686.90 M)



10. ENHANCING GREEN EXPORT CAPACITY THROUGH GREEN FINANCING

SECTION	DETAILS
Project Title	Enhancing Green Export Capacity Through Green Financing
Project Overview	A USD 615M concessional finance program to support green exports in Pakistan.
Team Overview	Led by EXIM Bank; PFIs involved.
Proponents & Structure	DFI-backed blended finance with grants and concessional debt.
Value Proposition and Market Opportunity	Responds to EU CBAM and industrial decarbonization.
Location	Pakistan (textile, leather, rice, surgical)
Policy & Regulatory Context	Aligned with Pakistan's 2030 emission reduction goals.
Business Model & Go-to-Market Strategy	Loans via PFIs and IFIs; technical support via EXIM.
Current Stage & Implementation Plan or Milestones	Structuring phase: stakeholder sessions completed.
Key Metrics for Success	80 $MtCO_2e$ avoided; IRR 3.08%
Funding Needs	USD 615 M (loan + grants)
Use of Proceeds	Machinery replacement, clean energy upgrades.
Investment Structure	Blended debt model with FX cover.
Financial Highlights	**NPV**: USD 9.9B; **IRR**: 3.08%
Exit Strategy & Potential	Debt repayment through industrial returns.
Monetized Carbon & Nature Co-Benefits	Yes – carbon reduction and energy savings.
SDG Alignment with KPIs	**SDG 8**: Decent Work and Economic Growth **SDG 9**: Industry, Innovation and Infrastructure **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action
Job Creation	Skilled industrial employment.

11. BALOCHISTAN SOLAR ENERGY PROJECT

SECTION	DETAILS
Project Title	Balochistan Solar Energy Project
Project Overview	A portfolio of grid-connected and captive solar power plants in Balochistan under the PPP mode (DBFMOT). **Total capacity**: 95 MW across four sites (Hub – 50 MW, Gwadar – 20 MW, Quetta – 20 MW, Bostan SEZ – 5 MW). Projects will collectively generate ~208 GWh annually, contributing to energy security and supporting the province's clean energy transition.
Team Overview	Public Partner: Government of Balochistan (GoB). Project Authority: LIEDA, GIEDA, QITE, Bostan SEZ Authorities. Private Partner: To be selected through competitive bidding. Developers and lenders provide equity + commercial debt.
Proponents & Structure	**Public-Private Partnership (PPP)**. GoB holds 12% equity (Class B shares), the private developer has 18% (60% of the equity), and 70% is held through commercial debt. Lender's security includes lien over assets, SBLC, and step-in rights.
Value Proposition and Market Opportunity	Rising demand for reliable power in Balochistan's industrial estates and special economic zones (SEZs). Projects reduce reliance on imported fossil fuels, lower energy tariffs over time, and align with national renewable energy policy targets.
Location	Hub (LIEDA – 50 MW), Gwadar (GIEDA – 20 MW), Quetta (QITE – 20 MW), Bostan SEZ (5 MW)
Policy & Regulatory Context	Aligned with National Renewable Energy Policy, Balochistan PPP Act 2021, NEPRA tariff regulations, and provincial energy strategies. GoB equity and revenue-sharing fixed at 12% and 10% respectively (from year 10 onwards).
Business Model & Go-to-Market Strategy	**PPP DBFMOT model**. 20-year concession (2 years construction + 18 years operation). Power is sold to captive consumers and distribution companies (QESCO, KE) at approved NEPRA tariffs. Revenue-sharing with GoB post debt repayment.
Current Stage & Implementation Plan or Milestones	Transaction structure prepared; financial feasibility completed. Each project was designed with a 20-year concession. Construction periods: Hub (2 yrs), Gwadar (2 yrs in phases), Quetta (1 yr), Bostan (6 months). COD followed by 18–19 years of operation.

Key Metrics for Success	**Total capacity**: 95 MW Net annual production ~208,050,000 kWh **Project IRR**: 20–24% (developer) **Payback**: 7–10 years **Govt. revenue share**: 10% from year 9/10 Tariffs between PKR 8–15.5/kWh (site dependent).
Funding Needs	USD 58 M
Use of Proceeds	EPC (solar modules, inverters, civil/electrical works), non-EPC costs, IDC, project development, O&M setup.
Investment Structure	30% equity (18% private, 12% GoB) + 70% commercial debt. Lender protections in place.
Financial Highlights	**Hub**: 50 MW, IRR 20.89%, payback 8.9 yrs, tariff PKR 10–13/kWh **Gwadar**: 20 MW, IRR 20.52%, payback 9.9 yrs, tariff PKR 8–12/kWh **Quetta**: 20 MW, IRR 21.48%, payback 8.9 yrs, tariff PKR 11.5/kWh **Bostan**: 5 MW, IRR 23.32%, payback 7.9 yrs, tariff PKR 15.5/kWh. **Overall IRR range**: 20–24%.
Cap Table Snapshot	GoB (12% equity, Class B shares), Private Developer (18% equity, project developer/operator), Commercial Lenders (70% debt).
Exit Strategy & Potential	The project generates stable cash flows through PPAs/tariffs. Exit options: sale of equity to infrastructure funds, refinancing debt, or long-term O&M contracts. Potential to replicate across other SEZs and districts.
Monetized Carbon & Nature Co-Benefits	~208 GWh/yr clean electricity displaces fossil-fuel power, reducing GHG emissions. Contributes to improved energy security, lower air pollution, and supports industrial growth with renewable energy.
SDG Alignment with KPIs	**SDG 7**: Affordable & Clean Energy – MW capacity added, kWh produced **SDG 8**: Decent Work & Economic Growth – green jobs in O&M, EPC **SDG 9**: Industry, Innovation, Infrastructure – powering SEZs/industrial estates **SDG 13**: Climate Action – CO_2 avoided through solar substitution
Job Creation	Construction jobs across four sites (civil, electrical, and EPC workforce). Long-term O&M green jobs. Indirect jobs in SEZ-linked industries enabled by stable clean power supply.

12. FAISALABAD GARMENT CITY INDUSTRIAL COMPLEX (FGCC-PP)

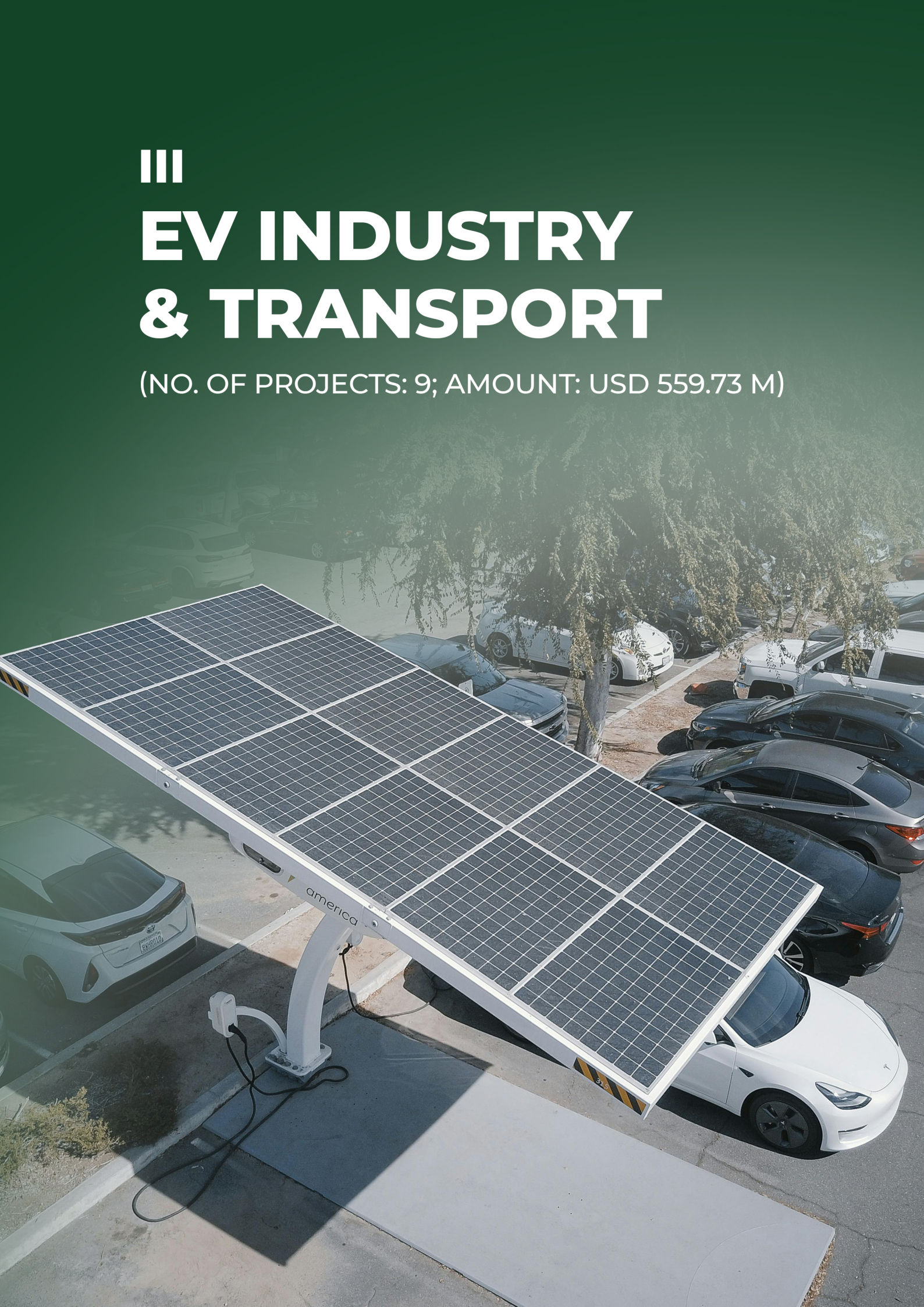
SECTION	DETAILS
Project Title	Faisalabad Garment City Industrial Complex (FGCC-PP)
Project Overview	The Faisalabad Garment City (FGCC) project aims to redevelop and optimally utilize FGCC's greenfield and brownfield properties under a Public-Private Partnership (PPP). This initiative reduces capital costs for SMEs, enhances export competitiveness, and promotes industrial clustering, aligning with national textile and SME policies.
Team Overview	**Consortium Partners**: IQ Capital Plus (Lead Transaction Advisor), Arif Habib Dolmen REIT Management Ltd, Nawaz Hussain Sikander (Legal Advisor)
Proponents & Structure	**Procuring Agency**: Faisalabad Garment City Company (FGCC). **PPP Mode**: Design, Build, Finance, Maintain, Operate and Transfer (DBFMOT). **Concession Period**: 25 years (including 2 years construction).
Value Proposition and Market Opportunity	Lowers entry barriers for SMEs with pre-built compliance-ready facilities. Strengthens Pakistan's textile exports through improved quality, sustainability, and compliance with buyer standards. Fosters SME clusters, innovation, and supply chain synergies. Supports national goals outlined in the Textile Policy 2020–25 and the SME Policy 2021.
Location	Value Addition City (VAC), Khurianwala, Faisalabad.
Policy & Regulatory Context	Textile Policy 2020–25 (value addition, export competitiveness). SME Policy 2021 (access to infrastructure, global markets). CPEC Industrial Cooperation Framework. Punjab Environmental Protection Act, 1997, and IEE/EIA Regulations, 2022.
Business Model & Go-to-Market Strategy	Rental-based income (PKR 20–35 per sq. ft). Ancillary services (utilities, training, daycare, logistics). Flexible leasing, including rent-to-own options for SMEs.
Current Stage & Implementation Plan or Milestones	Techno-economic feasibility completed (2025). Initial Environmental Examination completed (2024). Transaction structuring and PPP model finalized. Procurement and financial close targeted.

Key Metrics for Success	Occupancy rate of 70% by Year 3. A 15–20% export capacity boost for SMEs. **Job creation:** 5,000+ direct jobs (40% women). Compliance with international buyer standards (sustainability, safety).
Funding Needs	**Total project cost:** USD 13.90 M **Funding structure:** Mix of developer equity (25–30%), Government Viability Gap Funding (20–30%), and commercial debt (40–50%).
Use of Proceeds	Construction of industrial and commercial buildings. Provision of utilities, training centres, daycare, and logistics. Maintenance and operational reserves.
Investment Structure	PPP-DBFMOT (Design-Build-Finance-Maintain-Operate-Transfer) model with phased construction, rental income, and ancillary service
Financial Highlights	**IRR (Equity):** ~20–22%. **Dividend IRR:** ~16–17%. **Payback period:** ~9 years. Occupancy breakeven within 3 years.
Cap Table Snapshot	**Developer Equity:** 25–30%. **Government VGF Loan:** 20–30%. **Commercial Debt:** 40–50%.
Exit Strategy & Potential	Concession transfer to FGCC at end of term. Investor returns secured through rental income, energy markups, and ancillary services.
Monetized Carbon & Nature Co-Benefits	Energy-efficient infrastructure and captive renewable power supply. Resource efficiency (waste minimization, water management). Lower emissions via consolidated logistics and industrial clustering.
SDG Alignment with KPIs	**SDG 5:** Gender Equality (40% women workforce, daycare). **SDG 8:** Decent Work & Economic Growth (jobs, SME growth) **SDG 9:** Industry, Innovation, Infrastructure (modern industrial cluster)
Job Creation	5,000+ direct jobs, with 40% targeted for women, plus indirect employment through SME supply chains.

III

EV INDUSTRY & TRANSPORT

(NO. OF PROJECTS: 9; AMOUNT: USD 559.73 M)



13. ECONOMIA MANUFACTURING PROJECT

SECTION	DETAILS
Project Title	Economia Manufacturing Project
Project Overview	Economia, a project of AGECO (Pvt.) Ltd. aims to establish a large-scale manufacturing setup for solar-powered electric vehicles (SEVs) and retrofitting kits (including PMDC motors and Li-ion batteries) in Pakistan. The initiative reduces reliance on fossil fuels, addresses rising oil import costs, lowers public transport expenses, and provides environmentally friendly alternatives. Vehicles can self-generate ~50 km/day via solar energy, recover ~20 km through kinetic energy, and hold ~100 km of basic storage (extendable with additional batteries). Phase 1 models target city speeds (≤60 km/h), with Phase 2 high-speed models (≤150 km/h) planned. The project intends to produce 150 vehicles/week in Phase 1, scaling up to 100 vehicles/day within one year.
Team Overview	**Mr. Muhammad Aslam Azad** – Project Head (45+ years HVAC & renewable energy experience). **Mr. Ahmed Aslam** – Chartered Accountant & Project Management Professional. **Mr. Adil Aslam** – Engineer with international renewable energy project experience. Additional management positions: CFO, COO, HR Manager, Business Development Manager, Technical Lead, Logistic Manager, and Procurement Manager. 30% of the team will comprise women.
Proponents & Structure	**Proponent**: AGECO (Pvt.) Ltd., a family-owned company registered with SECP. **Equity structure**: 100% equity, privately held.
Value Proposition and Market Opportunity	**Competitive pricing**: half the cost of imported EVs from China. **Target market**: middle-income small car owners, ride-hailing drivers, motorbike users, and government institutions (Defense Forces, Police, NADRA, PTCL, Rescue 1122). **Market size**: 7 M vehicles replacement demand in Pakistan. **Market note**: Government survey cites a replacement demand of ~7 M vehicles nationally, while another dataset notes ~700,000 passenger cars on the road (60% ≤1000cc). Both figures highlight the large-scale opportunity. **Affordability**: Opportunity for retrofitting existing vehicles with affordable kits.
Location	Industrial Zone, Rawalpindi/Islamabad (Kahuta Triangle, Humak)
Policy & Regulatory Context	EV Policy 2019 supports the adoption of electric vehicles. AGECO is already SECP-registered, with WP-29 manufacturing & road safety standards approved by PSQCA. Design patents for 10 solar electric vehicle models approved by IPO Pakistan.

Business Model & Go-to-Market Strategy	**Technology**: PMDC motors, Li-ion batteries, solar panels, controllers. **Products**: Four SEV variants + retrofitting kits. **Distribution**: dealer networks in major cities, financing options via banks and leasing firms. **Long-term plan**: Localize production of motors and batteries to reduce reliance on imports.
Current Stage & Implementation Plan or Milestones	Completed feasibility studies and prototypes. Prototypes displayed at exhibitions since 2014 (~15,000 visitors; 1,000+ test drives) and reportedly in limited use by defense organizations. **Key milestones after funding**: **Month 2**: Land acquisition, hire a strategic team. **Month 6**: Plant construction, hire management staff. **Month 8**: Machinery installation, staff training. **Month 10**: First vehicle production, marketing & distribution setup. **Month 12**: Full operational cycle, 100% capacity production.
Key Metrics for Success	Production capacity utilization. Average downtime reduction. Throughput ratio (vehicles/week). Safety incidents per employee. Inventory turns. EBITDA margins.
Funding Needs	USD 20 M is the initial equity investment. Additional USD 200 M (expansion to 100 vehicles/day).
Use of Proceeds	**Land & infrastructure**: USD 2 M. **Building construction**: USD 2 M. **Machinery**: USD 1.5 M. **Power generation (500kW solar system)**: USD 0.5 M. **Inventory & working capital**: USD 14 M.
Investment Structure	100% equity investment in USD . Open to impact investors, private equity, venture capital, strategic and industrial investors.
Financial Highlights	**Average car sale price**: USD 5,500 × 7,200 cars/year. **Retrofitting kit**: USD 2,000 × 7,200 kits/year. **Production cost assumption**: approximately USD 3,850 per car and USD 1,400 per kit. **Admin/marketing/distribution OPEX**: ~USD 250,000/month. **IRR**: ~59%. **Payback**: ~20 months. **Breakeven**: within 2 years.
Cap Table Snapshot	**Current equity**: USD 1 M, 100% family-owned. A detailed cap table and proposed share allocation are to be clarified with AGECO before investor engagement.

Exit Strategy & Potential	Investors exit through IPO, strategic sale, or acquisition by large EV/automotive companies. High-growth market with scaling potential in the regional EV sector.
Monetized Carbon & Nature Co-Benefits	Reduced CO_2 emissions from fossil fuel replacement. Carbon credit monetization is possible through the avoidance of emissions. Further quantification of avoided emissions (tCO_2/year) is recommended for investor review. Reduction in the national oil import bill.
SDG Alignment with KPIs	**SDG 7** - Affordable & Clean Energy **SDG 9** - Industry, Innovation & Infrastructure **SDG 11** - Sustainable Cities & Communities **SDG 13** - Climate Action. KPIs- CO_2 emissions avoided, jobs created, women employed, vehicles produced, foreign exchange saved.
Job Creation	Estimated: 500+ jobs in early phases, with significant indirect job creation in supply chain & service networks—30% women inclusion target.

14. EV RETROFITTING PROJECT

SECTION	DETAILS
Project Title	EV Retrofitting Project
Project Overview	The proposed project is for a manufacturing setup to produce retrofitting kits (including Permanent Magnet DC motors and lithium-ion batteries) for existing ICE vehicles. The current proposal is for introducing the manufacturing and installation of retrofitting kits (including 3 & 5 KW PMDC motors and Li-ion batteries) to existing engine vehicles up to 1000 cc.
Team Overview	**The core team will further comprise the following designations and qualifications**: CFO (ACA, ACCA, CMA) Senior Operations Manager/COO (MBA) Accountant (M.COM) HR Manager (MBA) Business Development Manager (BBA) Technical Lead (BSc. Engineering) Logistic Manager (MBA/BBA) Procurement Manager (MBA/BBA (Note: During the hiring stage, special consideration will be given to gender equality. 30% of the team will comprise women).

Proponents & Structure	AGECO (Pvt.) Ltd. is a family-owned private limited company (registered with SECP), specializing in the manufacturing of numerous HVAC and alternative energy products under the brand name "ECONOMIA" since 1997. The company has successfully designed and manufactured the world's first solar electric commercial car without an engine. AGECO is one step ahead of other manufacturers that are producing only electric cars, whereas AGECO has incorporated solar as a prime energy source considering energy crises in Pakistan as well as the third world.
Value Proposition and Market Opportunity	**Market Opportunity:** The primary target market for this project is domestic and commercial (taxi) drivers who currently own small cars and motorbikes. Government institutions like the Defense Forces of Pakistan, Police, 1122, NADRA, PTCL etc. can also benefit from this product. According to available statistics, there are over 700,000 passenger cars on the roads nationwide, of which more than 60% are small cars with an engine capacity of up to 1000 cc. This category belongs to the middle-income group which is a major chunk of the target market. This is a sizable market segment keeping and considering the purchasing power. Examples include Captains, Drivers and investors who are in "Ride Hailing" services like Careem, Uber & Drive-In, and want to earn better profit margins. Here lies a significant opportunity to create a network of support, services & spares in all large cities nationwide, with trained and competent technicians for electric vehicles. **Value Proposition:** The goal of this project is to establish a manufacturing plant capable of producing 200 kits/day and scale up to 2000 kits/day to meet a target of 80% convergence from ICE to EV by 2030. The use of retrofitting kits for EVs will reduce CO2 emissions and lower the national economy's oil import bill, while also positively impacting the environment by having a long-term positive effect on global warming and climate change. This project will provide the local population an opportunity to get trained and developed technically while working on emerging technologies involved.
Location	The company is located in the industrial zone of Rawalpindi/Islamabad (Kahuta triangle, Humak). The location is the heart of the twin cities facilitating business operations, sales and distribution effectively.
Policy & Regulatory Context	The Government of Pakistan has already issued a draft EV policy 2019, encouraging investors and consumers to use electric vehicles in future. Following international trends and rising fuel prices, use of EVs is encouraged by national governments and international policy makers. There is no incremental regulatory requirement as the company is already registered with SECP as a Private Limited Company and necessary license approvals have already been obtained.

Business Model & Go-to-Market Strategy	The company utilizes PMDC motors, Li-ion batteries, and electronic controllers in the design and production of retrofitting kits. The advantage of using a combination of these technologies is to replace the combustion engines currently used in domestic and commercial vehicles in Pakistan, which will help reduce carbon emissions in the environment and decrease the burden of expensive oil imports on the national economy. The retrofitting kits can be charged from home (high/low setting) within 2-4 hours, and from commercial charging stations within 30 minutes. While there are currently no existing dealers, the company plans to establish distribution centers nationwide for product delivery and payment collection. Moreover, prospective clients will be given the option to finance the product through banks/leasing companies.
Current Stage & Implementation Plan or Milestones	The project is currently in the development phase as the feasibility study and implementation plans have been completed, and the provision of financial resources to commence the project is now anticipated. The company will create an extensive manufacturing plan for daily operations. During production, managers will be given specific daily, weekly and monthly targets. The manufacturing facility will enable smooth operations reducing downtime during production. The business will be operated using inventory management software to ensure availability of raw materials for production, and consequently timely delivery of end-product to the customers. Frequent inventory audits will ensure that there are no stock-out incidents and economic order quantity is achieved. Quality assurance and control will also be ensured by establishing a QA and QC department. Business processes will be monitored and deliverables physically inspected for anomalies preventing product quality issues after delivery.
Key Metrics for Success	**Average production downtime** – Percentage comparison of downtime hours to the total time available to produce vehicles in the same time period. **Capacity utilization rate** – the ratio between how many vehicles an automotive company can produce over a period of time and how many vehicles the company could potentially produce in that same period with optimal use of time and labor. **Safety incidents per employee** – Comparison of number of safety incidents to the number of employees working as this is a frequent issue that must be measured carefully and consistently. **Throughput ratio** – Average number of units being produced over a time period. It can be used to gauge if there are weaknesses in the production line. **Inventory turns** – Comparison of cost of goods sold to average inventory. This determines the number of times inventory is sold, and helps to determine if a business has too much inventory when compared to its sales.

	Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA): Used to compare profitability between the company itself and its competitors. It is a baseline look at a company's earnings which can be more useful for comparison purposes because it does not include the effects of financing, tax jurisdiction, or capital structure.
Funding Needs	The project requires a minimum of USD 45 M USD to initiate Phase-1 (retrofitting kits up to 1000cc), further USD 40 M USD for Phase-2 (retrofitting kits up to 1800cc) and USD 35 M for Phase -3 (retrofitting kits up to 2400cc).
Use of Proceeds	Upon receiving funds, the manufacturing setup will be ready within 6-10 months, the first prototype including assembling line will be prepared for approval from engineering development board for commercial marketing within 8-10 months. Regular production at full capacity is scheduled to commence at the start of the second year. Product delivery will be implemented through distribution centers in the country's major cities. These distributors/dealers will be taken on board during the first year when the manufacturing setup is underway.
Investment Structure	The project requires an initial investment of USD 45 M USD with 100% equity investment. The project provides a very lucrative opportunity for the investors as it is estimated to have an IRR of 299% with payback in less than 20 months. The targeted investors include philanthropic investors, impact investors, development funds, institutional investors, private equity, venture capital, strategic investors, industrial investors and carbon investors.
Cap Table Snapshot	**Assumption for projecting capital expenditure** (initial investment - USD 45m) **Cost of Land for establishing infrastructure** (25-50 hectares @USD 40,000 USD /hectare) – USD 2.0m **Cost of building** (100,000 sqft. @ USD 20 USD /sqft.) – USD 2.0m **Cost of Machines for PMDC motors and battery** (lump sum) – USD 15m **Power generation** (1MW solar system with energy storage) – USD 2.0m **2 months' inventory for raw material** – USD 20.0m **Charging stations with solar support** (50 Nos) – USD 4.0m
Exit Strategy & Potential	The company intends to continue its business for the foreseeable future, incorporating the latest trends and designs with upcoming technology and customer demand considering lowering the price of kits. This shall be done by minimizing the price of the battery which is 70% of the cost of the kit by a rental/swappable battery proposal and charging batteries are available in all service areas and distribution centers across the country. In order to reduce the energy cost, the company aims to provide the facility of charging by green energy of solar charging stations instead of charging from commercial charging stations.

Monetized Carbon & Nature Co-Benefits	The company plans to reduce dependence on imported raw materials by establishing manufacturing setups of local raw materials (PMDC motors and Li-Ion batteries). This will help minimize depreciation of currency risk as well as reliance on international sources for raw material. It will also reduce shipping times, enhance customization and create a valuable supply chain for the local economy, creating a sustainable social and economic impact.

15. NATIONWIDE ELECTRIC VEHICLE CHARGING NETWORK (EVCN)

SECTION	DETAILS
Project Title	Nationwide Electric Vehicle Charging Network (EVCN)
Project Overview	This initiative seeks to remove infrastructure barriers to electric mobility, stimulate private investment, reduce dependence on imported fossil fuels, and achieve measurable reductions in greenhouse gas emissions. The EVCN will scale from the current baseline of approximately 100 chargers to more than 1,000 charging stations nationwide by 2030, strategically deployed along national highways, economic corridors, and major urban centers.
Team Overview	The project will be implemented under the leadership of NEECA, in coordination with the Ministry of Climate Change & Environmental Coordination, the Ministry of Finance, and the National Highways Authority. The implementation framework will include partnerships with power distribution companies (DISCOs), oil marketing companies (OMCs), CNG station operators, private EVCS developers, financial institutions, and academic/research institutions for technical support.
Proponents & Structure	**Proponent:** NEECA, Ministry of Energy (Power Division), Government of Pakistan. **Implementation Structure:** Public-private partnership model, combining concessional finance, multilateral development bank support, and private capital. **The structure will focus on:** National EVCS roadmap and regulatory facilitation. Licensing and streamlined approval procedures. Renewable energy integration and grid management. Access to voluntary and compliance carbon markets.
Value Proposition and Market Opportunity	Pakistan possesses over 2,000 operational CNG stations that can be converted into EVCS facilities, reducing infrastructure costs and expediting deployment. With the growing adoption of electric two- and three-wheelers, as well as the anticipated rise in electric cars and buses, the opportunity for investment is significant.

	The initiative will: Reduce annual oil imports to enhance energy security. Cut urban air pollution and related public health costs. Generate a pipeline of bankable projects for investors. Create skilled employment and stimulate local manufacturing of EVCS components.
Location	**Nationwide coverage with priority deployment along**: Lahore–Islamabad–Peshawar Motorway (M2/M1). Karachi–Hyderabad–Sukkur Motorway (M9/M6). Quetta–Gwadar Corridor under CPEC. Metropolitan areas include Karachi, Lahore, Islamabad, Peshawar, and Quetta.
Policy & Regulatory Context	**Anchored in**: - New Energy Vehicle Policy 2025 (target: 30% new EV sales by 2030). Electric Vehicle Charging Infrastructure (EVCI) & Battery Swapping Stations (BSS) Regulations 2024 (issued by NEECA). Pakistan's Nationally Determined Contributions (NDCs). Regulatory support encompasses concessional tariff regimes, fiscal incentives, and enabling frameworks that facilitate private sector participation.
Business Model & Go-to-Market Strategy	The proposed business model is based on a blended finance mechanism with concessional climate finance to de-risk investments, alongside private sector participation through PPP arrangements. **The go-to-market strategy includes**: 1. Deployment of 100 pilot fast-charging stations by 2026. 2. Expansion to 500 charging stations by 2027 in partnership with OMCs and CNG associations. 3. Scaling to over 1,000 charging stations nationwide by 2030. 4. Integration of renewable energy into EVCS operations where feasible. 5. Public awareness and demand creation campaigns.
Current Stage & Implementation Plan or Milestones	**2024**: Notification of EVCS regulations by NEECA. **2025**: Preparation of Pakistan's National EVCS Roadmap. **2026**: Phase I (Pilot phase) – 100 fast chargers installed. – **2027**: Phase II(Expansion phase) – 500 chargers operational across major corridors. **2030**: Phase III(Consolidation phase) – over 1,000 chargers nationwide, integrated with renewable energy and digital platforms.
Key Metrics for Success	Number of EVCS installed and operational. EV-to-charger ratio aligned with international best practice. Share of EVCS powered by renewable energy. Annual reduction in oil imports. GHG emission reductions. Employment generated in EVCS and related value chains.

Funding Needs	**Phase I** – 100 DC Fast Chargers (120 kW each): USD 7.5 M **Phase II** – 500 DC Fast Chargers (120 kW each): USD 35.7 M **Phase III** – 400 DC Fast Chargers (120 kW each): USD 30 M **Training, Capacity Building, and Technician Courses**: USD 50000 **Procurement of Standards and Compliance Frameworks**: USD 20000 **Total Funding Required**: USD 75 M approx
Use of Proceeds	EVCS infrastructure (hardware and installation). Regulatory enforcement and capacity building. Awareness programs and workforce training.
Investment Structure	A public-private partnership model, utilizing concessional capital to de-risk investment, with private operators managing stations under transparent revenue-sharing arrangements. Additional revenues will be generated through carbon credit markets.
Financial Highlights	Projected EVCS market revenue of USD 1.5 billion annually by 2030. Annual savings of USD 2–3 billion in oil imports. Positive economic impact through employment, SME participation, and domestic EVCS manufacturing.
Cap Table Snapshot	**Government/MDBs**: 40% equity and concessional debt. **Private Investors/OMCs**: 40%. **Carbon Market Revenues & Green Bonds**: 20%.
Exit Strategy & Potential	Investors exit through long-term concession agreements, carbon credit monetization, or equity transfers to infrastructure funds. The government ensures continuity through enabling policy and regulation.
Monetized Carbon & Nature Co-Benefits	Avoided emissions of 5–7 $MtCO_2$ annually by 2030. Improved urban air quality and associated health benefits. Indirect co-benefits: renewable energy integration and reduced ecological stress from fossil fuel extraction.
SDG Alignment with KPIs	**SDG 7 (Affordable & Clean Energy)**: EVCS powered by renewable energy. **SDG 9 (Industry, Innovation, Infrastructure)**: Establishment of sustainable mobility infrastructure. **SDG 11 (Sustainable Cities)**: Cleaner transportation solutions. **SDG 13 (Climate Action)**: Emission reductions in transport sector.
Job Creation	Approx. 50,000 jobs (manufacturing, supply chains, research and development).

16. ELECTRIC MOBILITY AS A SERVICE (EMAAS)

SECTION	DETAILS
Project Title	Electric Mobility as a Service (EMAAS)
Project Overview	Rent-free EVs with battery swapping and solar integration for urban transport.
Team Overview	NeuBolt Energy Services
Proponents and Structure	Vertically integrated model with solar, IoT, and BSS.
Value Proposition and Market Opportunity	USD 8 Billion addressable market in 3W sector.
Location	Urban centers in Pakistan
Policy and Regulatory Context	Supports EV policy and clean air targets.
Business Mode and Go-to Market Strategy	Swappable batteries, solar charging, tech platform.
Current Stage and Implementation Plan or Milestones	Pilot in 2024; commercial launch in 2025.
Key Metrics for Success	USD 483 M revenue by Year 15; IRR 41.1%
Funding Needs/Current Status	USD 45.5 M
Use of Proceeds	Vehicle leasing, BSS infrastructure, tech stack.
Investment Structure	Equity-funded; revenue-based growth.
Financial Highlights	**NPV**: USD 85.9 M, **IRR**: 41.1%
Monetized Carbon and Nature Co-benefits	Franchise model and acquisition-ready.
SDG Alignment with KPIs	**SDG 7**: Affordable and Clean Energy **SDG 9**: Industry, Innovation and Infrastructure **SDG 11**: Sustainable Cities and Communities **SDG 13**: Climate Action

17. OPERATING ELECTRIC VEHICLES IN CENTRAL BUSINESS DISTRICT (CBD)

SECTION	DETAILS
Project Title	Operating Electric Vehicles in Central Business District (CBD)
Project Overview	The project introduces electric buses to operate along key routes in Quetta's Central Business District, aiming to reduce urban air pollution, cut greenhouse gas emissions, and provide affordable, modern public transportation. It focuses on replacing diesel-based buses with EVs, supported by charging infrastructure, battery management, and integration with city traffic systems.
Team Overview	Lead Proponent: Balochistan Public-Private Partnership Authority (BPPPA). Stakeholders: Government of Balochistan (policy, regulation), Quetta Metropolitan Corporation (local facilitation), private EV operators (fleet investment & operations), financial institutions (funding), and local communities (beneficiaries).
Proponents and Structure	**Implemented as a Public-Private Partnership (PPP)**. The public sector provides regulatory support, land, and facilitation; private partners invest in EV buses, charging depots, and operations. Potential collaboration with international EV manufacturers and battery service providers.
Value Proposition and Market Opportunity	Quetta faces critical air quality challenges due to its high reliance on diesel vehicles and inadequate public transportation. EV buses reduce emissions, operating costs, and noise pollution while aligning with Pakistan's push for clean mobility. A strong market opportunity exists to scale EV fleets across other Balochistan urban centers.
Location	Quetta, Balochistan
Policy and Regulatory context	Guided by Pakistan Electric Vehicle Policy 2020–2025, Balochistan PPP Act 2021, and provincial clean transport strategies. Aligned with Pakistan's NDCs under the Paris Agreement. Local approvals required from provincial EPA for charging stations and depot facilities.
Business Mode and Go-to Market Strategy	**PPP DBFMOT model**. A private partner invests in buses, charging infrastructure, and operations; the GoB facilitates approvals and provides partial equity support. Revenue generated through ticket sales, government subsidies, and potential carbon credits.

Current Stage and Implementation Plan or Milestones	Feasibility assessment and technical design prepared. **Next steps:** Secure private partner through PPP bidding Land allocation for depots and charging stations Pilot rollout in CBD (Phase 1: ~20 EV buses) Scaling up fleet after pilot success.
Key Metrics for Success	EV fleet size (number of buses deployed) Annual GHG reduction (tons CO_2 avoided) Passenger ridership levels Reduction in air pollution levels ($PM_{2.5}$/NOx) Cost savings vs. diesel buses Reliability & service coverage.
Funding Needs/Current Status	**Estimated project cost:** ~PKR 3–5 billion (depending on fleet size and infrastructure). Mix of public equity, private investment, and concessional financing from climate funds.
Use of Proceeds	Purchase of electric buses, charging depots, maintenance facilities, battery systems, grid upgrades, driver training, and monitoring systems.
Investment Structure	Equity contributions (GoB + private developer) plus commercial loans/climate finance. Private sector is responsible for majority of CAPEX (fleet, depots, chargers).
Financial Highlights	EV buses have lower operating costs than diesel (~30–40% reduction). Revenue from fares supplemented by GoB support during initial years. Carbon credits provide an additional revenue stream. Payback horizon ~8–10 years, depending on fleet size and tariff setting.
Cap Table Snapshot	GoB equity (~10–15%), Private EV operator equity (~25–30%), Debt financing (~60%), Climate funds/grants (potential).
Exit Strategy and Potential	Long-term O&M revenues from fare collection. Potential to refinance after initial 8–10 years. Scaling model to other cities in Balochistan (Gwadar, Turbat, Khuzdar).
Monetized Carbon and Nature Co-benefits	GHG reduction from diesel replacement; estimated annual savings of thousands of tons of CO_2. Co-benefits: reduced air pollution, improved public health, lower noise pollution, and modernized urban transport.
SDG Alignment with KPIs	**SDG 7** (Affordable & Clean Energy – EV charging infrastructure) **SDG 11** (Sustainable Cities & Communities – clean urban mobility) **SDG 13** (Climate Action – CO_2 avoided) **SDG 3** (Good Health – reduced air pollution exposure).
Job Creation	**Direct:** Drivers, mechanics, depot and charging station staff. **Indirect:** EV supply chain, infrastructure construction, battery servicing. Capacity-building for local workforce in EV maintenance and operations.

18. GREEN GOVERNMENT FLEET PAKISTAN (GGFP)

SECTION	DETAILS
Project Title	Green Government Fleet Pakistan (GGFP)
Project Overview	The project aims to electrify public transportation in the public sector to reduce greenhouse gas (GHG) emissions and improve air quality in major cities across Pakistan. It will align with the country's national goals, including the Pakistan Green Mobility Strategy (PGMS) and Nationally Determined Contributions (NDCs). The initial phase aims to electrify 10,000 public vehicles, with a long-term goal of converting the entire public fleet of 80,000 vehicles.
Team Overview	**Executing Agency:** To be determined **Implementing Agency:** Pakistan Climate Change Authority (PCCA) in collaboration with Provincial Transport and Administration Departments.
Location	Major cities across all provinces and territories, including Lahore, Karachi, Peshawar, Quetta, and Islamabad.
Current Stage and Implementation Plan or Milestones	This document serves as a project concept note, outlining the projects initial concept. The next steps involve developing a detailed implementation plan with specific timelines, milestones, and deliverables.
Key Metrics for Success	**Number of vehicles converted to EVs:** The project will track the number of public vehicles switched to electric. **GHG Emissions Reduction:** The primary metric is the reduction in CO_2 emissions, calculated from the number of vehicles converted. Based on a conversion of 10,000 vehicles, this is estimated to be a 690,000 tCO_2 reduction per year in the initial phase. Alignment with National Strategy: Success will also be measured by the project's contribution to Pakistan's climate and mobility goals.
Funding Needs/Current Status	USD 67.32 M
Monetized Carbon and Nature Co-benefits	The project is estimated to reduce 690,000 tCO_2 annually in its initial phase, generating a potential for monetized carbon credits. Co-benefits include improved air quality from the reduction of Particulate Matter (PM2.5) and other pollutants, which can lead to better public health outcomes.

SDG Alignment with KPIs	**The project contributes to several Sustainable Development Goals (SDGs):** **SDG 3:** Good Health and Well-being (through improved air quality). **SDG 7:** Affordable and Clean Energy (by promoting EV technology). **SDG 11:** Sustainable Cities and Communities (by creating cleaner urban transport). **SDG 13:** Climate Action (by significantly reducing GHG emissions from the transport sector).
Job Creation	It is expected that the project will be able to generate 400 additional jobs

19. PAKISTAN NEV ECOSYSTEM PROGRAM

SECTION	DETAILS
Project Title	Pakistan NEV Ecosystem Program
Project Overview	The Pakistan NEV Ecosystem Program is a national initiative aimed at accelerating the adoption of new energy vehicles (NEVs) and the development of requisite charging infrastructure through a structured, finance-driven approach. The program is designed to address the key structural barriers that have constrained NEV market growth by deploying concessional financing, blended capital solutions, offtake commitments, and risk mitigation instruments, including guarantee facilities. A central tenet of the program is to rectify the market coordination failure that typically impedes the simultaneous development of NEV demand and charging infrastructure supply. In the absence of sufficient infrastructure, vehicle adoption remains limited; conversely, infrastructure investment is commercially unviable without assured demand. By concurrently enabling both dimensions—vehicle uptake and infrastructure deployment—the program creates the conditions for a self-reinforcing and scalable market transition. In alignment with Pakistan's National Electric Vehicle Policy and broader climate and energy transition objectives, the program aims to catalyze the establishment of a resilient, future-oriented clean transportation ecosystem.
Team Overview	The program will be led by the Sustainable Finance Department and the core Investment Banking Team of JS Bank Limited (JSBL). Moreover, a multistakeholder working group may be formed to support policy alignment and ecosystem-level coordination.

Proponents & Structure	JSBL will develop, structure, and deploy a suite of financing products tailored for fleet operators, charging infrastructure developers/owners and may target retail NEV buyers (including two-, three-, and four-wheelers). In addition, the bank will manage the blending of grants/subsidized financing with commercial capital to offer co-deposits.
Value Proposition and Market Opportunity	**The integrated model creates tangible value across the entire electric mobility ecosystem, aligning commercial interests with developmental impact**: ○ Charging Infrastructure owners/ developers benefit from access to concessional infrastructure financing and off-take commitments, enabling them to invest in NEV charging infrastructure with reduced risk. As early movers, they can leverage their existing fuel station networks (if available) to gain a competitive advantage in the transition to clean mobility. ○ Fleet Operators enjoy minimal upfront costs for transition to NEVs, along with predictable access to charging infrastructure and after sales support. This enhances operational efficiency and significantly reduces running costs, improving the economics of fleet electrification. ○ OEMs gain from guaranteed vehicle demand through fleet-level commitments. This increases brand visibility and supports the expansion of their after-sales service networks, improving customer satisfaction and long-term adoption. ○ JS Bank positions itself as a market leader in sustainable finance. By combining concessional and ESG-aligned capital with de-risked lending structures, the bank strengthens its portfolio and enhances its impact credentials. ○ The Wider Ecosystem benefits through reduced carbon emissions, decreased reliance on fossil fuel imports, reduced pollution, the creation of green jobs, and the development of scalable EV infrastructure to facilitate broad penetration of EVs, contributing to both environmental and economic goals. ○ The integrated model creates tangible value across the entire electric mobility ecosystem, aligning commercial interests with developmental impact. Nevertheless, it is imperative to highlight that in doing so, stakeholders must remain mindful of prevailing regulatory frameworks - notably the State Bank of Pakistan's Prudential Regulations for Consumer Financing (BPRD Circular Letters No. 29 of 2021 and No. 19 of 2022), which impose restrictions on auto financing such as maximum loan tenures, engine displacement limits, aggregate exposure caps, and eligibility criteria. Adhering to these guidelines is crucial for ensuring financial viability, regulatory compliance, and access to concessional financing channels.

Location	Pakistan
Policy & Regulatory Context	Aligned with Pakistan's New Electric Vehicle Policy. Supports national NDCs (Nationally Determined Contributions) under the Paris Agreement. Enhances compliance with clean transportation and climate finance frameworks.
Business Model & Go-to Market Strategy	Two-pronged market approach targeting: 1. Fleet EV buyers and retail buyers through corporate, commercial and retail channels. 2. Infrastructure developers through commercial channels. Partner with: - OEMs for bundled sales and vehicle pipeline - OMCs, charging infrastructure developer/owners & real estate owners, for charging station locations - Fleet customers for offtake and route optimization Tentative: Early pilots in high-density urban corridors (Karachi, Lahore, Islamabad) before scaling nationally.
Current Stage & Implementation Plan or Milestones	**Phase 1: Concept Structuring & Validation** Timeline: Months 1–5 Objective: Finalize product design, de-risking tools, and partner alignments. Milestones: Program concept note finalized and approved internally Preliminary stakeholder consultations with OEMs, OMCs, fleet operators, infrastructure developers/owners. Structure and finalize the facility terms with impact financiers in consultation with Climate Vulnerable Forum. Prepare pilot financing documentation and internal credit approval frameworks. **Phase 2: Pilot Rollout & Learning** Timeline: Months 6 -1 Objective: Implement controlled deployment of NEV and infrastructure financing. Milestones: Launch of pilot vehicle financing product in 2–3 major cities (e.g., Karachi, Lahore, Islamabad). Commissioning of initial charging stations in partnership with OMCs or infrastructure developer/owner and commercial real estate owners. Onboarding of 3–5 fleet operators with signed offtake commitments. OEM partnerships signed for service support and bundled offerings Initial monitoring framework operational: utilization, repayment, and impact data collection. Publish pilot evaluation report with lessons learned and stakeholder feedback .

	Phase 3: National Scale-Up Timeline: Months 12–36 Objective: Expand program reach, optimize delivery, and mobilize additional capital. Milestones: Scale vehicle and infrastructure financing to nationwide level Expand OMC and OEM partnerships to national footprint Digitize customer onboarding, asset tracking, and reporting systems Begin monetization strategy for carbon benefits
Key Metrics for Success	1. Number and value of NEVs financed 2. Number and value of charging stations deployed 3. GHG emissions reduced (in $MtCO_2e$) 4. Amount of concessional capital mobilized
Funding Needs	USD 11.55 M
Use of Proceeds	**Funded Facility:** Option 1: Blended concessionary finance through a grant component- Under the option grant from the impact financiers would be used to subsidise sub-loans. Consumer loans/lease for vehicles are priced at 1 Year KIBOR+ 3% p.a. while commercial loans are priced ranging up to 3% p.a. over relevant tenor KIBOR. sub borrower will pay relevant KIBOR, while the spread, i.e. 3% will be covered through a grant. Option 2: Blended finance through a concessionary loan - Under this option, concessionary loans will be blended to provide sub-loans at a rate that is below the market rate. However, since the concessionary loan will be in USD or any other reserve currency this will expose JSBL to foreign currency devaluation risk, which will need to be mitigated. **Guarantee Coverage Facility:** Loan loss risk coverage: The facility will offer loan loss coverage at both the portfolio and individual loan levels. Given that the NEV market is still in its early stages and lacks an established secondary market, repossessed assets in the event of default are expected to have minimal to no recoverable value. As such, the loan loss risk coverage guarantee is intended to provide partial mitigation against potential losses in the value of collateral or underlying assets, thereby reducing overall credit risk exposure.

Investment Structure	**Funded facility:** Unsecured facility to JSBL Tenor: Vehicle/ fleet loan up to 5 years; charging infrastructures up to 10 years Grace Period: Up to 5 years for charging infrastructure loan Repayment: Vehicle/ fleet financing monthly; Charging Infrastructure quarterly Currency: Preferably PKR; hedging required if in USD or any other reserve currency Tranches: Split financing for vehicles and infrastructure to align repayment timing **Unfunded facility** Unsecured facility to JSBL Tenor: to match with the sub-loans' maturity
Cap Table Snapshot	**Option 1**: PKR equivalent of USD 10,676,157 **Option 2**: PKR equivalent of USD 5,338,078
Exit Strategy & Potential	The program is structured to ensure a gradual and responsible transition from concessional support to commercially sustainable operations. The primary exit for impact financiers and concessional capital providers will be achieved through the scheduled repayment of sub-loans and the wind-down of guarantee facilities, aligned with the maturity of the underlying vehicle and infrastructure financing portfolios. Over the medium term, as uptake increases and cost structures improve, concessional financing will be progressively phased out, allowing the bank to transition fully to commercial lending structures supported by embedded risk-based pricing and credit assessment tools. In parallel, the project aims to monetize carbon and nature co-benefits, offering a potential revenue stream through the issuance of verified carbon credits or participation in results-based climate finance programs.
Monetized Carbon & Nature Co Benefits	The program is well-positioned to generate verified carbon credits by reducing greenhouse gas emissions through increased adoption of electric vehicles. Beyond emission reductions, it offers additional benefits, such as improved air quality and reduced fossil fuel dependence, which could increase the value of the carbon credits. These credits can be monetized via carbon markets, providing a valuable revenue stream to support the project's financial sustainability.
SDG Alignment with KPIs	**SDG 3**: Good Health and Well-being **SDG 7**: Affordable and Clean Energy **SDG 9**: Industry, Innovation, and Infrastructure **SDG 11**: Sustainable Cities and Communities **SDG 13**: Climate Action

20. MANUFACTURING OF ELECTRIC VEHICLES

SECTION	DETAILS
Project Title	Manufacturing of Electric Vehicles
Project Overview	LEO Automobiles (Pvt.) Ltd. aims to design, develop, and launch electric quadricycles—the first of their kind in Pakistan—followed by hatchbacks and minivans.
Team Overview	**Founder & CEO**: Syed Ahmed Sana Zaidi (30+ years in the automobile industry). **Executive Director**: Lt. Col. Aamir Mahmood (Retd) (25+ years in engineering & logistics). **Supporting managers**: Capt. Kashif Ali (Production & Development), Naeem Uddin (Finance Consultant), Muhammad Qasim (HR & Admin). **Current staff**: Management (2), Production (6), Admin (2).
Proponents & Structure	**Private Limited company registered with SECP. Shareholding**: 1. Ahmed Sana Zaidi – 35% 2. Aamir Mahmood – 35% 3. M. Ali – 10% 4. Marco Spijkerman – 10% 5. Asif Sultan – 10%.
Value Proposition and Market Opportunity	Local EV production addresses the challenges of high vehicle prices, unsafe three-wheel loaders, and costly four-wheel pickups. Target markets include the military and paramilitary sectors, waste management companies, factories, commercial users, schools, and housing societies. The CL-200, priced at approximately PKR 1.3 M, offers an affordable, safer, and eco-friendly alternative.
Location	Lahore, Pakistan – Small Industrial Estate II, Sunder Raiwind Road (Office & Manufacturing Facility)
Policy & Regulatory Context	Pakistan is a signatory to the WP-29 international automobile standards, with type approvals currently in process. LEO is an active member of the PSQCA Technical Committee, contributing to standardization and type approval efforts.
Business Model & Go-to-Market Strategy	LEO operates a vendor-based supply chain utilizing locally produced parts, while importing the EV drivetrain. The company is targeting a driving range of approximately 250 km per charge. An initial network of 4–5 dealers has been appointed, with plans for future expansion. Sales will be made through dealers on an installment basis, while the manufacturer will receive upfront payments.

Current Stage & Implementation Plan or Milestones	The prototype CL-200 was developed in March 2023 and is currently being converted to an electric variant. Key milestones for 2023–2024 include starting production, selling 1,500 units in the first year, developing hatchback and minivan EVs, setting up an R&D facility, and exploring export opportunities. The 5-year goal is to achieve sales of 10,000 EVs.
Key Metrics for Success	**Production capacity**: 3,000 units/year. **Sales targets**: 1,500 units in Year 1, 10,000 units in 5 years. **Range**: ~250 km/charge. **Revenue**: PKR 209K (2024) ~> PKR 58 M (2030).
Funding Needs	Approx. USD 1.36 M required for expansion, EV tooling, vendor development, and working capital.
Use of Proceeds	Building & Fixtures, EV tools, EV testbench, equipment, conveyor belt, molds & dies, pneumatic system, vendor development, and working capital.
Investment Structure	The company is currently equity-financed by its founders and shareholders. It is now seeking an additional investment of USD 1.36 M, either through equity or a blended financing structure.
Financial Highlights	**Net worth (2023)**: ~USD 148,500 Projected IRR: 81% **Revenue**: PKR 209K (2024) □ PKR 58 M (2030) Positive net income projected from 2025 onwards.
Exit Strategy & Potential	LEO plans to scale into international markets, expand its dealer and vendor networks, and strengthen its R&D capabilities for continuous product improvement. As Pakistan's EV market matures, the company also sees potential for acquisition or a future IPO.
Monetized Carbon & Nature Co-Benefits	EVs reduce fossil fuel consumption, lower urban smog, reduce Pakistan's oil import bill, and improve air quality.
SDG Alignment with KPIs	**SDG 7**: Affordable & Clean Energy (EV adoption) **SDG 9**: Industry, Innovation, Infrastructure (local EV manufacturing) **SDG 11**: Sustainable Cities (reduced urban pollution) **SDG 13**: Climate Action (reduced emissions)

21. ECODOST ELECTRIC BIKE

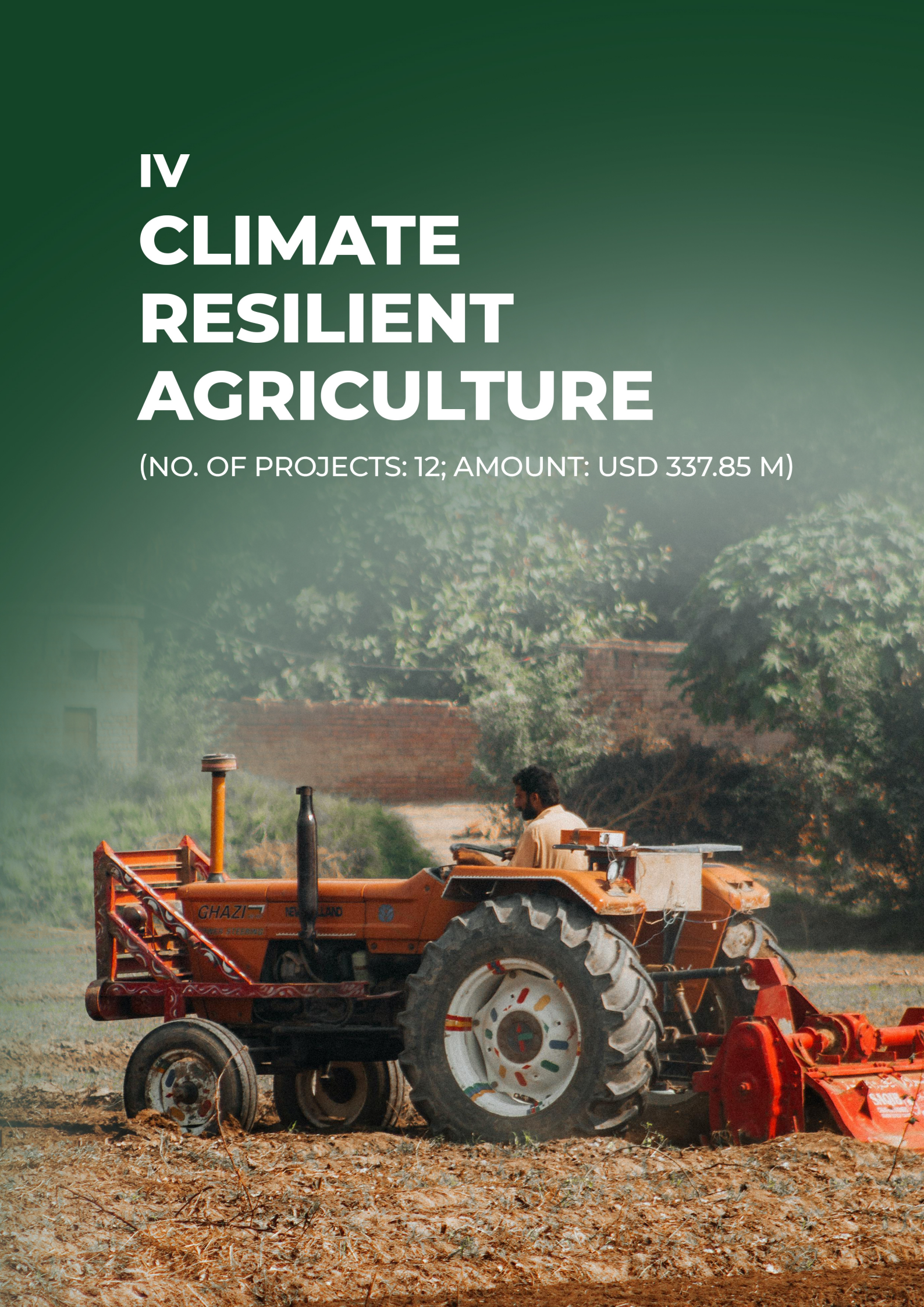
SECTION	DETAILS
Project Title	Ecodost Electric Bike
Project Overview	Nova Mobility (Pvt.) Limited, a subsidiary of Novatex Limited, began operations in July 2022 under the brand ECODOST. The company's mission is to reshape Pakistan's mobility sector by designing, assembling, and marketing two- and three-wheeler electric vehicles (EVs). Featuring advanced Lithium-Iron Phosphate Battery technology, the project aims to reduce carbon emissions and Pakistan's fuel import dependency. The company is seeking USD 1 M in working capital financing for the bike project.
Team Overview	**Leadership Team**: Saqib Bilwani – CEO - Rizwan Diwan – Non-Executive Director - Mustufa Bilwani – Non-Executive Director - Daanish Diwan – Director Projects - Mughees – CFO (Chartered Accountant, 14+ years) - Saqib Abdullah – Head of Operations (Electrical Engineer, production & quality specialist) - Hassan Ahmed – Head of Technical & R&D (M.Eng. Management, quality certifications)
Proponents & Structure	Nova Mobility, incorporated in December 2021, is a wholly-owned subsidiary of Novatex Limited—the flagship of G&T Group (est. 1948). G&T is among Pakistan's largest conglomerates, employing over 10,000 people, with a net worth of USD 500 M and annual exports of USD 270 M. The Group has diversified operations in Pharmaceuticals, Retail, Power, and global partnerships, including major collaborations with China.
Value Proposition & Market Opportunity	**Value Proposition**: ECODOST offers an affordable and sustainable alternative to gasoline bikes, powered by Lithium-Iron Phosphate Batteries (70 km/charge, 6-year lifespan, water-resistant, and capable of 2,000 charging cycles). These bikes deliver durability, high resale value, and low operational costs. **Market Opportunity**: Pakistan's motorcycle market exceeds 1.5 M units annually. With Honda dominating 80% and Chinese bikes covering the rest, the EV gap is significant. ECODOST is positioned to capture a share across various sectors, including FMCG, logistics, construction, e-commerce, healthcare, and hospitality.
Location	**Assembly Plant**: Karachi (close to port). **Sales Offices**: Karachi & Lahore (nationwide expansion planned).
Policy & Regulatory Context	Aligned with Pakistan's EV policy under the Engineering Development Board (EDB). Nova Mobility holds EDB permits for EV import and assembly, which grant preferential tax and duty rates. The Government of Pakistan supports the adoption of electric vehicles (EVs) through incentives, including interest-free financing for the first 15,000 EV bikes.

Business Model & Go-to Market Strategy	**Business Model:** Manufacturing and sales of 2- & 3-wheeler EVs. The current funding supports parts procurement and operational expenses for 2-wheeler bikes. **Technology & Operations:** Key components include Lithium-Iron Phosphate batteries, advanced motors, and ECUs. SCOLECITE (China) is a strategic supplier. Operations are supported by SAP S4 HANA ERP and a proprietary mobile app (under development) for performance tracking. **Go-to-Market Strategy:** - Pre-launch digital, ATL & BTL campaigns with influencers. - Sales network: self-owned showrooms in Karachi & Lahore + 21 dealers within Year 1. - Credit terms: 30–45 days for dealers. - Focused on both B2B and B2C markets.
Key Metrics for Success	**IRR**: 15.6% - **Payback**: 4.6 years - **Interest Coverage**: 21x (5-year avg) - **Sales**: 15,300 units in Year 1, 2,000 units/month thereafter
Funding Needs	USD 1 M (short-term working capital loan). Support is also sought for micro/consumer financing schemes targeting SMEs and individuals.
Investment Structure	USD 1M in debt (short-term running finance). Return: interest at ~25.42% (1-year KIBOR + 3%). Investor categories: microfinance banks, impact/philanthropic funds, industrial and carbon investors, and DFIs.
Financial Highlights	**Exchange**: USD 1 = PKR 300; CNY 1 = PKR 42 - **Inflation**: 10% annual; sales prices up 10% every 6 months post-July 2024 - Interest Rate: 25.42% - **WACC**: 15.3% - **Total Project Cost**: PKR 1.44B - **Novatex Equity**: PKR 500M; **Loan**: PKR 644M - **NPV**: PKR 974M - **IRR**: 15.6%; **Payback**: 4.6 years - **Interest Coverage**: 21x - **Historical (Apr 2023)**: Assets PKR 3.1M; PPE PKR 1.57M; Share Capital PKR 1.67M; Accum. Loss PKR (0.76M)
Cap Table Snapshot	**As of April 30, 2023**: Novatex Ltd.: 49,999,000 shares (USD 1,666,634) Rizwan Diwan: 500 shares (USD 16) Mustafa Bilwani: 500 shares (USD 16) **Total Share Capital**: USD 1,666,667
Exit Strategy & Potential	Investors earn interest (~25.42%) on deployed capital. The project, backed by Novatex, ensures risk mitigation. An IRR of 15.6% and high resale value of battery technology strengthen long-term security.
Monetized Carbon & Nature Co-Benefits	Replacing gasoline bikes with EVs eliminates ~2.2 g/km of CO2 emissions. Supports cleaner air in cities, reduces oil imports, and raises consumer awareness on climate friendly transport.

SDG Alignment & KPIs	**SDG Alignment & KPIs aligned with:** **SDG 13 (Climate Action)**: EV adoption reduces CO_2 emissions. **SDG 7 (Clean Energy)**: Uses efficient battery technology. **SDG 9 (Innovation)**: Builds local EV manufacturing. **KPIs**: Annual CO_2 reduction (tons) % cost savings vs. petrol bikes Number of green jobs created
Job Creation	**Estimated Figure**: For a project targeting 15,300 units in Year 1, it is reasonable to estimate the creation of several hundred direct and indirect jobs within the first few years of operation.

IV
CLIMATE RESILIENT AGRICULTURE

(NO. OF PROJECTS: 12; AMOUNT: USD 337.85 M)



22. SUSTAINABLE TIMBER HARVESTING PROJECT

SECTION	DETAILS
Project Title	Sustainable Timber Harvesting Project
Project Overview	The project involves large-scale plantation of 200,000 fast-growing timber trees, across Punjab & KPK in Pakistan. It addresses the timber demand-supply gap by establishing legal, traceable, and sustainable timber sourcing while contributing to carbon sequestration, biodiversity restoration, and rural livelihoods
Team Overview	Led by Karandaaz Pakistan
Proponents & Structure	Karandaaz Pakistan – Project investor Potential for additional co-investors at pilot or scale-up stages
Value Proposition and Market Opportunity	Formalizes Pakistan's timber sector, currently dominated by informal supply chains Provides sustainable and traceable timber for construction and green buildings Supports government afforestation goals and climate resilience policies Monetizable carbon credits and ARR (Afforestation, Restoration, Revegetation) co-benefits
Location	Punjab & KPK
Business Model & Go-to Market Strategy	Aligned with Pakistan's ban on public forest deforestation, this supports NDC targets, biodiversity conservation, and UNFCCC-recognized afforestation frameworks.
Current Stage & Implementation Plan or Milestones	Trees planted on marginal/leased land with multiple harvesting cycles. Timber sold commercially for construction, furniture, and industrial use. Monetized carbon credits marketed to global buyers.
Key Metrics for Success	Pilot Phase (USD 1.2m / PKR 348m) Full Project Size: USD 50m (scalable across regions) Multiple harvest cycles
Funding Needs	USD 50 M
Use of Proceeds	Land-lease/acquisition, plantation, maintenance, harvesting operations, and carbon certification

Investment Structure	Revenue-share – with potential co-investor (10% net harvest proceeds per cycle) Equity-based participation
Financial Highlights	**Pilot IRR:** 42% PKR terms Strong cash flows from timber harvest cycles (Project lifecycle: 15 years) Long-term institutional investors attracted as alternative asset class
Cap Table Snapshot	Pilot sponsored by Karandaaz; open to additional investors for scale-up.
Exit Strategy & Potential	Cash returns via harvest proceeds over 15 years Long-term carbon credit monetization Potential regional expansion with global partners
Monetized Carbon & Nature Co-Benefits	Carbon sequestration from large-scale afforestation Biodiversity restoration Improved soil fertility on marginal lands ARR (Afforestation, Restoration, Revegetation) recognized under climate finance framework
SDG Alignment with KPIs	**SDG 8:** Decent Work & Economic Growth (job creation, rural income) **SDG 11:** Sustainable Cities & Communities (green construction inputs) **SDG 13:** Climate Action (carbon sequestration, deforestation mitigation) **SDG 15:** Life on Land (biodiversity, afforestation)
Job Creation	610 jobs supported, including 491 direct plantation/processing jobs and 119 indirect roles in value chain

23. DIGITAL DERA CLIMATE SMART VILLAGES NETWORK

SECTION	DETAILS
Project Title	Digital Dera Climate Smart Villages Network Pakistan
Project Overview	Digital Dera is a hybrid startup that provides Climate Smart Digitalization Infrastructure for rural communities especially smallholding farmers, youth and women. Digital Dera achieves this by delivering technology and climate adaptation solutions to remote rural communities across Pakistan. Digital Dera provides these communities with access to Climate Resilient Smart Digital Agriculture through a free-of-cost service delivery model funded with public-private support at their doorstep making available cutting-edge farming modernization inputs improving their adaptation to the brunt of climate change as well as improving their livelihoods while sequestering carbon in the soil through regenerative agriculture practices.

Team Overview	Digital Dera was co-founded by Fouad Riaz Bajwa, a digital transformation specialist and public policy entrepreneur, and Aamer Hayat Bhandara, a young climate advocate and progressive farmer from Pakpattan. The day-to-day operations are handled by a team of community volunteers and experts from Agriculture Republic who conduct awareness and capacity-building sessions. The team's on-the-ground presence and deep understanding of the local farming community are central to the project's success.
Proponents & Structure	Its structure is based on a community network model: **Physical Hub:** The "Digital Dera" itself, a physical center where farmers can access high-speed internet, digital tools, and receive hands-on training. **Community-Led:** The initiative is driven by local "Community Network Champions" and young volunteers who help bridge the digital literacy gap by training other farmers, particularly the elderly, on how to utilize available technology. **Partnerships:** It relies on a multi-stakeholder approach, bringing together private companies, non-governmental organizations, and government departments. Key proponents include Agriculture Republic, Hayat Farms, the Internet Society (Global), Accountability Lab Islamabad for fiscal transparency, and Pakistan Telecommunication Company Limited (PTCL), which provides the backend internet services.

Value Proposition and Market Opportunity	**Dominance of Smallholding Farmers:** The overwhelming majority of farms in Pakistan, over 85%, are smallholdings (less than 12.5 acres). These farmers are particularly vulnerable due to low yields, limited access to information, and their reliance on traditional methods. This represents a massive, underserved market of over 9 M farm families. The fragmentation of this market makes it difficult for traditional corporate solutions to reach them, creating a perfect niche for a community-based, scalable model like Digital Dera. **The Digital Divide:** Despite progress, a significant digital divide persists in rural Pakistan. While overall telecom penetration is high, the quality of internet service and digital literacy in remote farming areas remains critically low. This lack of connectivity is a major bottleneck preventing farmers from accessing timely information and modern agricultural technologies. Digital Dera directly targets this gap, providing a much-needed service in areas where traditional ISPs have not been invested.
Location	Digital Dera's pioneer site is located at Chak 26 SP village in Pakpattan South Punjab. The liaison is managed from Lahore, Pakistan.
Policy & Regulatory Context	**Digital Transformation and Internet Connectivity Policy:** By partnering with a major telecom provider like PTCL for backhaul, it leverages the existing infrastructure while innovating in the last-mile delivery. The initiative also presents a compelling case for the government's Universal Service Fund (USF) to reassess its strategies and consider supporting community-led, sustainable connectivity models. By demonstrating that a low-cost, community-owned network is viable and highly impactful,the most vulnerable populations become active agents of climate action, improving their livelihoods while contributing to national and global climate goals.

Business Model & Go-to-Market Strategy

Its go-to-market strategy is not based on traditional consumer marketing but rather on B2B partnerships. By providing farmers with a physical hub (the "dera") and internet connectivity, it aggregates their produce from regenerative agriculture into a collective for large food buyers who invest in crops and forward-buy harvests. The model proves its value by reducing the role of middlemen and market complexities, generating profit between a 5% to 30% share of the value created and depending on the value of the harvest sold. This revenue is then reinvested to deploy more nodes, thereby expanding its reach. In essence, Digital Dera's strategy is to grow its market share by proving that environmentally sustainable and traceable food production can be a profitable and scalable business, attracting more corporate partners while empowering local communities.

Current Stage & Implementation Plan or Milestones

Operational Hub: The first Digital Dera or Pioneer hub in Chak 26-SP village, Pakpattan, is fully functional and serves as a living laboratory for the Digital Dera's model. It provides free, high-speed internet connectivity and a physical space for training and collaboration for thousands of farmers in the area.

Community Engagement: Digital Dera has built a strong foundation of trust and engagement within the local community. The "Community Network Champions" model is actively in use, with local youth leading the digital and agricultural training efforts. This peer-to-peer approach has resulted in a high adoption rate of digital tools and a measurable increase in farmer productivity and knowledge.

Proving the Value Proposition: Digital Dera has already demonstrated tangible benefits, as evidenced by a case where farmers, utilizing the hub's weather forecasts, delayed pesticide spraying, saving Ms of rupees by avoiding a rainstorm. This has cemented the project's value proposition in the minds of the farmers.

Strategic Partnerships: Key partnerships with organizations like Hayat Farms, the Internet Society, Accountability Lab, and private entities like PTCL are well-established and continue to provide the technical and operational backbone for Digital Dera.

Future Implementation Plan & Milestones:

Milestone 1: Securing Expansion Capital
Goal: To secure USD 45 M in funding to finance the expansion plan. This funding is crucial for the next phase of deployment, as it will cover the costs of infrastructure, hardware, and operational expenses for the new hubs.

Milestone 2: National Rollout (2026-2030)
Goal: To deploy 200 new nodes/Digital Deras in 200 rural villages across Pakistan. This will be a phased rollout, with the aim of deploying 50 new Digital Deras per year from 2026 to 2030

Milestone 3: Establishing the Monetization Engine
Goal: To operationalize the business model by generating sustainable revenue streams from carbon credits and data services

Milestone 4: Influencing Policy and Broader Adoption
Goal: To influence national policy on rural connectivity, climate resilience, and agricultural data ownership.

Key Metrics for Success

Financial Metrics:
Profit per Village: Tracking the profit-sharing revenue from each of the 200 connected villages.
Revenue from Input: Measuring income generated from the sale of chemical-free fertilizers and other inputs.
Carbon Credit Revenue: The total value and sell-through rate of verified carbon credits.
Return on Investment (ROI): Overall return on a USD 45M investment.

Operational Metrics:
Node Deployment Rate: The number of new Digital Dera nodes deployed per year (target: 50 per year).
Community Adoption: The number of farmers actively participating in the program within each village.
Operational Cost per Village: The cost to run each hub and network node on a daily, weekly, monthly and yearly basis.

Social and Environmental Metrics:
Yield Increase: The percentage increase in crop yields for participating farmers.
Biodiversity Restoration: Qualitative or quantitative metrics on biodiversity return in the farming areas.
Carbon Sequestration: The total tons of carbon sequestered per year across the network.
Livelihood Improvement: Qualitative data on farmer income and well-being.

Funding Needs

Digital Dera requires a total of USD 45 M to scale its successful pilot project into a nationwide network. This funding will be used to deploy 200 new Digital Deras across 200 villages from 2026 to 2030, with a goal of establishing 50 new hubs each year.

Use of Proceeds

The funds will be used for:

Infrastructure and Hardware (Approximately 50%): A significant portion of the funding will be allocated to the physical assets needed for each of the 200 hubs. This includes the purchase of computers, tablets, and solar power systems to ensure consistent operation in areas with unreliable electricity. Most importantly, it will cover the costs of the wireless mesh network equipment, including transceivers, antennas, and routers, which will provide the last-mile internet connectivity.

Operational and Human Resources (Approximately 30%): A significant portion will be allocated to managing the national expansion and sustaining operations. This includes the salaries for a core management team to oversee the rollout, as well as the costs of recruiting and training the "Community Network Champions" in each village. These funds will also cover the ongoing maintenance and technical support for the network and the hubs, ensuring they remain operational and practical.

Digital Platform and Content Development (Approximately 15%): A portion of the proceeds will be invested in the technology that powers the entire network. This includes developing a robust and scalable digital platform that enables farmers to access information and allows the system to collect and analyze data. A key focus will be on developing the Measurement, Reporting, and Verification (MRV) platform for the future carbon credit system, which necessitates substantial investment in software development and data analytics.

Contingency and R&D (Approximately 5%): The remaining funds will be kept in reserve for unforeseen circumstances and to support ongoing research and development. This includes exploring new technologies, piloting new services, and engaging in advocacy efforts to influence national policy on digital agriculture and rural connectivity. This ensures the project remains agile and can adapt to the evolving needs of the agricultural sector and the digital landscape.

Financial Highlights

Crop Harvest Fulfillment:
The 200 Digital Dera connected villages will act as a single source of crop fulfillment for large food processors. Assuming each village collectively produces USD 150,000 in regenerative agriculture crop annually, the total value of fulfilled orders would be USD 30 M per year (200 villages * USD 150,000). With Digital Dera's profit-sharing model taking a 15% share, this generates a direct annual revenue of USD 4.5 M.

Carbon Credits:
The 200 villages, spanning an estimated 40,000 hectares of farmland, could sequester a significant amount of carbon. At an average of 2 tons of carbon per hectare per year and a credit price of USD 15 per ton, the total carbon credit value is USD 30,000 annually. Digital Dera's 20% share of this revenue is USD 240,000 per year.

Chemical-Free Inputs:
Digital Dera can also generate revenue from supplying chemical-free fertilizers, crop protection, and other inputs. Assuming a 10% margin on the total value of these inputs for all 200 villages, this could provide an additional revenue stream of USD 1.5 M to USD 3 M per year.

Return on Investment (ROI):
The combined annual revenue from profit-sharing, carbon credits, and input sales could be over USD 6.24 M after the full rollout. The initial USD 45 M investment could be recouped in approximately 7 to 8 years from these combined revenue streams.

NPV and IRR:
Using a discount rate of 11%, Digital Dera's long-term Net Present Value (NPV) remains positive, as the consolidated revenue streams provide a stable and predictable cash flow. The Internal Rate of Return (IRR) is projected to be above 15%, reflecting a strong return from a sustainable and high-impact business model that reduces market complexities for farmers while providing a traceable, premium product for buyers.

Cap Table Snapshot

Co-Founder 1: 51% and Co-Founder 2: 49%

Exit Strategy & Potential	**Initial Public Offering (IPO):** Once the 200 Digital Dera nodes are fully operational and the financial model is proven; Digital Dera can explore an IPO. The company would be positioned as a unique blend of agri-tech, climate-tech, and social enterprise. Its appeal to the public market would be its stable, recurring revenue from large-scale crop fulfillment contracts, its revenue from a growing carbon credit market, and its strong brand as a leader in sustainable development. An IPO would allow investors to exit by selling their shares on public exchange, and it would provide the company with the capital to further expand its network and services.
SDG Alignment with KPIs	**SDG 1:** No Poverty **SDG 2:** Zero Hunger **SDG 4:** Quality Education **SDG 5:** Gender Equality **SDG 13:** Climate Action

24. CLIMATE PRECISION AGRICULTURE

SECTION	DETAILS
Project Title	Climate Precision Agriculture
Project Overview	HBL Zarai Services Limited (HBL Zarai), a wholly owned subsidiary of HBL, is dedicated to promoting and uplifting Pakistan's agriculture sector. HBL Zarai offers a comprehensive range of services, including Agronomic Advisory, Farm Inputs, Farm Mechanization, crop offtake and procurement, Warehousing, and Logistics. HBL Zarai integrates itself with rural communities and offers these services through its flagship HBL Zarai Deras etched deeply in the heart of farmlands and HBL Zarai Dost Shops placed at a Chak or Village level, literally creating outreach at farmers' doorstep. The prime objective of the company is to increase farm productivity, farm economics and build a climate resilient agriculture sector equipped to face challenges of food security, water scarcity and ever-increasing climate related incidents. The proposed model presents an integrated set of mechanization solutions with an objective to improve farm yields & farm economics through the introduction of precision land leveling, precision cultivation & planting, precision based crop surveillance & nutrition, efficient irrigation, contemporary harvesting & grain conservation, scientific post-harvest handling & drying, soil conservation & enrichment through mechanized post-harvest management of the farm, conservation of biodiversity / life on land & below the soil surface, transforming farms into climate resilient farms, etc. **The proposed set of precision equipment comprises of:** Advanced Tractors Land preparation (Cultivator, Plougher, Roller, Sub-soiler, Land Leveler, Power Harrow etc.) Plantation equipment (Bedmaker, Pneumatic Planters, Inter-Row Cultivator, Rice Transplanter, Potato Planter, Rice Seeder etc.) Crop Surveillance & nutrition (Fertilizer Spreader) Harvesting equipment (Multi-grain Combined Harvesters, Specialized Harvesters, Forage Harvester etc.) Post-Harvest Handling of Crop (Multi-grain Dryer) Post Harvest Land Management (Residual Mulcher) Livestock & Dairy Nutrition (Crop Silage Baler, Forage Harvester etc.) In addition to improving farm productivity and various other allied advantages, the use of precision land levelers, land preparation and plantation equipment lead to efficient water utilization thereby helping in the efforts to conserve water in a water stressed farming landscape.

Team Overview	HBL Zarai is guided by a highly diverse and accomplished Board of Directors, which brings together deep expertise in agriculture, finance, and corporate governance. The company is led by Mr. Amer Aziz, CEO of HBL Zarai, an accomplished finance and agriculture professional who is also a farmer himself, and has a deep understanding of the challenges faced by the agricultural value chain in Pakistan. The company's senior leadership team comprises accomplished professionals presenting diverse skillset to steer the company in its various functional areas.
Proponents & Structure	**Mudarib:** Independent trustee / fund manager / any designated islamic financial institution **Rabb-ul-Maal:** Fund Investors. **SPV/Trustee:** An entity to be created or Mudarib may assume the role of SPV/Trustee to hold assets. **Operator:** HBL Zarai under Ijarah model, distributing rentals to investors via mudaraba fund. The operator will charge a service fee from farmers, the service fee should cover all direct operating expenses, maintenance charges, fair dollar adjusted return for the investor (Ijara rental), fair return for the operator etc.
Value Proposition and Market Opportunity	Pakistan's agricultural landscape spans approximately 52.8 M acres, with around 71% of farmers classified as smallholders, cultivating an average of less than 12.5 acres of land each. Despite this vast farming base, access to mechanization services is almost non-existent, leaving most farmers reliant on traditional and inefficient methods that hinder productivity, increase production costs, and contribute to the end-to-end process losses. The structured pay-per-use mechanization model represents a transformative opportunity. By lowering the barrier to entry and enabling access to modern equipment without requiring significant upfront capital, the Fund directly addresses a critical market gap. This creates value for farmers through increased yields, reduced costs, and improved sustainability, while opening a scalable, asset-backed investment avenue for both domestic and international investors.
Location	**Initial focus**: Sahiwal & Gujranwala (Punjab); scalable nationwide.
Policy & Regulatory Context	Aligned with regulatory and policy guidelines. However, certain regulatory approvals from SBP and SECP may be involved.
Business Model & Go-to-Market Strategy	The funded farm mechanization suite will be operated under a pay-per-use model where HBL Zarai will provide mechanization services against a service fee charged on a per acre basis.

	The revenue generated will not only cover operating overheads and periodic maintenance of the machinery fleet but will also build in a sustainable margin that ensures attractive returns to the Fund. Dedicated maintenance workshops and trained operators will be integrated into the model to ensure equipment uptime and efficiency, thereby further protecting investor value. For cross-border investors, the rental streams and fund performance can be benchmarked in USD, adjusted returns, ensuring protection against local currency volatility. This makes the structure particularly suitable for international participation while maintaining full compliance with Shariah principles. **The Go-to-Market strategy:** HBL Zarai's will leverage its Dera network, Village level shops, and its field teams for demand aggregation, service execution and payment collection. By bundling mechanization with advisories, the Fund will deliver a seamless experience to farmers while securing recurring, asset-backed cash flows for investors.
Current Stage & Implementation Plan or Milestones	HBL Zarai's team is already operating a fleet of state-of-the-art farm mechanization machinery. The acquired assets under this project will be employed by HBL Zarai to extend its existing service coverage to farmers. The next stage involves securing investor commitments. Upon funding, the capital will be deployed for the procurement of machinery, establishment of maintenance hubs, and recruitment of trained operators. Services will then be rolled out to farmers under the pay-per-use model.
Key Metrics for Success	Payback in 5-7 years. IRR > 20%. Average annual ROI >15%.
Funding Needs	Rs. 6 billion (Approx. USD 21.5 M).
Use of Proceeds	Acquisition of a full farm machinery suite (tractors, harvesters, dryers, planters, etc.) with sufficient allocation for repairs and maintenance.
Investment Structure	**Mudarib**: Independent trustee / fund manager / any designated islamic financial institution **Rabb-ul-Maal**: Fund Investors. **SPV/Trustee**: An entity to be created or Mudarib may assume the role of SPV/Trustee to hold assets. **Operator**: HBL Zarai under Ijarah model, distributing rentals to investors via mudaraba fund.
Financial Highlights	**Pay Back Period**: 4.5 years **NPV**: Rs. 5.4 billion discounted at 16% based on 10 years of DCF **IRR**: 37% **Average Annual ROI**: >20% **Cash Flow Snapshot**: Annexure-1 Coverage Acres (Scale of Operations): 10,000 Acres

Cap Table Snapshot	Mudaraba Fund structure – no fixed equity split. Investors participate via NAV-based units. HBL Zarai acts as asset operator, not equity shareholder.
Exit Strategy & Potential	The fund can be listed through an IPO or converted into an open ended NAV based fund and sold to an asset management company in Pakistan.
Monetized Carbon & Nature Co-Benefits	GHG emission reductions, water conservation, strengthening food security efforts, poverty alleviation, soil conservation and enrichment, preservation of biodiversity etc.
SDG Alignment with KPIs	**SDG 1**: No Poverty (through improved farm economics) **SDG 2**: Zero Hunger (through higher farm yields) **SDG 3**: Good Health & Well-Being (through improved farm economics and HBL Zarai's integration with rural community) **SDG 8**: Decent Work & Economic Growth (replacing human labour with machinery, converting raw human labour into more skilled resources) **SDG 12**: Responsible Consumption & Production (lesser GHG emissions, water conservation, conservation of biodiversity and soil through precision agriculture) **SDG 13**: Climate Action (climate resilient agriculture and smart farm management through use of technology) **SDG 15**: Life on Land (conservation of soil, biodiversity on the land and under the soil)
Job Creation	200+ direct and indirect jobs across machinery operators, mechanics, service coordinators, and farmer support staff.

25. RICE-WHEAT FARM MECHANIZATION COMPONENT: TRANSFORMING SINDH'S AGRICULTURE THROUGH SERVICE PROVIDERS

SECTION	DETAILS
Project Title	Rice-Wheat Farm Mechanization Component: Transforming Sindh's Agriculture through Service Providers
Project Overview	The project introduces mechanization services for rice and wheat farmers in Sindh via a service provider model (Khushaal Kissan Private Limited). It aims to increase farmer profitability, save farmer time, reduce water use, improve grain quality, and create formal sector rural jobs. Focus crops in Sindh are rice (Kharif) and wheat (Rabi), which together dominate the province's agriculture.

Team Overview	Pakistan Agriculture Coalition has already helped establish a commercial mechanization service provider company named Khushaal Kissan Private Limited (KKPL). JV partners have been active since 2019 through the service provider KKPL: Garibsons, Jaffer Brothers, Conwill Pakistan, MM Commodities, RBI.
Proponents & Structure	Operations under KKPL.
Value Proposition and Market Opportunity	95% of Sindh's rice (2.3 M acres in FY24) and two-thirds of Sindh's wheat are cultivated in 12 districts, enabling economies of scale. A labour shortage in some parts of Sindh, combined with the time-consuming nature of traditional methods, is creating a market demand for machines. Laser levelling can reduce water usage by 40%, Mechanized transplantation can increase yields by 10-15%, and grain loss can drop from 20% to 3% through mechanized harvesting.
Location	Sindh, Pakistan (12 rice-wheat districts: mostly in upper Sindh and some in lower Sindh)
Policy & Regulatory Context	Supports the Sindh government's goals for increasing farmer profitability and efficiency through agricultural modernization. Aligned with the national drive to improve productivity, water use efficiency, and export competitiveness.
Business Model & Go-to-Market Strategy	**Service provider model:** modern machinery operated by trained providers available to small farmers. Farmers pay affordable service charges. Training and awareness to ensure adoption.
Current Stage & Implementation Plan or Milestones	KKPL is in its fifth year of operations.
Key Metrics for Success	900,000 acres mechanized (out of 2.3M rice acres), water savings >30%, increased yields (by 12% due to mechanical harvesting and 15% due to mechanical sowing), reduced post-harvest losses, improved rice quality, formal sector job creation in machinery operations and services.
Funding Needs	500 harvesters and 500 transplanters (with seeders, carriage machines, etc.). Target portfolio of 1,000 machines + opex: USD 60 M
Use of Proceeds	For machinery expansion.
Investment Structure	**Structured as PPP with service providers:** 51% managed locally, 20% equity offered to investors initially, another 20% in a later round, followed by IPO. Investor returns are underpinned by recurring service revenues and scaling export-linked rice value chains.
Cap Table Snapshot	Not applicable (PPP project with service providers and government support).

Exit Strategy & Potential	A self-sustaining service provider industry has been established. Scalable to other crops and provinces.
Monetized Carbon & Nature Co-Benefits	Water savings (>30%), reduced methane from rice paddy due to precision irrigation, and improved sustainability in farming practices.
SDG Alignment with KPIs	**SDG 2**: Zero Hunger **SDG 6**: Clean Water **SDG 8**: Decent Work **SDG 9**: Industry & Innovation **SDG 12**: Responsible Consumption

26. SCALING CLIMATE-SMART MECHANIZATION FOR SMALLHOLDER FARMERS

SECTION	DETAILS
Project Title	Scaling Climate-Smart Mechanization for Smallholder Farmers
Project Overview	Machvista Engineering (Pvt) Ltd. proposes to design, manufacture, and deploy affordable climate-smart farm implements (no-till planters, intercultivators, precision fertilizer applicators, and crop-specific tools) tailored for smallholder farmers. By replacing manual or inefficient diesel-based practices with energy-efficient, soil-friendly tools, the project will reduce emissions, conserve water, enhance soil health, and increase productivity. This initiative also supports adaptation by reducing labor dependency, ensuring timely sowing under erratic weather conditions, and enabling regenerative practices such as no-till farming.
Team Overview	**Lead Proponent**: Machvista Engineering (Pvt) Ltd. **Partners**: Provincial agriculture departments, farmer cooperatives, carbon credit programs, global agri-machinery networks. **Advisors**: Climate-smart agriculture specialists, finance experts.
Proponents & Structure	Machvista will lead R&D, local fabrication, and farmer training. Partnerships with governments and NGOs will facilitate the extension of services and access to climate finance. Private sector partners will manage the validation of carbon credits for reduced emissions.

Value Proposition and Market Opportunity	Pakistan's smallholder farmers (≈80% of the farm population) face low productivity and high input costs due to a lack of mechanization. Climate change exacerbates risks: late sowing, erratic rainfall, and higher fuel prices. **Climate-smart implements offer:** Fuel savings: No-till seeding reduces tractor hours by 60%. Water savings: precision irrigation/fertilization reduces input use by 20–30%. Yield gains: timely mechanization improves yields by 10–25%. Regional scaling potential across CVF–V20 economies with similar farming systems.
Location	**Punjab:** wheat–cotton belt for no-till and intercultivators. **Sindh:** sugarcane and rice belt for mechanized fertilizer applicators and residue management. **KPK:** maize–tobacco belt for small intercultivators and transplanting aids. **Balochistan:** orchards (grapes, apples) for precision fertilizer applicators and small tillage tools.
Policy & Regulatory Context	○ Aligns with Pakistan's National Climate-Smart Agriculture Framework. ○ Supports NDC commitments to reduce emissions from agriculture.
Business Model & Go-to-Market Strategy	○ Hub-and-spoke model: establish local fabrication hubs + village-level service providers. ○ Farmers can rent machinery (pay-per-use) instead of owning. ○ Carbon revenue from no-till adoption subsidizes machinery costs. ○ Partnerships with microfinance institutions for leasing schemes.
Current Stage & Implementation Plan or Milestones	**Pilot (Year 1):** Deploy 500 climate-smart implements across 4 provinces. **Scale-up (Year 2–3):** Expand to 5,000 implements, establish fabrication hubs. **Consolidation (Year 4–5):** Link carbon finance + regional replication in CVF nations.
Key Metrics for Success	○ Tons of CO_2e avoided (fuel savings, residue burning reduction). ○ Hectares under no-till and precision mechanization. ○ Increase in farmer income and yield. ○ Reduction in water and fertilizer usage.
Funding Needs	USD 20 M over 5 years.

Use of Proceeds	○ 40% R&D and fabrication hubs. ○ 30% Farmer training and leasing models. ○ 20% MRV and carbon credit certification. ○ 10% Project management.
Investment Structure	○ Blended finance (equity + concessional loans + grants). ○ Carbon credit revenues reinvested. ○ Private partnerships with provincial governments.
Financial Highlights	**Farmer adoption rate:** 10,000 farmers in the first 5 years. **CO_2e reduction:** 1-1.5 M tons over project lifetime. **ROI:** 18–22% with carbon finance inclusion.
Cap Table Snapshot	(To be developed – will include Machvista, local partners, concessional funders, carbon buyers).
Exit Strategy & Potential	○ Integration into global carbon markets for long-term financing.
Monetized Carbon & Nature Co-Benefits	○ Avoided CO_2e**:** 0.5 -- 1 ton per hectare annually. ○ Water use reduction: 20–30%. ○ Soil health improvement: increased organic carbon levels. ○ Reduced stubble burning.
SDG Alignment with KPIs	**SDG 2 (Zero Hunger):** Increased yields. **SDG 6 (Clean Water):** Reduced irrigation use. **SDG 7 (Affordable Clean Energy):** Reduced fuel use. **SDG 8 (Decent Work):** Green jobs in manufacturing & services. **SDG 13 (Climate Action):** Emissions reduction. **SDG 15 (Life on Land):** Soil health restoration.
Job Creation	5,000+ green jobs (fabrication, mechanics, operators, women-led service providers).

27. SCALING BIOCHAR FOR CLIMATE-RESILIENT AGRICULTURE

SECTION	DETAILS
Project Title	Scaling Biochar for Climate-Resilient Agriculture
Project Overview	This project aims to establish decentralized biochar production and application systems across Pakistan's climate-vulnerable agricultural regions. Using crop residues (rice straw, cotton stalks, bagasse, maize cobs, and animal manure), biochar will be produced through low-emission pyrolysis and applied to degraded, saline, and water-stressed soils. The project will improve soil fertility, enhance water retention, reduce methane from residue burning, and provide carbon credits through sequestration.
Team Overview	○ **Lead Proponent**: Machvista Engineering (Pvt) Ltd. ○ **Partners**: Agricultural universities, provincial agriculture departments, local farmer cooperatives, carbon credit certifiers. ○ **Advisors**: Climate finance and soil science experts.
Proponents & Structure	Machvista will lead design, local fabrication of biochar units, and farmer outreach. Collaboration with public research institutes will ensure monitoring and data validation. Private sector partners will manage carbon credit certification and facilitate transactions with international buyers.
Value Proposition and Market Opportunity	○ Pakistan produces 50+ M tons of crop residues annually, much of which is openly burned. ○ Biochar provides dual benefits: climate mitigation (carbon sequestration, methane reduction) and adaptation (drought resilience, soil health). ○ The growing voluntary carbon market creates revenue streams for farmers and project developers.
Location	1. **Punjab rice belt** – rice straw biochar to reduce stubble burning & methane. 2. **Sindh saline soils** – cotton stalk biochar for salt mitigation. 3. **Balochistan orchards** – fruit pruning waste biochar for soil organic matter. 4. **Thar/Cholistan deserts** – animal manure biochar for sandy soils.
Policy & Regulatory Context	○ Supports Pakistan's NDC targets on agriculture and forestry. ○ Aligns with National Climate Change Policy and National Food Security Policy. ○ Potential eligibility for Loss & Damage Fund and V20 Sustainable Insurance Facility.

Business Model & Go-to-Market Strategy	○ Establish community-level biochar units operated by cooperatives. ○ Farmers contribute residues, receive subsidized biochar. ○ Carbon credits sold internationally finance long-term sustainability. ○ Revenue shared with farmers, creating rural green jobs.
Current Stage & Implementation Plan or Milestones	○ **Pilot (Year 1–2)**: 5 sites in Punjab, Sindh, Balochistan, KPK. ○ **Scale-up (Year 3–5)**: Expand to 50+ units across vulnerable districts. ○ **Commercialization**: International carbon credit sales, regional export of expertise.
Key Metrics for Success	○ Hectares of land improved. ○ Tons of biochar applied annually. ○ Tons of CO_2e sequestered. ○ Reduction in stubble burning incidents. ○ Farmer income uplift through yield increase and carbon sharing.
Funding Needs	USD 15 M over 5 years.
Use of Proceeds	○ 40% Biochar unit fabrication and deployment. ○ 25% Farmer training and capacity building. ○ 20% MRV (Monitoring, Reporting, Verification) & carbon certification. ○ 15% Project management and partnerships.
Investment Structure	○ Concessional climate finance (grants, green bonds). ○ Blended finance (equity + results-based payments). ○ Carbon credit revenue reinvested.
Financial Highlights	○ **Carbon revenue potential**: ~USD 80–100 per hectare annually. ○ **Break-even**: Year 4 with carbon credit sales. ○ **ROI**: >20% for blended-finance investors.
Cap Table Snapshot	(To be developed – will include Machvista, local partners, concessional funders, carbon buyers).
Exit Strategy & Potential	○ Replication in other CVF countries (Bangladesh, Nepal, African V20 nations). ○ Long-term revenue through certified carbon credits.
Monetized Carbon & Nature Co-Benefits	○ Carbon sequestration: 5–7 tCO_2e per hectare annually. ○ Soil fertility improvement. ○ Water retention up to 20% higher in sandy soils. ○ Avoided methane from rice residue burning. ○ Biodiversity gains in orchard and pasture areas.

SDG Alignment with KPIs	○ **SDG 2 (Zero Hunger)**: +20% yield in pilot areas. ○ **SDG 6 (Clean Water)**: Reduced irrigation demand. ○ **SDG 7 (Clean Energy)**: Biochar units powered by agri-waste/solar. ○ **SDG 12 (Responsible Consumption)**: Circular use of crop residues. ○ **SDG 13 (Climate Action)**: Carbon sequestration & methane avoidance. ○ **SDG 15 (Life on Land)**: Soil rehabilitation.
Job Creation	3,000+ green jobs (technicians, operators, extension workers, women entrepreneurs in cooperatives).

28. POST-HARVEST VALUE CHAIN DEVELOPMENT

SECTION	DETAILS
Project Title	Post-Harvest Value Chain Development
Project Overview	Project Overview Post-Harvest Value Chain Development
Team Overview	Develop modern cold chain, processing, drying, packaging units, and certification systems to reduce fish loss and increase product value.
Proponents and Structure	Fisheries Dept., private processors, women-led SMEs.
Value Proposition and Market Opportunity	Post-harvest losses reduced by 50%. Value-added exports 20%.
Location	Gwadar, Pasni, Hub, inland hubs.
Policy and Regulatory Context	EU SPS, HACCP, Balochistan Value Chain Plan.
Business Mode and Go-to-Market Strategy	SMEs operate solar cold storage/drying facilities. Exports via Gwadar EU-compliant port.
Current Stage and Implementation Plan or Milestones	**Year 1**: Pilot 10 processing units. **Year 3–5**: Scale to 50 units.
Key Metrics for Success	50 processing units operational. 40% post-harvest loss reduction.
Funding Needs/Current Status	USD 12.5 M.

Use of Proceeds	Cold chain, solar dryers, packaging.
Investment Structure	30% private & 70% Donor
Financial Highlights	Value-added export revenues ↑ USD 100m.
Exit Strategy and Potential	SMEs scale commercially; government withdraws
Monetized Carbon and Nature Co-Benefits	Less waste → less methane emissions.
SDG Alignment with KPIs	**SDG 12** (Responsible Production). **SDG 5** (Gender Equality).
Job Creation	Direct: 2,000 | Indirect: 5,000

29. COLDHUB PAKISTAN

SECTION	DETAILS
Project Title	ColdHub Pakistan: Sustainable Cold Storage Practice in Pakistan
Project Overview	ColdHub Pakistan aims to address the post-harvest losses in Pakistan's agricultural supply chain by introducing sustainable cold storage facilities powered by renewable energy. In Pakistan, 30-40% of perishable food is lost due to inadequate storage and inefficient supply chain management. ColdHub Pakistan proposes solar-powered cold storage units in major agricultural hubs and peri-urban markets to reduce food waste, enhance farmer income, lower greenhouse gas emissions, and improve food security.
Team Overview	A team led by NEECA and a multidisciplinary team comprising agricultural economists, renewable energy engineers, business strategists, and local community partners. Collectively, the team brings experience in agribusiness, climate-smart technologies, logistics, and policy advocacy.
Proponents & Structure	**Lead Proponent:** ColdHub Pakistan (social enterprise initiative **Partners:** Farmer cooperatives, NGOs, provincial agricultural departments, private investors, and renewable energy providers. **Legal Structure:** Public-private partnership (PPP) with social enterprise orientation.

Value Proposition and Market Opportunity	Pakistan's agricultural sector employs ~40% of the labor force, yet suffers annual losses of around USD 1.3 billion due to post-harvest spoilage. ColdHub Pakistan provides a scalable and sustainable solution through affordable, off-grid cold storage powered by solar energy. The market opportunity spans fresh produce exporters, wholesalers, and retailers who can reduce losses and ensure consistent supply. Rising demand for climate-smart solutions and food security interventions strengthens the business case.
Location	Pilot implementation in Punjab (Multan, Faisalabad), scaling to Sindh (Hyderabad, Karachi periphery), Balochistan (Quetta), and KPK (Peshawar fruit markets).
Policy & Regulatory Context	Supported by Pakistan's National Food Security Policy 2018 and National Climate Change Policy 2021. Alignment with government renewable energy targets and sustainable agriculture strategies. Compliance with provincial agriculture market regulations and food safety standards.
Business Model & Go-to-Market Strategy	**Business Model:** Pay-per-use cold storage service. Farmers and traders rent storage space on a daily or weekly basis at affordable rates. **Go-to-Market:** ○ Partnerships with farmer cooperatives and wholesale markets. ○ Awareness campaigns highlighting reduced food waste and higher incomes. ○ Integration with logistics companies for farm-to-market supply chain efficiency.
Current Stage & Implementation Plan or Milestones	**Stage**: Feasibility study completed; pilot design phase. **Milestones:** **Year 1**: Install 10 solar-powered ColdHubs in Punjab. **Year 2–3**: Scale to 50 units nationwide. **Year 4–5**: Expand into export-linked value chains (mangoes, kinnows, vegetables).
Key Metrics for Success	40% reduction in post-harvest losses for users. 20–25% increase in farmer income. Over 5,000 farmers have used our services in the first three years. CO_2 emissions avoided through renewable-powered storage (estimated 15,000 tons over 5 years).
Funding Needs	USD 5 M initial investment for infrastructure, solar technology, logistics integration, and operational scaling.

Use of Proceeds	**ColdHub installation & renewable energy equipment**: 50% **Logistics and operational costs**: 20% **Capacity building & training for farmers**: 15% **Marketing & partnerships**: 10% **R&D and monitoring**: 5%
Investment Structure	Blend of grants, concessional loans, and equity participation. Potential revenue-sharing model with cooperatives.
Financial Highlights	Break-even expected within 4 years. Annual revenue potential: USD 7–8 M at nationwide scale. Gross margins projected at 35–40%.
Cap Table Snapshot	**Founders & core team**: 40% **Impact investors**: 35% **Public-private partners**: 15% **Farmer cooperatives & local stakeholders**: 10%
Exit Strategy & Potential	Investor exit via acquisition by agribusiness conglomerates or logistics firms. Potential listing as a green enterprise on Pakistan Stock Exchange (PSX) sustainability board.
Monetized Carbon & Nature Co-Benefits	Avoided emissions from reduced food spoilage and renewable-powered cooling. Potential to generate carbon credits for sale in voluntary markets. Co-benefits include improved food availability, water savings (resulting in less waste), and biodiversity protection through reduced land-use pressure.
SDG Alignment with KPIs	○ **SDG 2 (Zero Hunger)**: Reduced food loss. ○ **SDG 7 (Affordable & Clean Energy)**: Solar-powered storage. ○ **SDG 8 (Decent Work & Economic Growth)**: Jobs and farmer income growth. ○ **SDG 12 (Responsible Consumption & Production)**: Sustainable food systems. ○ **SDG 13 (Climate Action)**: CO_2 emissions reduction.
Job Creation	○ **Direct jobs**: 300+ (technicians, logistics staff, local operators). ○ **Indirect jobs**: 1,500+ in agricultural markets and supply chains.

30. INTEGRATED CLIMATE-RESILIENT AGRICULTURE PROSPERITY PROJECT(CRAPP)

SECTION	DETAILS
Project Title	Integrated Climate-Resilient Agriculture Prosperity Plan (CRAPP) Agriculture Extension Department, Khyber Pakhtunkhwa
Project Overview	Establishment of high-value climate-adapted orchards & Integrated Pest Management (IPM) Practices, Walking Tunnels farming.
Team Overview	Agriculture Extension Department Khyber Pakhtunkhwa
Proponents & Structure	Establishment of 1000 acres of high-value climate-adapted orchards, Provision of 100 acres of Fruit fly traps, Provision of 100 Trichogramma Cards in vegetables, and 1000 walking tunnels for off-season vegetables
Value Proposition and Market Opportunity	Increase production of high-value fruits & vegetables, promoting local market linkages to encourage export-quality production
Location	Khyber Pakhtunkhwa
Policy & Regulatory Context	NDCs and SDGS
Business Model & Go-to-Market Strategy	Enhanced fruit/Vegetable production and revenue generation from marketing of the fruits and vegetables through local and international markets
Current Stage & Implementation Plan or Milestones	Pilot Concept ready, 3.152 M USD investment plan
Key Metrics for Success	18,350-ton CO2e/year, 17.2 M USD, 200 Jobs
Funding Needs	3.152 M USD
Use of Proceeds	Nurseries, Planting, Certification, and monitoring
Investment Structure	Blended finance model (Government funding + Climate finance + Carbon buyers + Private sector).
Financial Highlights	IRR estimated at 18-22% including carbon revenues. **Payback period:** 3-5 years.
Cap Table Snapshot	**Public sector:** 50% **Private investors:** 30% **Community/farmers:** 20%

Exit Strategy & Potential	Gradual transfer of orchard ownership and carbon rights to farmer groups
Monetized Carbon & Nature Co-Benefits	18,350-ton CO_2e/year **Co-benefits:** biodiversity conservation, soil health improvement, water regulation, and rural poverty reduction.
SDG Alignment with KPIs	**SDG 2**: Zero Hunger **SDG 8**: Decent Work and Economic Growth **SDG 9:** Innovation **SDG 13:** Climate Action **SDG 15:** Land Restoration
Job Creation	200 Jobs

31. FINANCING OF AGRI GREEN BANKING PRODUCTS

SECTION	DETAILS
Project Title	Financing of Green Banking Products
Project Overview	**Promoting Climate resilience and Environmental protection in Pakistan's agriculture sector by financing following:** Solar Powered tube wells, Solar Powered High Efficacy Irrigation System (Drip/Sprinkler etc.) Small Water Reservoirs, Combine Seeder Bio Gas Unit
Team Overview	ZTBL field functionaries, supported by Mobile Credit Officer, with more than 1,100 Mobile Credit Officers (MCOs) & 501 BM serving in 501 branches nationwide.
Proponents & Structure	Potential collaboration with agro-engineering service providers and renewable energy companies.
Value Proposition & Market Opportunity	○ Pakistan has more than 1.285 M tube wells, of which 1.2 M are diesel-powered and 0.31 M are electric, highlighting a significant potential for Solarization ○ Punjab has approximately 24 M acres of wheat and 17 M acres of rice area, offering a considerable potential for Combine seeder use to avoid residue burning, cut costs, and lower GHG emissions ○ Installation of biogas units under Climate Prosperity Plan, enabling farmers to capture methane from livestock manure and convert it into clean energy.

Location	Pakistan
Policy & Regulatory Context	Fully aligned with ZTBL Green Banking Policy, State Bank of Pakistan Green Banking Guidelines, Pakistan's Nationally Determined Contributions (NDCs), Uraan Pakistan 5Es (Environment and Climate change, Energy & Infrastructure)
Business Model & Go-to-Market Strategy	ZTBL will provide financing for green agriculture technologies through its extensive branches and MCO network, with re-payments made as per the Bank's defined loan rules and policies." Outreach to farmers will be strengthened through mobile vans and digital agri advisory Services of the Bank and Zarai Bethaks.
Current Stage & Implementation Plan	ZTBL has already initiated financing of climate-smart technologies. Banks will assign targets to specific areas based on the agricultural profile of each area. Financing will additionally be facilitated through agricultural service providers.
Key Metrics for Success	**Solar Tube Wells** CO_2 Emission Reduction: 3 metric ton CO_2 per tube well per year (≈ 6,000 metric ton CO_2/year for 2,000 tube wells). Farmer Savings: Annual cost reduction in fuel & maintenance expenses per farmer. **Solar with Drip / High-Efficiency Irrigation Systems** Water Savings: 70–80% reduction in irrigation water use Yield Improvement: 20-40% increase in crop productivity Energy Use Reduction: Fewer pumping hours & reduced electricity/diesel consumption. Reduction in greenhouse gases Emission **Combine Seeder** Crop Residue Burning Avoidance: Tonnes of paddy straw prevented from burning per season. GHG & Smog Reduction Cost Savings: Reduced tillage and fuel use per acre. **Bio Gas Units:** Bio Gas Units can reduce methane emissions by up to 40%, while simultaneously providing a renewable source of energy for rural households, reducing reliance on firewood, fossil fuels, and improving rural livelihoods.
Funding Needs	USD 49.70 M
Use of Proceeds	Financing for the installation of Green products such as solar tube wells, Solar-powered irrigation systems, Combine Seeder equipment and Bio Gas units
Investment Structure	Loan financing through ZTBL for Green Banking Products

Financial Highlights	To be developed based on portfolio performance and expected re-payment flows
Cap Table Snapshot	ZTBL is a state-owned enterprise
Exit Strategy & Potential	Since ZTBL applied for grant/aid only therefore upon recovery the funds will be re-financed or revolved through the same scheme or a related climate-friendly/green banking initiative.
Monetized Carbon & Nature Co-Benefits	Carbon credits through avoided emissions from diesel replacement and residue burning reduction; Enhanced soil fertility; reduced smog and air pollution Water-use efficiency.
SDG Alignment with KPIs	**SDG 2**: Zero Hunger **SDG 6**: Clean Water **SDG 7**: Affordable & Clean Energy **SDG 13**: Climate Action

32. PROMOTING SUSTAINABLE LIVELIHOODS, GREEN INFRASTRUCTURE, AND CLIMATE RESILIENCE THROUGH OLIVE CULTIVATION AND APICULTURE ALONG NATIONAL HIGHWAYS IN BALOCHISTAN (PHASE-II GREEN BALOCHISTAN INITIATIVE)

SECTION	DETAILS
Project Title	Promoting Sustainable Livelihoods, Green Infrastructure, and Climate Resilience Through Olive Cultivation and Apiculture Along National Highways in Balochistan (Phase-II Green Balochistan Initiative)
Project Overview	The proposed project promotes sustainable olive cultivation and agroforestry along Balochistan's national highways to enhance domestic edible oil production and reduce dependence on imports. Through large-scale olive plantations, nurseries, processing units, and market linkages, it will establish a robust olive-based value chain, create employment opportunities, and enhance rural livelihoods through community engagement and skills development. Integrating honeybee rearing within olive areas will generate additional income through honey production while enhancing pollination, biodiversity, and ecosystem services. This olive–honey agroforestry model will diversify livelihoods, strengthen rural economies, and encourage the participation of women and youth.

	By adopting climate-smart practices, the project will enhance water-use efficiency, sequester carbon, and build resilience to climate change, while roadside green belts will improve microclimates and mitigate heat island effects. Optimizing marginal lands and fostering institutional collaboration will ensure long-term socio-economic and environmental sustainability for highway communities.
Team Overview	Team led by Government line departments
Proponents & Structure	The Green Balochistan Initiative (GBI), a flagship program of the Government of Balochistan, is the project's proponent. Established to promote sustainable agriculture as a driver of ecological restoration, climate resilience, and rural development, GBI focuses on advancing agricultural systems, including agroforestry and apiculture, as well as community-based resource governance. With its institutional capacity and partnerships, GBI is well-positioned to implement the project, enhancing agricultural productivity and ensuring socio-economic sustainability for communities in Balochistan. The project will be implemented under the institutional framework of the GBI through its Project Management Unit (PMU). Oversight and policy guidance will be provided by the Project Steering Committee (PSC), chaired by the Additional Chief Secretary, Planning and Development Department, Government of Balochistan. The PMU, led by the Project Director, will manage day-to-day operations including planning, monitoring, financial management, and stakeholder coordination. Implementation will be supported by specialized technical teams in agriculture, agroforestry, apiculture (honeybee rearing and management), GIS/remote sensing, and socio-economic development. Field activities will be carried out in collaboration with the Agriculture Department, Forest & Wildlife Department, National Highway Authority (NHA), and local communities, ensuring capacity building, participatory approaches, and long-term sustainability.
Value Proposition and Market Opportunity	**Sustainable Livelihoods:** Directly benefits about 30,000 smallholder farmers and rural households and indirectly impacts ~100,000 household members. Generates 8,000–10,000 seasonal and permanent jobs in plantation, irrigation, harvesting, processing, beekeeping, and transportation. Supports 200–300 local entrepreneurs, traders, processors, and honey producers, and trains ~500 agriculture extension staff, forestry officials, and local stakeholders. **Edible Oil & Honey Production**: Increases local olive oil production by 10–15% while simultaneously promoting honey and related by-products (beeswax, propolis, royal jelly) as high-value commodities, reducing import dependence and diversifying income streams.

	Environmental Benefits: Enhances biodiversity, pollination, microclimates, and carbon sequestration, benefiting nearly 300,000 residents of roadside communities, with potential monetization opportunities through climate finance. Integrated Value Chain: Combines nurseries, plantations, honeybee colonies, and processing units for both olive and honey, creating a complete, scalable model. **Market Potential:** High domestic demand and export opportunities to the Middle East for olive oil, honey, and value-added products, coupled with policy support and donor interest, create opportunities for private-sector engagement and provincial expansion.
Location	The national highways in Balochistan will be lined with olive plantations on both sides of the road, with a plant-to-plant spacing of 16 feet and a row-to-row spacing of 10 feet, measured from the edge of the road. **Proposed plantations along major highways include**: Quetta to Karachi (N-25, ~370 km): ~500,000 plants Quetta to Chaman (N-25, ~125 km): ~170,000 plants Quetta to Zhob (N-50, ~336 km): ~450,000 plants Quetta to Fort Monroe (N-50 and N-70, ~461 km): ~620,000 plants Quetta to Jaffarabad (N-65, ~340 km): ~470,000 plants Total: ~2,310,000 olive seedlings (including 10% extra to cope with potential mortality) To integrate apiculture with olive agroforestry, honeybee rearing and production sites will be established along highways at ~15 km intervals, with 25–30 hives per site, depending on floral availability. **Proposed hive management sites include**: Quetta to Karachi (N-25, ~370 km): ~25 sites having 625–750 hives Quetta to Chaman (N-25, ~125 km): ~8 sites having 200–240 hives Quetta to Zhob (N-50, ~336 km): ~22 sites having 550–660 hives Quetta to Fort Monroe (N-50 and N-70, ~461 km): ~31 sites having 775–930 hives Quetta to Jaffarabad (N-65, ~340 km): ~23 sites having 575–690 hives Total: About 109 hive sites having 2,725–3,270 hives. These plantations will create a green corridor along the national highways, contributing to carbon sequestration, roadside beautification, and soil conservation.
Policy & Regulatory Context	The project directly supports national and provincial policies by strengthening agriculture through olive cultivation and apiculture along the National Highways in Balochistan, while enhancing livelihoods, promoting green infrastructure, and mitigating climate change: **Regulatory Compliance & Institutional Coordination:** Implementation will comply with provincial agriculture, apiculture, environmental, and land management regulations, coordinated with the Agriculture Department, Forest & Wildlife Department, and NHA.

Business Model & Go-to-Market Strategy	Addressing land degradation and climate vulnerability while creating green jobs and carbon credits. Strong potential in voluntary carbon markets, NTFP-based value chains (including olive oil, honey, and other bee products), and climate-resilient agriculture through integrated olive–honey agroforestry.
Current Stage & Implementation Plan or Milestones	**Current Stage** Conceptualization Completed: Project idea, objectives, and scope defined. Feasibility Assessment: Preliminary site selection, assessment of highway corridors, and suitability for olive cultivation conducted. Stakeholder Engagement Initiated: Coordination with Agriculture Department, Forest & Wildlife Department, NHA, and local communities underway. Institutional Setup: PMU of GBI established with staffing and governance structure in place. Implementation Plan (6-Year Timeline) **Year 1: Preparation & Planning** Finalize detailed project design and site surveys along national highways. Recruit and train PMU staff, technical experts, and field teams. Procure inputs: Olive seedlings, irrigation equipment, tractors, transportation vehicles, fertigation and water tanks, spray machines, fertilizers, growth regulators, pesticides/insecticides, as well as beekeeping equipment (hives, protective gear, honey extractors) and honeybees for rearing. Establish monitoring, reporting, and data management framework. **Year 2: Nursery Development & Seedling Production, and Honeybee Rearing** Establish and operationalize olive nurseries at strategic locations. Produce sufficient seedlings for plantation activities in subsequent years. Rear honeybee colonies on a mass scale in controlled apiaries, ensuring strong and healthy hives that will be shifted to olive plantation sites during field establishment Train local staff and community members in nursery management, fertilization, pest management, and irrigation techniques, as well as apiculture practices including honeybee rearing, hive management, and honey production. **Year 3: Plantation Establishment (Phase 1)** Prepare plantation sites using tractors and irrigation/fertigation systems. Apply fertilizers, pesticides, and insecticides as per agricultural recommendations. Establish initial olive plantations along selected highway corridors. Begin operationalizing spray and irrigation equipment/implements. Shift reared honeybee colonies from nurseries to plantation areas, where they will utilize surrounding flora to strengthen colonies and support biodiversity, while preparing for future olive pollination.

	Begin pilot-scale honey production and train local farmers in hive management, honey extraction, and colony maintenance. **Year 4: Plantation Expansion & Capacity Building** Expand olive plantations along additional roadside areas. Apply fertilizers, pesticides, and insecticides as per agricultural recommendations. Expend and operate spray and irrigation support plantation growth. Increase honeybee rearing for larger-scale honey production, with bees feeding on olive trees (as they grow) and nearby plants. Set up community-level honey collection and processing units to ensure good quality and better market access. Diversify into other bee products (beeswax, propolis, royal jelly, pollen) to create more income opportunities. Train farmers and local communities in advanced beekeeping (hive care, seasonal management, honey extraction, and value addition) and continue training in climate-smart farming. Raise awareness on safe use of pesticides near beehives to protect colonies. **Year 5 & 6: Full-Scale Operations, Monitoring & Sustainability** Complete plantation targets and ensure full irrigation and fertigation infrastructure is operational. Fully operationalize olive oil processing units, honey processing units, and market linkages for both olive and honey value chains. Strengthen local value chains, post-harvest handling, and community-based processing initiatives (olive oil, olive tea, and honey). Conduct comprehensive monitoring, evaluation, and impact assessment. Strengthen institutional collaboration and ensure sustainability of livelihoods, green infrastructure, biodiversity, and environmental resilience. Explore carbon credit opportunities and promote integration of olive–honey agroforestry as a model for replication in other regions.
Funding Needs	**Project Cost**: USD 30 M
Use of Proceeds	The total project cost of USD 30 M will be fully funded by donor support. The proceeds will be strategically allocated to ensure effective implementation, long-term sustainability, and measurable socio-economic and environmental impacts. **Plantation, Nursery Development, and Honeybee Rearing (25%)** – Establishment of olive nurseries, seedling production, large-scale plantation along national highways, maintenance of young trees, honeybee colony rearing, hive management, and integration of apiculture with olive plantations.

Irrigation Infrastructure and Pest Management (30%) – Tractor-based irrigation with water and fertigation tanks, procurement of fertilizers, pesticides, and growth regulators, supply of spraying equipment, and implementation of integrated pest management practices.

Training and Capacity Building (10%) – Farmer training, skill development programs, and institutional capacity building for extension staff, researchers, forest officers, and local communities, including olive plantation management, olive oil extraction, and olive tea making and processing, as well as advanced apiculture practices and honey production.

Processing Units and Value Chain Development (10%) – Establishment of olive oil extraction facilities, honey collection and processing units, post-harvest handling infrastructure, and market linkages to strengthen olive and honey-based value chains.

Monitoring, Administration, and Community Engagement (25%) – Project management, monitoring and evaluation, transportation (vehicles and tractors), field logistics, and participatory engagement with local communities, including eventual handover of olive plantations and apiaries to roadside local communities.

Investment Structure	The project has an estimated total cost of USD 30 M, which will be fully funded by donor support. The PMU of the GBI will manage and allocate the funds across key components. Funds will be allocated as follows: 25% for plantation and nursery development along-with honeybee rearing and hive management, 30% for irrigation infrastructure and insect and pest control, 10% for training and capacity building (covering both olive cultivation and apiculture), 10% for olive oil and honey processing units, and 25% for monitoring, administration, and community engagement. Financial oversight will be provided by the PSC, chaired by the Additional Chief Secretary of the Planning and Development Department, Government of Balochistan, to ensure transparency, accountability, and timely disbursement of funds. Cost-effectiveness and sustainability will be promoted through efficient resource utilization and coordination with local stakeholders and communities, supporting both olive and honey value chains for long-term socio-economic and environmental benefits.
Financial Highlights	**Total Project Cost**: USD 30 M **Funding Source**: Fully funded by donor support **Key Allocations:** Plantation and nursery development, and honeybee rearing & hive management – 25% Irrigation infrastructure and insect/pest control – 30% Training and capacity building – 10% Olive oil and honey processing units – 10% Monitoring, administration, and community engagement – 25%

	Fund Management: Managed by the PMU of GBI, with oversight from the PSC to ensure transparency, accountability, and timely disbursement. **Focus**: Ensuring efficient and transparent use of resources to achieve sustainable olive cultivation, integrated honeybee rearing and hive management, enhanced rural livelihoods through olive oil and honey value chains, improved green infrastructure along highways, climate resilience, and long-term socio-economic and environmental benefits for local communities.
Exit Strategy & Potential	By the end of the sixth year, olive plantations will be transferred to local communities, with trained cooperatives overseeing irrigation, harvesting, and maintenance. Honeybee colonies and apiaries will also be managed by the communities, ensuring continued honey production, pollination services, and diversification of income through bee products (honey, beeswax, propolis, royal jelly, pollen). Processing units and value chain enterprises for both olive oil and honey products will be entirely operated by the private sector, while the Government of Balochistan, through local authorities, will provide oversight to ensure sustainable management. The project will generate a sustainable olive–honey–based economy: boosting domestic oil and honey production, creating jobs, improving microclimates along highways, enhancing aesthetic landscapes, and strengthening ecological services. Following successful implementation along national highways, the project is planned to expand to provincial and local roads, scaling up its social, economic, and environmental impact across Balochistan. Carbon Sequestration: Olive plantations, agroforestry, and honeybee forage areas are expected to sequester 42,000 tons of CO_2 annually, with potential monetization through carbon credits or climate finance.
Monetized Carbon & Nature Co-Benefits	**Carbon Sequestration**: Olive plantations, agroforestry, and honeybee forage areas are expected to sequester 42,000 tons of CO_2 annually, with potential monetization through carbon credits or climate finance.
SDG Alignment with KPIs	**SDG 1**: No Poverty **SDG 2**: Zero Hunger **SDG 8**: Decent Work and Economic Growth **SDG 13**: Climate Action **SDG 15**: Life on Land
Job Creation	Between 500 seasonal and permanent jobs will be created in plantation, irrigation, harvesting, processing, beekeeping, honey extraction, and transportation.

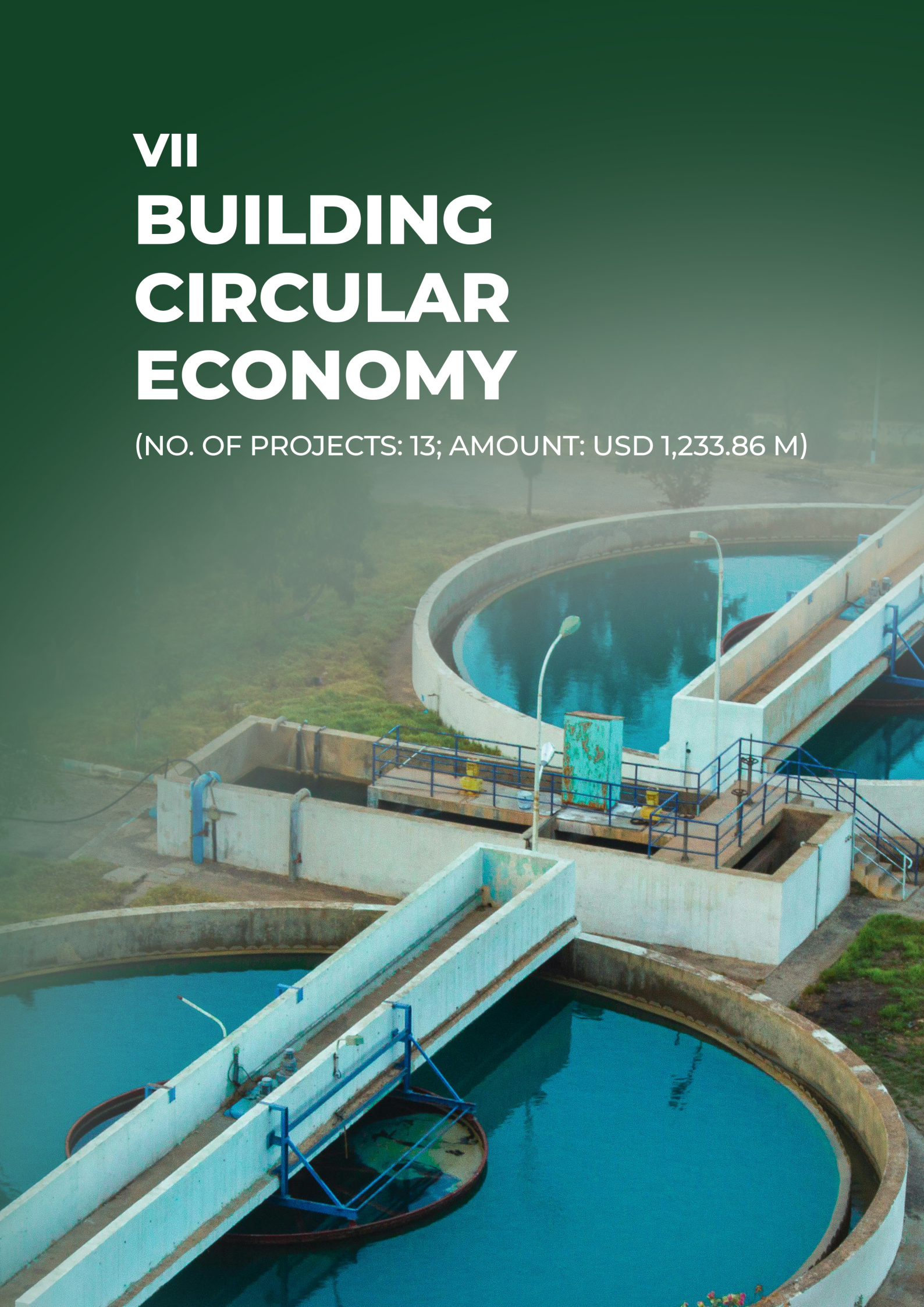
33. CLIMATE-SMART MANAGEMENT AND BIOSALINE REMEDIATION

SECTION	DETAILS
Project title	Climate-Smart Management and Biosaline Remediation
Project overview	The project aims to determine the extent of salt-affected soil in Balochistan. The goal is to enhance soil productivity by utilizing soil amendments, implementing improved farming practices, and adopting sustainable cropping systems. Additionally, the goal is to evaluate and develop salt-tolerant plant varieties and halophyte species under real field conditions.
Team overview	Green Balochistan Initiatives (GBI)
Value Proposition and Market Opportunity	Salt-affected soils in Balochistan will be mapped and assessed using GIS and Remote Sensing technology. ○ Salt-tolerant crops and halophytes will be screened and evaluated under field and greenhouse conditions. ○ Halophyte-based farming systems and value chains will be developed for food, fodder, forage, and industrial uses. ○ Efficient irrigation methods using saline and brackish water will be tested and demonstrated at the field scale. ○ Demonstration plots will be established, and farmers, researchers, and extension workers will be trained through community-based programs. ○ Laboratory facilities will be strengthened, greenhouse and shed house structures will be established, and vehicles will be provided for research and field operations. ○ Establishment of a Center of Excellence for Saline Agriculture as a hub for research, training, policy advice, technology transfer, and promotion of biosaline agriculture.
Location	Salt-affected areas of the entire Balochistan province.
Policy and Regulatory Context	Aligned with the Balochistan Comprehensive Development Strategy, the Agriculture sector strategy.
Funding Needs/Current Status	USD 25 M

Use of proceeds	○ District-wise GIS-based maps of salt-affected soils and groundwater profiles will be developed, providing a scientific baseline to monitor climate-driven changes in salinity and support adaptive, climate-smart land and water management. ○ Cutting-edge research will generate sustainable solutions for rehabilitating salt-affected soils, including the development of salt-tolerant crops, halophytes, integrated nutrient management, and improved agronomic practices, thereby supporting long-term productivity under climate stress. ○ Locally screened and exotic salt-tolerant crops and halophytes will be evaluated and made accessible to farmers, enabling them to adapt to salinity stress, water scarcity, and climate variability. ○ Field-scale demonstrations of efficient irrigation techniques using saline and brackish water (e.g., drip irrigation, deficit irrigation) will improve water-use efficiency and reduce soil salinization risks. ○ The development of Halophyte-based value chains for food, fodder, forage, and industrial applications will be pursued. ○ Establishment of the Center of Excellence in Balochistan will act as a long-term hub for research, training, and policy guidance, and technology transfer, promoting climate-smart saline agriculture, ensuring sustainability.
SDG alignment with KPIs	**SDG 1**: No Poverty **SDG 2**: Zero Hunger **SDG 8**: Decent Work and Economic Growth **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action **SDG 15**: Life on Land **SDG 17**: Partnerships for the Goals

VII
BUILDING CIRCULAR ECONOMY

(NO. OF PROJECTS: 13; AMOUNT: USD 1,233.86 M)



34. PUNJAB RECYCLING PARKS PACKAGE - 10 PLANTS

SECTION	DETAILS
Project Title	Punjab Recycling Parks Package – 10 Plants
Project Overview	The Punjab Recycling Parks Package proposes the development of 10 integrated recycling and waste-to-resource plants across Punjab, each with a capacity of 500 TPD, collectively processing 5,000 TPD MSW. The initiative introduces a PPP + EPC (BOOT model) to ensure efficient recovery of resources, significant GHG reductions, and long-term sustainability.
Team Overview	Led by the Government of Punjab in partnership with municipal Waste Management Companies. Execution through private sector developers and EPC partners under BOOT concession agreements (20–25 years).
Proponents & Structure	**Proponents:** Government of Punjab, Waste Management Companies, private investors/EPC contractors. **Structure:** PPP + EPC, BOOT model, with government providing land and guaranteed waste supply; private sector responsible for financing, construction, operations, and resource recovery.
Value Proposition and Market Opportunity	Punjab generates over 50,000 TPD of MSW, with a recovery rate of less than 20% today. This package targets a≥70% recovery rate for a 5,000 TPD facility. Extension of landfill life by decades, circular economy acceleration, and direct contribution to Pakistan's COP30 and Paris Agreement commitments. **Market size**: USD 85–115 M annual revenues with strong upside from carbon credits and energy sales.
Location	Punjab Province, Pakistan – specific cities/sites identified and land to be allotted by the provincial government.
Policy & Regulatory Context	Supported by Punjab Government solid waste management policies. In alignment with Pakistan's Nationally Determined Contributions (NDCs) and Paris Agreement commitments.

Business Model & Go-to-Market Strategy	BOOT model with 20–25 year concession agreements. Guaranteed waste supply from local waste management companies. Multiple revenue streams include the sale of recyclables, bio-CNG, RDF, compost, and carbon credits. Carbon finance and climate-linked bonds to enhance returns. **Go-to-market:** phased rollout of 10 plants with initial investor syndication at COP30.
Current Stage & Implementation Plan or Milestones	Concept and prefeasibility completed. **Year 1–2**: Financial closure and construction of first 2–3 plants. **Year 3–5**: Rollout of remaining plants, achieving 5,000 TPD processing.
Key Metrics for Success	5,000 TPD MSW diverted from landfill. 70%+ recovery rate. 770,000–970,000 tCO_2e GHG reductions annually. Annual revenues of USD 85–115 M. 14–18% IRR with 6–8 year payback period.
Funding Needs	**Total CAPEX required**: USD 250–350 M. **Per plant CAPEX**: USD 25–35 M.
Use of Proceeds	Plant construction and EPC turnkey implementation. Machinery and processing units (MRF, biogas, composting, RDF). Project development, capacity building, and operational readiness.
Investment Structure	PPP + EPC BOOT model. Land and waste guaranteed by the government. Revenue sharing through product sales and carbon credits. Exit option: transfer to government or extend O&M period.
Financial Highlights	**Single Plant Revenues**: USD 7.5–9.5 M/year. **Package Revenues**: USD 75–95 M/year (excluding carbon). **Carbon Credits**: USD 10–20 M/year. **Combined**: USD 85–115 M/year. **IRR**: 14–18%. **Payback**: 6–8 years.
Cap Table Snapshot	**Government of Punjab (land + waste guarantee)**: Non-equity partner. **Private Sector Investors/EPCs**: 70–80% equity. **Climate/Impact Funds & DFIs**: 20–30% equity + concessional debt.
Exit Strategy & Potential	Concession transfer to the government at maturity (20–25 years). Extension of O&M with revised terms. Option to refinance or divest via secondary market in mid-term (years 7–10).

Monetized Carbon & Nature Co-Benefits	**Carbon**: 770,000–970,000 tCO_2e/year reductions, monetizable via compliance and voluntary markets. **Nature**: reduced landfill pollution, improved soil quality via compost, reduced fossil fuel use via RDF and bio-CNG. Potential for biodiversity benefits and avoided methane emissions.
SDG Alignment with KPIs	**SDG 7 (Affordable & Clean Energy)**: Bio-CNG production (USD 4.3 M/plant annually). **SDG 11 (Sustainable Cities)**: 5,000 TPD MSW managed sustainably. **SDG 12 (Responsible Consumption & Production)**: 70%+ recovery. **SDG 13 (Climate Action)**: 1 M tCO_2e/year avoided.
Job Creation	Estimated 300–400 direct jobs per plant. 3,000–4,000 jobs across 10 plants (operations, logistics, recycling, energy). Additional indirect employment in supply chain and recycling industries.

35. WASTEWATER TREATMENT PLANT (WWTP)

SECTION	DETAILS
Project Title	Wastewater Treatment Plant (WWTP)
Project Overview	Sewage Treatment to prevent pollution and monetize byproducts
Team Overview	WASA Punjab
Proponents and Structure	Public-private model
Value Proposition and Market Opportunity	Largest urban WWTP project in Lahore; monetizes waste.
Location	Mehmood Booti/Shadbagh, Lahore, Pakistan
Policy and Regulatory Context	Urban sanitation and environmental reform.
Business Mode and Go-to-Market Strategy	PPP model with a blended payment structure A base annuity over 17 years, supplemented by results-based payments.
Current Stage and Implementation Plan or Milestones	Pre-implementation completed.

Key Metrics for Success	23.7% ROE; PKR 369 B revenue.
Funding needs/Current Status	**CAPEX and O&M**: USD 405 M (PKR 116,372 M)
Use of Proceeds	Construction, operation, fertilizer, carbon credits.
Investment Structure	PPP + annuity model
Financial Highlights	ROE 23.7%; revenue PKR 369 B
Exit Strategy and Potential	Revenue-based annuity; end of PPP lifecycle.
Monetized Carbon and Nature Co-Benefits	491,000 tCO2e/year; wastewater reuse.
SDG alignment with KPIs	**SDG 6**: Clean Water and Sanitation **SDG 11**: Sustainable Cities and Communities **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action
Job Creation	O&M jobs and value chain support.

36. BIO-LNG

SECTION	DETAILS
Project Title	BIO LNG
Project Overview	The project involves setting up Pakistan's first bio-LNG plant, processing organic waste through anaerobic digestion, upgrading it to biomethane, and liquefying it into bio-LNG. With a capacity of 20 tons/day, it will serve industries such as textiles, cement, fertilizer, ceramics, as well as housing colonies, hospitals, domestic households, and the transportation sector. This renewable energy solution will replace expensive imported LNG, reduce greenhouse gases, and provide economic, social, and environmental benefits.

Team Overview	**The management team includes:** Air Marshal (R) Aurangzeb Khan (CEO) – 35 years in PAF, ex-Chairman PAC Kamra, now leading Wahdat Poultry Farm. Muhemmed Shahid Zaman (Chairman & COO) – 35 years in agriculture, orchards, dairy farming, fish farming. Shabana Muhemmed Shahid (Director, Social Initiatives) – Drives community welfare and women's empowerment. Hammad Khan (Project Director) – MBA (GWU & NUST), ex-Deutsche Bank & Capital One. Air Vice Marshal (R) Qasim Masood – Head of Technical Ops, ex-PAF & PIA. Additional senior consultants in geology, finance, IT, and logistics.
Proponents & Structure	The project has been initiated and anchored by the owners of Wahdat Poultry Farm Pvt. Ltd., the management partners of the proposed project. Karandaaz Pakistan has also invested in Wahdat Poultry Farm, a highly reputable institution sponsored by FCDO (UK Aid) and the Bill and Melinda Gates Foundation.
Value Proposition and Market Opportunity	The Bio-LNG project provides a cost-effective alternative to imported LNG, offering energy at 40% below grid prices while ensuring a reliable supply. With Pakistan's natural gas reserves projected to deplete by 2035, the project directly addresses an urgent national energy gap by substituting costly imported LNG with a sustainable local alternative. This positions Bio-LNG as both a cost-effective and future-proof energy solution.
Location	The initial model plant will be located in Sargodha, Punjab, Pakistan, an area renowned for its rich agricultural, dairy, and poultry farming sectors. The project will use a "Hub & Spoke" model, with plans to replicate it in other clusters across Pakistan, 12 of which are located in Punjab. The target markets near Sargodha include the Faisalabad and Bhalwal industrial zones, as well as Independent Power Producers (IPPs) such as Punjab Thermal and NPPMCL.
Policy & Regulatory Context	Renewable Energy (RE) Policy from 2019, which aims for 60% of energy to come from renewable sources (including hydro) by 2030. The project may seek status as a Special Economic Zone or Export Processing Zone to gain tax holidays and subsidies.
Business Model & Go-to-Market Strategy	The project is designed around a circular model that converts manure and agricultural waste into biogas, upgrades it to 99.9% pure biomethane, and liquefies it into Bio-LNG. This will also have commercially valuable byproducts such as fertilizers, CO_2, and dry ice. **The go-to-market strategy** centers on distributing Bio-LNG using specialized trucking fleets to key industrial clusters, IPPs, and commercial hubs, while packaging organic fertilizers directly for farmers.

	In the longer run, the company will also expand into consultancy and advisory services to scale the adoption of Bio-LNG across Pakistan.
Current Stage & Implementation Plan or Milestones	**Completed Milestones:** Initial market survey (Feb 2023) High-level feasibility (May 2023) Engaging vendors and consultants (Jul 2023) Survey for sourcing/pricing of substrate inputs (Jul 2023). **In Progress**: Testing of substrates (Sep 2023) Finalizing technical proposal and engaging consultants (Nov 2023) Arranging investment/term sheet (Dec 2023). **Future Milestones**: The estimated timeline for project commissioning is 16 months from the date of the first investment disbursement. Financial closure (Feb 2024) Signing agreements with EPC contractors (Mar 2024) Construction execution (Apr 2024) **Note: Milestone data has to be updated.**
Key Metrics for Success	Produce and distribute Bio-LNG with a capacity of 20 tons per day from the initial plant. Expand to install 5 additional plants in the first three years. Achieve a payback period of 3.5 years. Secure a 50% equity Internal Rate of Return (IRR). Ensure a consistent supply of Bio-LNG to the target market.
Funding Needs	USD 24.4M (Equity: 19.52 M, Debt: 4.88 M).
Use of Proceeds	**Land:** USD 160,000 **Plant & Machinery:** USD 20 M **Civil Works:** USD 4.16 M **Consultancies:** USD 48,000 **Working Capital:** USD 98,571
Investment Structure	**Equity**: USD 19.52 M **Debt**: USD 4.88 M 75% Principal Investor, 25% Wahdat Sponsors (sweat equity)
Financial Highlights	**Total Project Cost**: USD 24.4 M. **Equity IRR**: 50%. **Payback Period**: 3.5 years. **EBITDA Margin**: 44% in the first year, with an average of 45.8% over the next four years. **Projected Revenue (Year 5)**: USD 22.1 M. **Projected Net Margin (Year 5)**: 40.6%.
Cap Table Snapshot	**Principal Investor**: 75% equity stake with 100% equity in the project. **Wahdat Sponsors**: 25% sweat equity stake as a working partner.

Exit Strategy & Potential	The investors could achieve a valuation of USD 58 to 72 M in five years. Potential exit strategies include: **Industry Sale**: Selling the project to a larger player in the renewable energy sector. **IPO**: Taking the company public to provide an exit for early investors. **Buyback by Developer**: The developer may repurchase shares from investors once the project reaches a certain valuation.
Monetized Carbon & Nature Co-Benefits	Carbon-negative project CO_2 separated/sold Avoids open-field burning Fertilizer/compost production Job Creation
SDG Alignment with KPIs	**SDG 7**: Clean Energy **SDG 8**: Jobs **SDG 9**: Infrastructure/Innovation **SDG 12**: Responsible Consumption **SDG 13**: Climate Action

37. MAINSTREAMING REFILL STATIONS FOR PLASTIC AVOIDANCE

SECTION	DETAILS
Project Title	Mainstreaming Refill Stations for Plastic Avoidance
Project Overview	Create a supply chain of refill and reuse consumer products through community partner stores and refill stations developed by Davaam Life.
Team Overview	**Salman Tariq** – CEO & Co-founder **Omer Ghaznavi** – Co-founder MD **Bilal Alvi** – Head of Distribution **Eefa Bader** – Head of programs **Kabir Rizvi** – Business Development Manager **Muhammad Affan** – Senior Engineer **Hassan Haroon** – Senior Software Engineer
Proponents & Structure	Manufacturing of refill stations Production & supply of local consumer products in bulk packaging Distribution & logistics Setup of community shops (150-200 square feet) with concept of “Refill bazaar” operated by a community partner (especially women)

Value Proposition and Market Opportunity	○ Packaged products are typically 10–40% more expensive due to the packaging. Creating a supply chain of refills may provide customers essential savings on key monthly products ○ 30%+ inflation post 2022 has forced upper middle income families to also cut costs on groceries ○ Shift in consumer mindset particularly in moving away from international brands and embracing local products indicated a more "value" based shopping rather than "brand" ○ Combining all of the above, creating a reuse model and mainstreaming refill stations provides an ideal opportunity to chance consumer behavior towards responsible consumption (avoidance of plastic waste) ○ Davaam's successful pilots in using refill stations to supply consumer products has already received traction. ○ Successful community shops have been piloted in 3 places with a local community partner spreading the message, creating jobs and changing behaviors. Adding Davaam's sanitary napkin vending machines that dispense single-use napkins also creates elements of inclusivity and access to feminine hygiene Even a 1% shift to a USD 3 billion market of liquid cleaning detergents, personal care to reuse is a conservative estimate of USD 30 M market.
Location	Karachi, Lahore, Islamabad (more locations may be added based on suitable community partners particularly in interior Sindh and second tier cities)
Policy & Regulatory Context	The project is within the bounds of the consumer industry. Davaam's refill stations have been tested by PCSIR and the cooking oil refill station has been licensed by PSQCA. Other than that, the products are sold in accordance with the rules and regulations of the consumer industry.
Business Model & Go-to-Market Strategy	The go-to-strategy is to create community partners that benefit financially by advocating for reuse and refills. This is evident through Davaam's existing community partner refill shops. Davaam aims to create at-least 25 community partner shops equipped with 5-6 sets of refill stations, sanitary napkin vending and other essential products to help a local community member become an entrepreneur, employ more people and advocate for refills within his/her community.

Current Stage & Implementation Plan or Milestones	Davaam already has done a pilot of machines: 60 refill stations and 90 sanitary napkin machines which have shown traction. This needs to be scaled up. **The implementation plan and milestones are:** Manufacturing of 300 dispensing and vending stations (refill + sanitary napkin) Identify 30 local community partner and shops Equip 30 local community partner and shops Procure essential refill products to supply the shops Inaugurate the shops as sustainable consumer centers
Key Metrics for Success	200 dispensing and vending machines in the ground 30 shops on the ground 100 new jobs created (through partners and internally)
Funding Needs	USD 1,000,000
Use of Proceeds	**Refill & sanitary vending machines** – USD 400,000 **Setup of 30 community shops** – USD 340,000 **Workshop equipment** – USD 40,000 **Marketing, awareness & surveys** – USD 40,000 **Overheads (payroll, office, utilities)** – USD 180,000
Investment Structure	10% Self generated / Equity 90% to be raised (grants, soft funds, equity raising)
Financial Highlights	USD 250,000 annual recurring revenues created
Cap Table Snapshot	**Salman Tariq** – 42.5% **Omer Ghaznavi** – 42.5% **Gulab Jamun LLC** – 15% (holding company based in UAE with angel investors backing Davaam)
Exit Strategy & Potential	Potential for a large consumer / distribution company to take-over the setup
Monetized Carbon & Nature Co-Benefits	80 tons of CO_2 avoidance annually Consumer behavior change of 30,000 families
SDG Alignment with KPIs	**SDG 5**: Gender Equality **SDG 10**: Reduced Inequalities **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action
Job Creation	100 new jobs (25% women)

38. INTEGRATED SOLID WASTE MANAGEMENT PROJECT

SECTION	DETAILS
Project Title	Integrated Solid Waste Management Project
Project Overview	**Transforming Quetta's existing solid waste management into a fully Integrated Model that includes:** Transporting Daily Generation of waste to Landfill ○ Door to Door Collection ○ Waste Diversion from Landfill for recycling purposes ○ Revenue Generation from Households, Compost Production ○ and Recycling for sustainability of SWM. Desilting of all the existing Nullahs across 4 zones of MCQ Quetta.
Team Overview	**Primary Implementing Agency**: Balochistan Public Private Partnership Authority **Secondary Implementing Agency**: Metropolitan Corporation Quetta **Concessionaire**: Clear Cloud Enviro **Third Party Monitoring**: Otium Consultants **Third Party Auditor**: Rahim Iqbal Rafique.
Proponents and Structure	**Public Partner**: Balochistan Government (through BPPPA & QMC). **Private Partner**: Clear Cloud Enviro **PPP Model**: DBO (Design, Build, Operate) with performance-based payments and user-fee recovery. **Contract Tenure**: 7 Years
Value Proposition and Market Opportunity	Compost Production Recyclables Household Fee Collection Carbon Credit
Location	4 Zones of Metropolitan Corporation Quetta
Policy and Regulatory Context	Governed under Balochistan PPP Act
Business Model and Go-to-Market Strategy	**Revenue Streams:** Government funding through VGF User charges (gradually implemented). Sale of recyclables, compost, RDF. Carbon credits monetization. **Market Entry**: Start with Quetta as a flagship model district for Balochistan.
Current Stage and Implementation Plan or Milestones	**Current Stage**: The project has entered its second operational year. In the first year, approximately 280,000 tons of solid waste were lifted and transported from Quetta city to the Landfill site.

	In the second year, the focus is on: Door-to-door collection implementation to expand coverage and improve service quality. Revenue generation mechanisms, including user charges, sales of recyclables, and exploring carbon credit monetization.
Key Metrics for Success	○ Complete coverage of Door to Door Collection ○ Waste Diversion from Landfill for Recycling and Compost ○ Production ○ Clean City ○ Elimination of Illegal Dumpsites ○ Bins Deployment Across all 4 zones ○ Transportation of Daily generated waste to Landfill site.
Funding Needs/Current Status	USD 32 M
Use of Proceeds	MRF Facility Compost Production Plant Engineered Landfill Site Procurement of Additional Machinery Mechanical Desilting Machinery Community Awareness Programs
Investment Structure	Government and Private Financing through VGF Concessionaire.
Monetized Carbon and Nature Co-Benefits	Composting and Recycling reduce Landfill Volumes Carbon Credit from avoiding Methane Emissions across the city Improved Air Quality
SDG Alignment with KPIs	**SDG 3**: Good Health and Wellbeing **SDG 11**: Sustainable Cities and Communities **SDG 13**: Climate Action
Job Creation	**1500+ Direct and Indirect Jobs** ○ SWM workers, drivers, supervisors. ○ Engineers & technical staff. ○ Recycling & composting facility workers. ○ Awareness & community mobilization staff.

39. RECYCLING AND MANAGEMENT OF TEXTILE WASTE

SECTION	DETAILS
Project Title	Recycling and Management of Textile Waste
Project Overview	The proposed project is to utilize the post -consumer Textile waste produced by the Textile sector in Pakistan. In a study findings about 270,125.34 metric tons of Textile waste is generated including

	19,304.58 tons of textile wastage only generated from Karachi. The major challenge to sustainable management of textile waste in Pakistan is inadequate technical and financial resources and lack of awareness. This project helps a lot to reduce the Textile waste and to save the environment .
Team Overview	**Proponent Agency**: Ministry of Climate Change and Environmental Coordination. Any NGO both Local and International working for the cause to Save the Environment and Climate. **Implementation Partners**: Donor, Project Director **Community Stakeholders**: Management staff Including Project Director , Manager Workers, Designers. The Project Director will be the Head to lead this project.
Proponents & Structure	**Lead Agency**: Ministry of Climate Change, **Support**: Textile sector, P&D Department. **Partners**: International donors through CVF
Value Proposition and Market Opportunity	This project contributes a lot to save the environment and also Climate as it reduces from the Source, Inceration and reduces landfill sights.
Location	Industrial area close to Lahore
Policy & Regulatory Context	The project is in line with the objectives of the Ministry Of Environment and Climate Change. We have almost 270,125.34 metric ton of textile waste in our country which is an alarming figure as far as environment is concerned and it all send to landfill sights, Incineration and in Canals which is also another threat for Human beings If we utilize this textile waste properly, we may be able to reduce the quantity of textile waste by half in the next five years. The proposed project is in line with the international commitments to move towards sustainable and eco friendly products . This project further strengthens our diminishing Hand-craft Industry. Traceability is another issue that is arising rapidly in the manufacturing Industry. All European and USA companies require traceability documents for sustainable products.
Business Model & Go-to-Market Strategy	**Partnership required to make this project viable** ○ Ownership of this project should be entrusted to professionals. ○ Capacity building and training of workers on product making efficient practices. ○ Use of subsidies Loans and cost-sharing models affordability on making the final product.. ○ As soon as we have the funding we immediately start moving to execute our production plan. ○ Collaboration with the Textile Industry. ○ Collaboration with Academia like Pakistan Institute of Fashion and Design Lahore.

Current Stage & Implementation Plan or Milestones	At the current stage all R&D has been done. Trial samples are produced for marketing purpose and send to foreign buyers and they have a very good feedback about the product. The team that has already formed just needs funds to purchase the machines.
Key Metrics for Success	Up to 10% of reduction in total textile wastage in the first year of this project. Up to 20% decrease in the landfill sights. Workers training programme Women workers induction in this sector. Reduction in groundwater depletion rate
Funding Needs	USD 20 M
Use of Proceeds	Interventions include infrastructure halls, machines, offices, canteens, and worker areas. 80% Worker training and institutional strengthening – 0.187% Monitoring, research, and impact studies through consultants like KPMG– 3.2% Administrative and operational support – 14.443%
Investment Structure	Government budget (on taxes & administration) + Donor funding (intervention cost)
Financial Highlights	**Net Economic Return**: 20%- 40%% over project period **Payback**: 4 years (conventional and digital marketing, participation in international fairs).
Cap Table Snapshot	**Government**: 15% **Donor Agencies**: 85%
Exit Strategy & Potential	KPMG and sustainability Tracker Australia for sustainability
Monetized Carbon & Nature Co-Benefits	Up to 40% reduction in water wastage = improved aquifer recharge Environment friendly products with no generation of waste again. Improved soil fertility, reduced landfill degradation
Job Creation	150 workers employment for skilled and 20 persons for management and execution. Youth and women engagement in Entrepreneurship opportunities. Revival of handicraft Industry and local Artisans

40. REHABILITATION OF MEHMOOD BOOTI DUMPSITE INTO URBAN FOREST & SOLAR PARK

SECTION	DETAILS
Project Title	Rehabilitation of Mehmood Booti Dumpsite into Urban Forest & Solar Park
Overview	Transform Lahore's oldest landfill (closed 2016) into a 31-acre urban forest and 5 MW solar park, with full capping, gas recovery, and leachate treatment.
Team	RUDA (implementing); Lahore Development Authority; private contractors; environmental consultants.
Proponents	Govt of Punjab, RUDA, Private sector partners.
Value Proposition	Rehabilitates 43-acre degraded site; generates clean power; sequesters CO2; creates urban green space.
Location	Ring Road, Lahore (43 acres).
Policy Context	NAP 2023, NDC 3.0 commitments to methane reduction & RE expansion.
Business Model	The Public-Private Partnership (PPP) is managed by RUDA, with carbon credits sold and RE revenues generated from a 5 MW solar project.
Current Stage	Tender evaluation ongoing (2025).
Metrics	13M tons of waste capped; 31 acres of forest; 11 acres solar (5 MW).
Funding Needs	USD 12 M
Use of Funds	Closure cap, leachate system, gas recovery, afforestation, solar park, allied infra.
Investment Structure	Govt + PPP; revenue from carbon credit & solar sales.
Financials	**Carbon credits**: 100,000 tCO_2/yr RE revenue from 5 MW solar.
Exit Strategy	Long-term O&M via PPP; forest + solar provides sustainable revenue & carbon finance.
Carbon/Nature Co-Benefits	100,000 tCO_2/yr avoided; biodiversity habitat; improved air quality.

SDGs	**SDG 7**: Affordable and Clean Energy **SDG 11**: Sustainable Cities and Communities **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action **SDG 15**: Life on Land

41. BIOWASTE ENERGY VENTURES LTD. (BEVL)

SECTION	DETAILS
Project title	Biowaste Energy Ventures Ltd. (BEVL)
Project overview	Transforms organic waste into biomethane, bio pellets, and compost.
Proponents and Structure	Biowaste Energy Ventures Ltd.
Value Proposition and Market Opportunity	Addresses pollution, methane reduction, and waste reuse.
Location	Pakistan
Policy and Regulatory context	Supports national climate goals, methane abatement.
Business mode and go to market strategy	Daily collection, processing and sale of bioproducts.
Current stage and implementation plan or milestones	Phase I execution is underway; Phase II targets a Q4 2025 launch.
Key metrics for success	491,000 tCO2e/year; Rs. 300,000 annual savings/farmer.
Funding needs/Current Status	USD 11.1 M
Use of proceeds	Infrastructure, logistics, working capital.
Financial highlights	Displaces RLNG, saves water, provides compost.
Exit strategy and potential	Carbon monetization and market expansion.
Monetized carbon and nature co-benefits	491,000 tCO2e/year; water conservation.

SDG alignment with KPIs	**SDG 3**: Good Health and Well-being **SDG 6**: Clean Water and Sanitation **SDG 7**: Affordable and Clean Energy **SDG 13**: Climate Action
Job creation	Yes, includes women participation.

42. IRVERDE GOGREEN ZERO WASTE SOLUTIONS

SECTION	DETAILS
Project Title	Irverde GoGreen Zero Waste Solutions
Project Overview	Irverde GoGreen is a women-led, tech-enabled waste management company in Pakistan committed to achieving zero waste through innovative recycling, upcycling, and digital waste trading solutions. Established in 2022, Irverde provides end-to-end services including waste segregation training, waste collection, recycling and composting, sustainability consulting, and product innovation from hard-to-recycle materials. The company's mission is to eliminate the concept of waste, reduce landfill dependency, cut GHG emissions, and empower marginalized communities, particularly women.
Team Overview	The team includes environmental specialists, trainers, waste handlers, and local women engaged in recycling and upcycling activities. Professional management layers are planned as the company scales to industrial-level operations.
Proponents & Structure	Irverde GoGreen Pvt. Ltd. is structured as a private limited company with 3 directors, operational staff, and community-based waste collectors integrated into the supply chain. It combines grassroots social impact with corporate and industrial waste solutions.
Value Proposition and Market Opportunity	Irverde offers a one-stop zero-waste solution by handling all types of waste, including hard-to-recycle materials like organic waste, recyclable waste, tetra paks, and multilayer plastics. Unlike traditional waste collectors, Irverde focuses on education, training, and ESG-aligned reporting, making it highly attractive to corporations, industries, and institutions. With the rising demand for sustainable waste management in Pakistan and globally, the market opportunity is significant, particularly for corporates under pressure to meet their ESG targets.
Location	Pakistan

Policy & Regulatory Context	Pakistan is actively pursuing environmental sustainability goals, including commitments to the Paris Agreement and the UN Sustainable Development Goals. Companies face increasing regulatory and reputational pressure to comply with waste management, carbon reporting, and ESG standards. Irverde supports clients in meeting these compliance requirements, including WWF Green Office certification, SDG alignment, and future carbon-credit readiness.
Business Model & Go-to-Market Strategy	**Irverde's business model is multi-stream:** 1) Paid training and awareness programs 2) Paid Waste pickup services 3) Recycling/upcycling into marketable products 4) Sale of recyclables to industry 5) Sustainability consultancy 6) Development of a digital waste trading marketplace. Our go-to-market strategy focuses on building credibility with corporates and industries, leveraging certifications, and piloting SaaS ESG dashboards for reporting and compliance.
Current Stage & Implementation Plan or Milestones	Currently operational with 3 Offices, 3 industries, and exploring the working with hotels/restaurants as clients. Key milestones over the next 18 months include: Commissioning fleet and crushers, SaaS MVP launch, WWF certification, Achieving 2.5 tons/day throughput, Scaling to 5 tons/day run-rate, SaaS ESG compliance modules, Verified carbon-credit readiness, Break-even in Lean case by month 16–18.
Key Metrics for Success	○ **Waste treated**: 800,000+ kgs ○ **People reached via training**: 15,000+ ○ **Women empowered**: 400+ ○ **Jobs created**: 15+ (expanding to 30+) ○ **Waste diversion**: 1,500 tons/year (projected) ○ **CO_2e avoided**: 1,800 tCO_2e/year
Funding Needs	Seeking PKR 40M (USD 150k) under Lean case; PKR 100M (USD 350k) under Growth case for a 12–18 month runway.
Use of Proceeds	Operations & hiring (25%), Fleet & Equipment (20–25%), SaaS development (20%), Business development & marketing (15–20%), Certifications & compliance (10%), Working capital (5%).
Investment Structure	Equity or SAFE; Valuation Lean: PKR 100 M, Growth: PKR 200 M.
Financial Highlights	Break-even in 16–18 months (Lean scenario). ROI over 24 months: Lean ~1.2x; Growth ~1.5x. Payback: Lean ~20–22 months; Growth ~26+ months.
Cap Table Snapshot	Founders and directors currently hold 100%. No external equity raised yet.

Exit Strategy & Potential	Potential for acquisition by regional or global sustainability companies, corporates seeking ESG compliance solutions, or IPO as the waste-tech sector in Pakistan matures.
Monetized Carbon & Nature Co-Benefits	Carbon credits readiness through SaaS ESG modules. Nature co-benefits include reduction in landfill, improved soil health through compost, and circular economy livelihood generation.
SDG Alignment with KPIs	Aligned with **SDG 3 (Good Health)**, **SDG 5 (Gender Equality)**, **SDG 8 (Decent Work)**, **SDG 11 (Sustainable Cities)**, **SDG 12 (Responsible Consumption)**, **SDG 13 (Climate Action)**. **KPIs**: waste diverted, CO_2e avoided, jobs created, women empowered, number of people trained.
Job Creation	30+

43. BIOGAS PROJECT

SECTION	DETAILS
Project title	Biogas Project
Project overview	**Problem:** Kheshgi Payan (District Nowshera) has over 17,000 cattle producing ~120 tons of dung per day. Poor waste management (open dumping or flushing into the Kabul River) causes ~360,000 tCO_2e/year emissions, severe water pollution, and public health risks. **Opportunity:** Abundant free feedstock, available water, and strong community roots create ideal conditions for a biogas project. **Solution:** Use biodigesters to convert dung into biogas for households/industries, and bio-compost for farmers. The project is designed to cut emissions, clean the environment, and generate income for the community.
Team overview	**Resources Future (RF)**: Carbon project developer (feasibility, PDD, registration, MRV). **Sarhad Rural Support Program (SRSP)**: A grassroots partner with 36 years of experience in Nowshera, ensuring farmer/community engagement. **Revgreen Pakistan**: Technology partner (plant design, construction, O&M).
Proponents and Structure	**Multi-partner model**: RF (carbon expertise), SRSP (community mobilization), Revgreen (technology). Revenue-sharing ensures community benefits.

Value Proposition and Market Opportunity	○ **Farmers**: Cleaner environment, reduced disease risk, compost fertilizer, community investments. ○ **Households**: Access to affordable, clean biogas. ○ **Industries**: Reliable source of subsidized biomethane. ○ **Investors**: Revenue from biogas sales, compost, and carbon credits.
Location	Kheshgi Payan, Nowshera District, Khyber Pakhtunkhwa, Pakistan
Policy and Regulatory Context	Aligns with Pakistan's NDCs (methane mitigation, renewable energy), waste management policies, and provincial clean energy strategies. Contributes to climate commitments and the achievement of SDG goals.
Business model and go-to-market strategy	**Three possible models under feasibility**: 1. Industrial Biomethane – central facility, supply to industries, >2000 m^3/day. 2. Centralized Domestic Biogas – pipeline supply to households, >4500 m^3/day. 3. Decentralized Clusters – small plants serving communities directly. All models share non-carbon revenue with the community while carbon credits stay with the investor.
Current stage and implementation plan or milestones	**Done**: Site identified (Azim Dhand village), households/farms mapped, community engagement initiated, technical data collection underway. **Next Steps**: 1. Feasibility assessment – finalize best option, revenue-sharing, and full business plan. 2. Secure agreements & supply chain. 3. Facility construction & trial run. 4. Carbon project registration & credit issuance.
Key metrics for success	○ >120 tons/day of dung managed ○ >4,500 m^3/day clean energy ○ >4,000 households & industries served ○ 360,000 tCO_2e/year avoided ○ Compost produced & sold to farmers
Funding Needs/Current Status	USD 10,000 (For Pilot & Feasibility)
Use of proceeds	○ Feasibility & business model finalization ○ Plant construction & O&M setup ○ Pipeline/distribution infrastructure ○ Community engagement & training ○ Carbon project development & registration
Investment structure	Blended finance approach (impact investors, carbon buyers, PPP). Non-carbon revenue is shared with the community; carbon credits with the investor.

Financial highlights	**Revenue streams**: ○ Biogas/biomethane sales (households & industries) ○ Compost sales to farmers ○ Carbon credits from methane reduction Expected strong IRR with de-risked model (free feedstock, no land lease costs).
Exit strategy and potential	Long-term income from carbon credits & energy sales; potential scaling to replicate across other livestock-intensive districts.
Monetized carbon and nature co-benefits	**Avoided methane & CO_2 emissions** (~360,000 tCO_2e/year) ○ Improved water quality in the Kabul River ○ Cleaner neighborhoods, reduced disease burden ○ Soil enrichment through organic compost
SDG alignment with KPIs	**SDG 3**: Health, **SDG 6**: Clean water, **SDG 7**: Affordable & clean energy, **SDG 11**: Sustainable communities, **SDG 12**: Responsible consumption, **SDG 13**: Climate action, **SDG 15**: Life on land.

44. CLIMATE-SMART FISH FEED & CIRCULAR ECONOMY INNOVATION

SECTION	DETAILS
Project title	Climate-Smart Fish Feed & Circular Economy Innovation
Project overview	Establish feed mills using mesopelagic fish, seaweed, agri-waste; promote Biofloc aquaculture systems
Team overview	Fisheries Dept., private feed producers, LUAWMS.
Proponents and Structure	PPP with incentives for private feed mills.
Value Proposition and Market Opportunity	Feed is 60% of aquaculture cost. Climate-smart feed lowers imports. Global aquafeed market worth USD 70 B.
Location	Gwadar, Hub, Pasni.
Policy and Regulatory context	Balochistan Blue Economy Plan Objective 2 & 3.
Business mode and go to market strategy	Private mills supply certified feed. Biofloc promoted among SMEs.

Current stage and implementation plan or milestones	Year 1: Feed mill pilot. Year 2–5: Scale to 5 mills.
Key metrics for success	5 feed mills. 50% reduction in imported fishmeal.
Funding needs/Current Status	USD 7 M
Use of proceeds	Mill equipment. Coastal Aquaculture pilot farms.
Financial highlights	Revenue ↑ USD 50m annually. Payback ~6 years.
Cap table snapshot	**Govt**: 10% | **Private**: 40% | **Donor**: 50%
Exit strategy and potential	Private mills dominate the market, government withdraws.
Monetized carbon and nature co-benefits	Less reliance on wild fishmeal. Reduced GHG emissions from transport.
SDG alignment with KPIs	SDG 12 (Sustainable Consumption). SDG 14 (Life Below Water).
Job creation	**Direct**: 800 | **Indirect**: 2,500

45. 500 TPD CITY COMPOSTING FACILITY

SECTION	DETAILS
Project Title	500 TPD City Composting Facility
Project Overview	This 500 TPD city-scale composting facility processes the organic fraction of municipal solid waste (MSW) into high-quality compost for agricultural and landscaping use. It diverts waste from open dumps, mitigates methane emissions, improves soil health, and generates carbon credits. The project contributes to circular economy transformation, reduces landfill burden, and supports Pakistan's NDC climate targets.

Team Overview	**Municipal Authority / Waste Management Company** – Provides land, guarantees waste supply. **Private Developer (PPP)** – Finances, designs, builds, and operates the composting facility. **Agriculture & Fertilizer Distribution Partners** – Ensure market offtake for compost. **Carbon Finance Partners** – Secure certification and MRV for emission reduction credits. **Investors** – DFIs, impact investors, green/climate funds.
Proponents & Structure	**Proponent:** Waste Management Company. **Structure:** PPP BOOT model (20–25 years). **Inputs Assured:** 500 TPD segregated MSW (≥50% organic fraction). **Outputs Assured:** Compost for agriculture; carbon credits.
Value Proposition and Market Opportunity	**Waste Challenge:** Urban MSW in Pakistan is >50% organic. **Compost Market:** Growing demand for organic soil amendments in Punjab's agriculture sector. **Climate Finance:** Organic diversion from landfill avoids methane → generates carbon credits (~100,000–120,000 tCO_2e/year). **Market Size:** One 500 TPD facility → USD 4–6M/year revenue; replicable across >10 cities.
Location	Urban center in Punjab, Pakistan (pilot sites e.g., Lahore / Faisalabad / Multan).
Policy & Regulatory Context	**Punjab Solid Waste Management Policy (2022)**: Prioritizes composting & recycling. **Agriculture Policy**: Endorses the use of organic fertilizers to reduce chemical dependency. **National Climate Change Policy**: Waste methane reduction target. **Carbon Markets**: Eligible for Verra/Gold Standard & Article 6 credits.
Business Model & Go-to-Market Strategy	**Revenue Streams:** Sale of compost to farmers and municipalities (~USD 3–4M/year). Carbon credits (~USD 1.5–2M/year). Waste tipping fee (negotiable with municipality). **Distribution Strategy:** Partnership with fertilizer distributors, city landscaping departments, and farmer cooperatives. **Branding:** Organic, climate-smart compost.
Current Stage & Implementation Plan or Milestones	**Stage 1 (Year 1)**: Feasibility, land & waste concession secured, Financial closure, EPC award, construction start. **Stage 2 (Year 2)**: Commissioning of 500 TPD composting facility. **Stage 3 (Year 3+)**: Commercial operations, carbon credit issuance.

Key Metrics for Success	**Waste Intake**: 500 TPD (~180,000 tons/year). **Compost Production**: ~60,000–70,000 tons/year. **Carbon Credits**: ~100,000–120,000 tCO_2e/year. **Annual Revenues**: USD 4–6M. Landfill Diversion: ~180,000 tons/year.
Funding Needs	**CAPEX**: USD 20–25M (land, composting plant, MRF line, storage sheds). **Working Capital**: USD 2M. **Financing Structure**: 30% equity, 70% debt.
Use of Proceeds	Composting infrastructure (windrow or in-vessel system). MRF & pre-sorting line. Carbon MRV registration & monitoring systems. Storage, bagging, and distribution network. Training & community awareness.
Investment Structure	PPP BOOT (20–25 years). **Equity Investors**: Strategic waste management firms, impact investors. **Debt Providers**: DFIs, green/climate lenders. **Municipal Role**: Waste supply + land provision.
Financial Highlights	**CAPEX**: USD 20–25M. **OPEX**: ~USD 3–4M/year. **Annual Revenues**: USD 4–6M. **Compost sales**: approximately USD 3–4 M. **Carbon credits**: ~USD 1.5–2M. **IRR**: 12–14%. **Payback**: ~ 8–9 years.
Cap Table Snapshot	**Private Developer / Investors**: ~30% equity. **DFIs / Banks**: ~70% debt. **Municipality**: Non-equity partner (land, waste guarantee).
Exit Strategy & Potential	**Concession Transfer**: After 20–25 years. **Secondary Market Exit**: Sale of equity stake to green infrastructure funds within 7–10 years. **Carbon Forward Sales**: Early exit opportunities through carbon pre-financing.
Monetized Carbon & Nature Co-Benefits	**Carbon Credits**: 100,000–120,000 tCO_2e/year (~USD 1.5–2M/year). **Nature Co-Benefits**: Soil fertility and moisture retention. Reduced chemical fertilizer dependency. Improved urban waste management & air quality. Odor and vector nuisance reduction.

SDG Alignment with KPIs	**SDG 7**: Indirect energy savings via reduced fertilizer use. **SDG 11**: Cleaner, more sustainable cities. **SDG 12**: Waste recovery into compost. **SDG 13**: 100k+ tCO_2e/year avoided. **SDG 15**: Enhanced soil health and biodiversity.
Job Creation	**Construction**: 300–400 jobs. **Operations**: ~150 direct jobs (sorting, composting, packaging). **Indirect**: ~500 jobs (distribution, supply chain, farmers' cooperatives). **Community Co-benefits**: Training of waste pickers integrated into formal system.

46. PUNJAB LANDFILL VALORIZATION PROGRAM

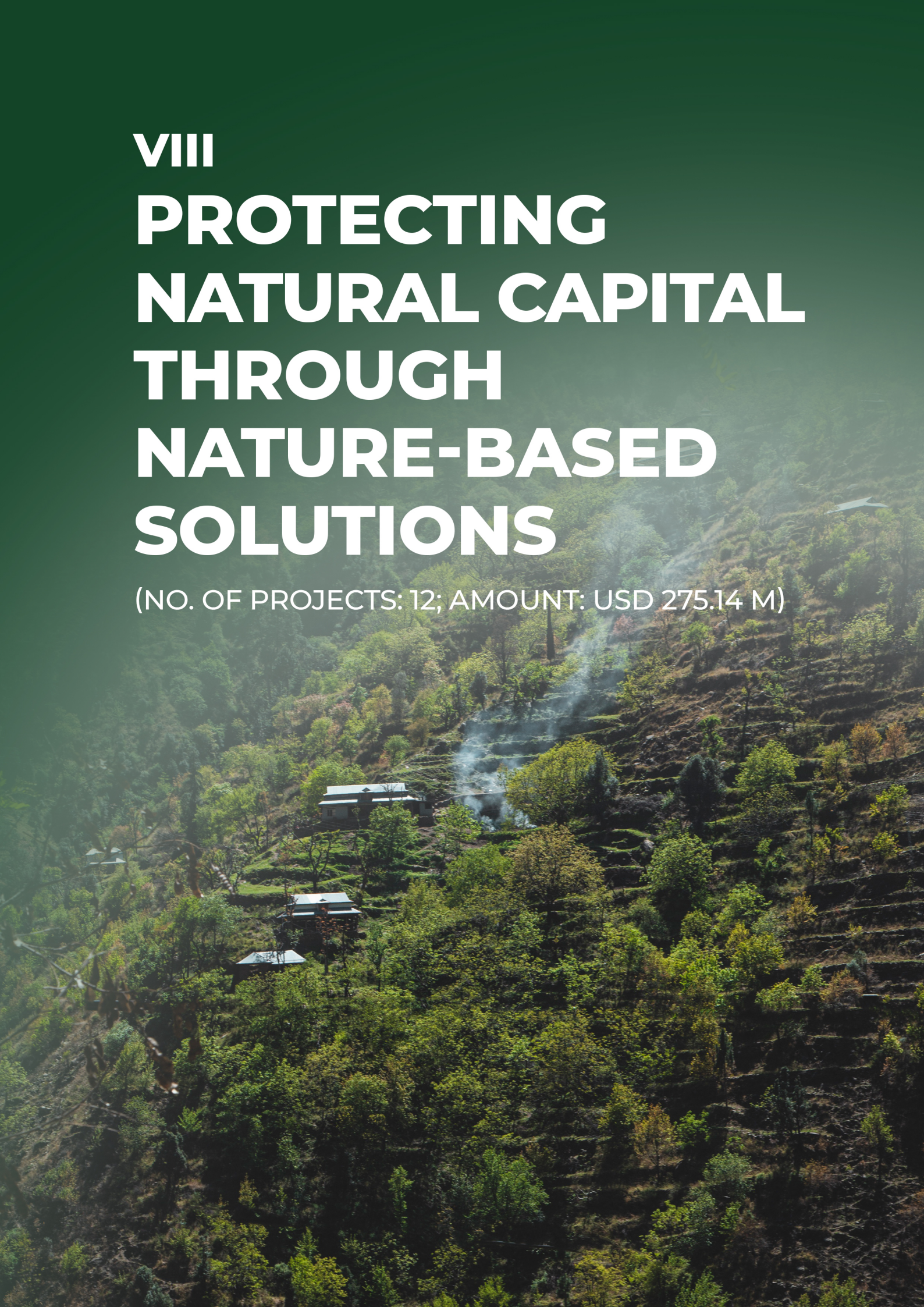
SECTION	DETAILS
Project Title	Punjab Landfill Valorization Program
Project Overview	The Punjab Landfill Valorization Program builds on the Lakhodair landfill (Lahore) pilot, Pakistan's first bankable landfill gas-to-carbon project. Lakhodair demonstrates methane capture, flaring, small-scale RNG upgrading, and the generation of internationally certified carbon credits (Verra/Gold Standard/Article 6). With 275,000 tCO_2e avoided annually and USD 5–6 M in revenues, it proves the model is technically viable and financially credible. At scale, replication across Punjab's 141 dumpsites (~50,000 TPD MSW) can deliver 2.5–3.0 M tCO_2e/year credits, 200–250 M m^3 RNG, and USD 400–550 M/year revenues, unlocking USD 1 billion+ investment and positioning Punjab as South Asia's first province-wide carbon valorization hub.
Team Overview	**Government of Punjab (Suthra Punjab, EPA, LWMC)**: Policy oversight, waste supply guarantee, land allocation. Private Developers / EPC Contractors: Financing, gas capture and upgrading, operations. **Carbon Finance Partners**: Registration, MRV, forward sales under Verra, Gold Standard, or Article 6. **DFIs & Climate Funds**: Co-investors via blended finance structures.
Proponents & Structure	**Proponent**: Government of Punjab. **Structure**: PPP BOOT (20–25 years) with blended finance (private equity + DFIs + concessional loans). **Revenue Model**: Carbon credits (anchor), RNG sales (supplementary), potential compliance market sales.

Value Proposition and Market Opportunity	**First-mover advantage**: Pakistan's first verified landfill carbon project. **Carbon Finance Backbone**: At provincial scale → USD 100–150M annually. **RNG Co-Benefit**: USD 300–400M annually. **Total Opportunity**: USD 400–550M/year revenues. **Climate Impact**: >10M tCO_2e avoided annually equivalent to removing 2M cars or planting 70M trees/year. **Market Opportunity**: USD 1B+ pipeline across 141 sites.
Location	**Pilot**: Lakhodair landfill, Lahore. **Scale-Up**: 141 dumpsites across Punjab province.
Policy & Regulatory Context	Supports Pakistan's NDC target of a 50% reduction in GHG emissions by 2030. Aligned with Global Methane Pledge & COP30 agenda. Eligible under Article 6 Paris Agreement mechanisms and voluntary carbon markets. Fits within Punjab's circular economy and waste valorization strategy.
Business Model & Go-to-Market Strategy	**Revenue Driver**: Carbon credit forward sales (USD 20–25/tCO_2e). **Supplementary Revenue**: RNG for industrial, transport, and grid substitution. **PPP Model**: The government ensures feedstock and land, while the private sector invests & operates. **Scale-Up Strategy**: Lakhodair bankability proven. 10–15 priority landfills developed (2026–2030). Provincial roll-out to all 141 dumps by 2035.
Current Stage & Implementation Plan or Milestones	**Proof of Concept**: Lakhodair pilot underway (USD 30–35M CAPEX). **Short Term (2026–27)**: Scale to 3–4 large dumpsites. **Medium Term (2028–30)**: Expand to 10–15 sites, reaching ~50% of potential. **Long Term (2035)**: Full provincial scale → >10M tCO_2e abatement/year.
Key Metrics for Success	**Pilot (Lakhodair)**: 275,000 tCO_2e/year, USD 5–6M revenues, IRR 9–11%. **Provincial Scale**: ○ 2.5–3.0M tCO_2e/year credits. ○ USD 400–550M/year revenues. ○ **IRR uplift:** 14–16%. ○ **Payback:** 6–8 years. ○ **Energy offset:** RNG for 500,000+ households. ○ 25,000+ direct & indirect jobs.
Funding Needs	USD 350 M for initial 10 sites till 2030

Use of Proceeds	**Pilot (Lakhodair)**: USD 30–35M. **Provincial Rollout**: USD 1B+ pipeline (phased deployment).
Investment Structure	Gas capture wells, flaring & upgrading units. RNG infrastructure & grid integration. Carbon MRV, verification, and registry costs. Capacity building & provincial replication fund.
Financial Highlights	BOOT Concessions (20–25 years). Government: provides land + feedstock guarantees Investors: finance and operate. Forward credit sales: de-risking mechanism for early cash flows.
Cap Table Snapshot	**Lakhodair**: **Revenues**: USD 5–6M/year (USD 4–5M credits, USD 1M RNG). **IRR**: 9–11%. **Payback**: 9–10 years. **Provincial Scale**: **Revenues: USD** 400–550M/year. **IRR**: 14–16%. **Payback**: 6–8 years. **CAPEX**: ~USD 1B (phased).
Exit Strategy & Potential	**Exit Strategy:** Concession transfer to Government at maturity. Secondary sale of carbon-backed assets to global funds (years 7–10). Integration into Pakistan's emerging carbon market platform. **Potential:** Private Sector (equity investors/EPCs): 60–70%. DFIs / Climate Funds: 20–30%. Government of Punjab: Non-equity (land, waste guarantee).
Monetized Carbon & Nature Co-Benefits	**Carbon**: >10M tCO_2e/year avoided (USD 100–150M annually). **Nature**: Leachate control, improved groundwater, reduced odor, fewer fires. **Energy Transition**: RNG displacing fossil fuels. **Health Benefits**: Improved urban air quality.
SDG Alignment with KPIs	**SDG 7** (Clean Energy): 200–250M m^3 RNG annually. **SDG 11** (Sustainable Cities): Rehabilitation of 141 dumpsites. **SDG 12** (Responsible Consumption): Waste valorization. **SDG 13** (Climate Action): >10M tCO_2e/year avoided.
Job Creation	**Pilot (Lakhodair)**: 300 direct, 1,000 indirect jobs. **Provincial Scale**: 5,000+ direct, 20,000+ indirect jobs. **Skills**: landfill gas management, carbon MRV, RNG operations.

VIII
PROTECTING NATURAL CAPITAL THROUGH NATURE-BASED SOLUTIONS

(NO. OF PROJECTS: 12; AMOUNT: USD 275.14 M)



47. CARBON OFFSET THROUGH AFFORESTATION, REFORESTATION, AND REVEGETATION (ARR)

SECTION	DETAILS
Project Title	Carbon Offset Through Afforestation, Reforestation, and Revegetaion (ARR)
Project Overview	A large-scale Afforestation, Reforestation, and Revegetation (ARR) initiative focused on restoring mangrove ecosystems across 34,351 ha in Gwadar and Lasbela districts, Balochistan. The project will sequester ~11.2 M tCO2e over 30 years, generate carbon finance, and improve socio-economic conditions of local communities through green employment, benefit-sharing, and ecosystem restoration.
Team Overview	**Lead**: Balochistan Public-Private Partnership Authority (BPPPA). The project involves a PPP structure with a private partner (to be selected via competitive bidding), local communities, NGOs/CSOs, academia, and investors.
Proponents & Structure	**Public Partner**: BPPPA (Government Agency). **Private Partner**: To be identified through bidding under PPP Act 2021. **Communities**: Beneficiaries and active stakeholders. **NGOs/CSOs, academia, and investors**: Supporting roles.
Value Proposition and Market Opportunity	Pakistan's highest poverty rate (71.2% MDPI) and severe mangrove degradation highlight the urgent need for ARR. The project offers climate resilience, improved livelihoods, carbon credit revenues, and alignment with global demand for blue carbon offsets.
Location	Balochistan, Pakistan - Gwadar & Lasbela Districts (Sites: Sonmiani Khor, Kalmat Khor, Jiwani Khor, Sahidi Khor, Sawar Khor, Shabi and Ankara Creeks)
Policy & Regulatory Context	Governed under Balochistan PPP Act 2021, PPP Policy 2021, and Public Procurement Rules. Environmental approvals through Balochistan EPA (EIA/IEE submission planned Sept 2025). Aligned with Pakistan's NDCs and Paris Agreement (potential ITMOs authorization).
Business ode and Go-to-Market Strategy	**PPP model**: Private partner mobilizes equity-based funding, develops projects, and generates carbon credits. Revenue from credit sales will fund benefit-sharing and reinvestment into communities.
Current Stage and Implementation Plan or Milestones	Pre-feasibility completed. PDD development (6 months), bidding for private partner, FPIC acquisition, MRV plan, and EIA/IEE submission. Project start: Aug 2026. Duration: 30 years. Plantation in two phases (19,747 ha + 14,604 ha).

Key Metrics for Success	○ 11.2 M tCO_2e sequestered (30 years) ○ 392,975 tCO_2e annually ○ 34,351 ha restored ○ Green jobs created ○ Revenue reinvested in health, education, and livelihoods ○ FPIC secured ○ Community engagement KPIs.
Funding Needs/Current Status	USD 30 M project development cost. Private partner to mobilize funds via equity (no debt/loan).
Use of Proceeds	Plantation and nursery management, monitoring & verification, community benefit-sharing, training, socio-economic infrastructure (health, education, clean water, renewable energy).
Investment Structure	Public-Private Partnership model. Concessionaire selected through competitive bidding. Equity financing structure (no loans).
Financial Highlights	Pre-feasibility confirms viability—project designed for 30 years with robust revenue generation from carbon credits starting year 5.
Cap Table Snapshot	**Public Partner:** BPPPA (regulatory oversight & facilitation). **Private Partner:** To be selected (project developer, fund mobilizer). **Communities:** Primary beneficiaries. **Investors:** Potential co-financing and resource providers.
Exit Strategy and Potential	Long-term revenue from carbon credit sales (VCS/Gold Standard methodologies under consideration). The project offers a scalable ARR model replicable in other coastal regions of Pakistan.
Monetized Carbon and Nature Co-Benefits	**Sequestration potential:** 11,229,218 tCO_2e (30 years). **Nature co-benefits:** Biodiversity restoration, improved fish stock, soil stabilization, climate adaptation, and enhanced marine/coastal ecosystems.
SDG Alignment with KPIs	**SDG 1** (No Poverty – green jobs & training) **SDG 2** (Zero Hunger – improved fisheries) **SDG 3** (Health & Wellbeing – better services) **SDG 5** (Gender Equality – women's engagement), **SDG 8** (Decent Work – green employment) **SDG 13** (Climate Action – carbon sequestration) **SDG 14** (Life Below Water – coastal ecosystem restoration) **SDG 15** (Life on Land – afforestation) **SDG 17** (Partnerships – PPP, community engagement).

48. DEVELOPMENT OF SKI RESORTS

SECTION	DETAILS
Project Title	Development of Ski Resorts
Project Overview	Establishment of seasonally reliable ski resorts to expand winter tourism, create jobs, and boost community income.
Team Overview	Dept. of Tourism & Culture GB (Govt.), Private Investors (Equity), Local Communities (Land & Employment).
Proponents and Structure	Public Private Community Partnership (30-year lease).
Value Proposition and Market Opportunity	Rising tourist inflow in GB; gap in winter tourism; strong demand for skiing/adventure facilities.
Location	Chilim Valley, Deosai Plains, Babusar, Naltar, Bagrote (GB).
Policy and Regulatory Context	GB Tourism Policy; PPP Act 2019; tax relaxations; customs duty exemptions.
Business Mode and Go-to-Market Strategy	**Revenue from**: skiing, chairlifts, hotel (100 rooms), recreational park, F&B, parking. 100% equity financing.
Current Stage and Implementation Plan or Milestones	Site ID completed → Feasibility → Equipment procurement → Hotel + lifts construction → Operations (3-4 years).
Key Metrics for Success	Tourist inflow, hotel occupancy, chairlift utilization, community royalty, and jobs created.
Funding Needs/Current Status	USD 28 M
Use of Proceeds	Chairlifts (PKR 3.93B); Hotel (PKR 1.22B); Compaction & runs (PKR 0.85B); Snow machines (PKR 0.15B); Grooming machines (PKR 0.14B); Recreational Park (PKR 0.12B); Parking (PKR 0.08B); Other equipment + mobilization + contingencies.
Investment Structure	100% Equity; 30-year lease; 8% revenue royalty to communities.
Financial Highlights	**Project Cost**: PKR 7.67B; **NPV**: PKR 21.38B; **IRR**: 26%; **Payback**: 9 years.
Cap Table Snapshot	Private investors (equity); Communities (royalty 8% revenue).
Exit Strategy and Potential	Lease transfer, operator buyout, or IPO of tourism assets.

Monetized Carbon and Nature Co-Benefits	Eco-tourism incentives, biodiversity protection, watershed conservation, reduced seasonal migration.
SDG Alignment with KPIs	**SDG 8**: 1,000+ jobs; **SDG 11**: resilient tourism infra; **SDG 12**: sustainable facilities; SDG 15: biodiversity co-benefits.
Job Creation	**Direct**: ~1,000; **Indirect**: 3,000+.

49. TRANSFORMING BARREN LANDS INTO CLIMATE-RESILIENT PROSPERITY

SECTION	DETAILS
Project Title	Transforming Barren Lands Into Climate-Resilient Prosperity
Project Overview	This project seeks funding to expand land development on barren lands of Gilgit-Baltistan, building on the foundation of the Economic Transformation Initiative (ETI-GB). ETI has developed over 50,000 acres of new lands through irrigation, Over 18,000 acres have already been irrigated and cultivated, achieving strong returns. The model scales this transformation by introducing a profit-sharing model with Village Agriculture Cooperatives (VACs), integrating carbon credit certification, promoting high-value crops, and strengthening inclusivity for women and youth.
Team Overview	Led by the Gilgit Baltistan Rural Support Programme (GBRSP), under the Umbrella of Government of Gilgit-Baltistan's Planning & Development Department, Agriculture, Fisheries and livestock department & Water Management Departments. Forest Wildlife and Environment Department, Mountain Area Research Centre with their technical agencies for irrigation, climate-smart agriculture, and carbon credit certification.
Proponents & Structure	**Lead Proponent:** Gilgit Baltistan Rural Support Programme (GBRSP), under the Umbrella of Government of Gilgit-Baltistan's Planning & Development Department, GB. **Implementing Partners:** Agriculture, Fisheries and livestock department & Water Management Departments. Forest Wildlife and Environment Department, Mountain Area Research Centre **Community Institutions:** 160+ registered VACs serving ~40,000 farmers. **Private Sector:** Partnerships with PepsiCo, Nestle, Shell Petroleum for carbon capture.

Value Proposition and Market Opportunity	Demand for organic high-altitude produce (potato seed, apricot, apple, vegetables) in domestic and export markets. Carbon credit sale (estimated 3–5 t CO_2 sequestered per acre annually). Improved food security and reduced malnutrition, building on outreach to 92,000 households. Green wood industry, green cover and fuel security.
Location	04 Target Districts of Gilgit-Baltistan (target: 20,000+ acres)
Policy & Regulatory Context	Aligned with the Government of Pakistan's climate adaptation and food security strategies, GB Land Titling reforms, and IFAD/Italian Cooperation co-financing frameworks.
Business Model & Go-to-Market Strategy	**Profit-Sharing**: Farmers contribute land/labor, project provides inputs and irrigation, returns shared (On agreed Terms Between investors and Farmers/Community). **Carbon Credits:** Certified via Verra/Gold Standard; monetized through voluntary markets. **Market Access:** Strengthen VAC linkages to processors/exporters; Farm-to-Market Roads ensure logistics. Development of Green wood Enterprises.
Current Stage & Implementation Plan or Milestones	27,700 acres cultivated under ETI-GB. Proposed expansion: additional 20,000 acres in 5 years. **Milestones:** Year 1: Scheme design, cooperative agreements, carbon baseline. Year 2–3:Irrigation/land development (10,000 acres), plantation, contracts. Year 4–5:Scale to 20,000 acres, carbon credits issuance, off-take contracts.
Key Metrics for Success	○ **Acres developed:** 20,000+ ○ **Households benefitting:** 30,000+ (with >30% women & youth) ○ **Annual crop revenue:** PKR 600m+ by Year 5 ○ **Carbon credits:** ~100,000 t CO_2 e /year ○ **Jobs created:** 10,000+ seasonal and permanent
Funding Needs	USD 25 M over 5 years
Use of Proceeds	○ Irrigation & land development infrastructure ○ Plantation inputs (saplings, seeds, fertilizers) ○ Cooperative strengthening & capacity building ○ Carbon credit certification and MRV systems ○ Value chain infrastructure (storage, pack houses branding, certification)
Investment Structure	**Blended finance:** donor grant + concessional loan + carbon revenue reinvestment

Financial Highlights	**Payback ratio from crops**: 1:2.5 within the first cycle. Carbon revenues: estimated USD 2–3M annually by Year 5.
Cap Table Snapshot	Community-led VAC ownership with project-managed revolving fund and credit guarantee scheme.
Exit Strategy & Potential	VACs institutionalized with revolving funds and credit guarantees. Land titling reforms ensure farmer ownership. Carbon proceeds reinvested for sustainability.
SDG Alignment with KPIs	○ **SDG 1**: No Poverty ○ **SDG 2**: Zero Hunger ○ **SDG 5**: Gender Equality ○ **SDG 8**: Decent Work and Economic Growth ○ **SDG 13**: Climate Action ○ **SDG 15**: Life on Land
Job Creation	10,000+ jobs, prioritizing women and youth, across farming, cooperative management, value chain services, and carbon monitoring.

50. CARBON SEQUESTRATION THROUGH FRUIT ORCHARD DEVELOPMENT

SECTION	DETAILS
Project Title	Carbon Sequestration Through Fruit Orchard Development
Project Overview	This project aims to establish and expand fruit orchards of diverse species (e.g., olive, citrus, peach, apple, apricot, walnut, and pomegranate) across suitable agro-climatic zones of Khyber Pakhtunkhwa (KP). The initiative seeks to enhance climate resilience, promote sustainable land use, increase farmer incomes, and generate certified carbon credits through verified carbon sequestration practices.
Team Overview	**Lead Proponent:** Agriculture Extension Department, Government of Khyber Pakhtunkhwa **Supporting Institutions:** Agriculture Research, Academia, Private Sector Nurseries, and Farmer Organizations (MFSCs & FSCs). **International Collaboration:** Carbon certification agencies, climate finance partners, and development partners (FAO, IFAD, GCF).

Proponents and Structure	**Implementing Agency:** Directorate General Agriculture Extension, KP **Project Partners:** Local communities, farmer cooperatives (MFSCs & FSCs), carbon registries, NGOs. **Governance Model:** Public-private-community partnership ensuring transparency and equitable benefit sharing.
Value Proposition and Market Opportunity	○ Establishment of climate-smart fruit orchards increases productivity and livelihoods ○ KP has over 0.5 M ha potential for fruit production, with strong market demand in domestic and export markets. ○ Verified carbon credits provide an additional revenue stream through international voluntary carbon markets.
Location	Potential districts of Khyber Pakhtunkhwa, including Swat, Dir, Chitral, Buner, Abbottabad, Haripur, Mardan, Peshawar, Charsadda, Karak, Swabi, DI Khan, Tank, Lakki Marwat, Bannu, Kohat, Khyber, Bajour, Orakzai, , and Kurrum etc.
Policy and Regulatory context	Aligned with Pakistan's National Climate Change Policy, KP Climate Change Policy, and Nationally Determined Contributions (NDCs).
Business Model and Go-to-Market Strategy	**Revenue Streams:** Sale of fruits, value-added processing, and monetized carbon credits. **Market Channels:** Local mandis, export hubs, value chain partnerships. **Carbon Credits:** Verified under global standards (VERRA, Gold Standard, or ART-TREES).
Current Stage and Implementation Plan or Milestones	**Year 1:** Baseline survey, site selection, nursery development, and farmer mobilization. **Years 2-3:** Plantation of orchards, capacity building, and carbon monitoring setup. **Years 4-5:** Maintenance, yield stabilization, carbon credit registration and issuance. **Years 6-10:** Scaling up, monitoring, and revenue generation. Orchard establishment (acres/hectares covered).
Key Metrics for Success	Orchard establishment (acres/hectares covered), Number of farmers benefited, Carbon sequestered (tCO_2e/year) Annual fruit production (tons) Household income increase (%)
Funding Needs/Current Status	USD 17.90 M

Use of proceeds	Orchard establishment & input supply. Nursery strengthening. Training & capacity building. Carbon monitoring, verification, and certification. Community mobilization & institutional support.
Investment structure	Blended finance model (Government funding + Climate finance + Carbon buyers + Private sector).
Financial highlights	**IRR estimated** at 18-22% including carbon revenues. **Payback period:** 3-5 years.
Cap Table Snapshot	**Public sector:** 50% **Private investors:** 30% **Community/farmers:** 20%
Exit strategy and potential	Long-term sustainability through revenue from fruit and carbon credits. Gradual transfer of orchard ownership and carbon rights to farmer groups.
Monetized carbon and nature co-benefits	**Estimated carbon sequestration:** 5–7 tCO_2e/ha/year. **Co-benefits:** biodiversity conservation, soil health improvement, water regulation, and rural poverty reduction.
SDG alignment with KPIs	**SDG 2:** Improved food security & nutrition. **SDG 8:** Decent work & economic growth. **SDG 13:** Climate action via carbon sequestration. **SDG 15:** Restoration of degraded lands.
Job creation	10,000 jobs

51. COASTAL AQUACULTURE & CARBON SEQUESTRATION THROUGH SEAWEED AND SHELLFISH FARMING

SECTION	DETAILS
Project title	Coastal Aquaculture & Carbon Sequestration through Seaweed and Shellfish Farming
Project overview	This project will establish seaweed (Kappaphycus and Gracilaria) and shellfish (mussels and oysters) farms along the Balochistan coast. The initiative enhances food security, reduces fishing pressure, sequesters carbon, improves marine biodiversity, and opens access to the growing carbon credit market.

Team Overview	Led by Fisheries & Coastal Development Department, with LUAWMS (technical), IUCN (ecosystem monitoring), and private aquaculture investors.
Proponents and Structure	Public–Private Partnership (PPP) with the Department providing leased coastal zones, private partners investing in farm infrastructure, and research institutions supporting monitoring.
Value Proposition and Market Opportunity	**The seaweed market is projected to reach USD 25B globally by 2030**. ○ High-value export potential (cosmetics, pharma, food). ○ Monetizable "blue carbon credits."
Location	Coastal zones near Jiwani, Ormara, Pasni, and Gwadar.
Policy and Regulatory Context	Aligned with Balochistan Blue Economy Development Plan 2025–2035, National Fisheries Policy, and Pakistan's NDC commitments under Paris Agreement.
Business Mode and Go-to-Market Strategy	Seed & feed provided via hatcheries. Private operators run farms; the government regulates & facilitates. Exports via Gwadar Port to Gulf, EU, and East Asian markets. Carbon credits monetized via voluntary carbon markets.
Current Stage and Implementation Plan or Milestones	**Year 1**: Feasibility, stakeholder engagement, zoning. **Year 2–3**: Establish pilot farms (500 acres). **Year 4–7**: Scale to 3,000 acres. **Year 8–10**: Full commercialization and export hubs.
Key Metrics for Success	3,000 acres under seaweed/shellfish farming. At least 500,000 tons of CO_2 equivalent are sequestered annually. 10,000 tons annual seaweed production. 2,000+ direct jobs created.
Funding Needs/Current Status	~USD 7M
Use of Proceeds	Farm infrastructure (rafts, ropes, hatcheries). Training and extension. Monitoring and carbon verification. Export facilitation.
Investment Structure	30% Govt support (land, basic infra). 50% private equity/impact investors. 20% concessional climate finance (blended).
Financial Highlights	**IRR**: ~18% **Payback**: 5–6 years **Carbon credits**: USD 2m/yr potential revenue

Cap Table Snapshot	**Donors/Climate funds**: 100%
Exit Strategy and Potential	The Out Sourcing & Private sector may exit via carbon credit trade or M&A with regional aquaculture companies.
Monetized Carbon and Nature Co-Benefits	Annual sequestration: ~500,000 tCO_2e. Biodiversity: oyster reefs improve fish stocks by 20%. Co-benefits: shoreline protection, water quality.
SDG Alignment with KPIs	**SDG 13** (Climate Action): 500,000 tCO_2e/year offset. **SDG 14** (Life Below Water): 3,000 acres restored. **SDG 8** (Jobs): 2,000+ direct jobs.
Job Creation	**Direct**: 2,000 **Indirect**: 3,000 (processing, logistics, exports).

52. CLIMATE-RESILIENT CULTIVATION & VALUE-CHAIN DEVELOPMENT OF MEDICINAL AND AROMATIC PLANTS

SECTION	DETAILS
Project Title	Climate-Resilient Commercial Cultivation and Sustainable Harvesting of Aromatic & Medicinal Plants in Gilgit-Baltistan
Project Overview	This project aims to introduce and scale up the commercial cultivation, collection, and value-chain development of medicinal and aromatic plants (MAPs) in Gilgit-Baltistan. The region's unique biodiversity and climatic conditions are highly suited for high-value species such as Wild Garlic, Cumin, Rhododendron, Hing, Bergenia, Sasuria Lapa, Picoriza karu, Ephedra, wild thyme, Viola, Wild Rose,Wild Almond, Dandelion, Artemisia and many others. By promoting sustainable harvesting and processing, the project will enhance local livelihoods, contribute to biodiversity conservation, and support climate prosperity. The initiative aligns with national and global priorities for nature-based solutions, carbon reduction, and sustainable economic growth.
Team Overview	**Lead Team:** GBRSP – Program for Natural Resource Management & Climate Change. **Technical Experts**: Botanists, agronomists, and NRM specialists from local and international partners **Community Role**: Local farmers and community resource persons (CRPs) trained in cultivation, processing, and sustainable harvesting practices.
Proponents & Structure	**Lead Proponent:** Gilgit-Baltistan Rural Support Programme (GBRSP). **Partners**: IUCN-Pakistan, WWF-Pakistan, local academia (KIU), representatives from the herbal industry, and women's producer groups. **Governance**: Steering committee at provincial

Value Proposition and Market Opportunity	The rising global demand for natural products, herbal medicine, and essential oils presents a unique market opportunity. Pakistan currently imports many herbal products that could be produced locally instead. Gilgit-Baltistan's MAPs can be positioned as premium organic products with high export potential. The project offers both economic benefits to marginalized communities and ecological benefits by reducing overexploitation of wild flora.
Location	Selected valleys of all districts Gilgit-Baltistan. Astore valley is especially critical, as it is widely known as the "storehouse of medicinal plants of Pakistan," providing a rich resource base for sustainable utilization.
Policy and Regulatory context	**Project aligns with**: Pakistan's National Climate Change Policy. Gilgit-Baltistan Strategy for Sustainable Development. SDG targets for poverty reduction, climate action, and biodiversity. Global commitments such as the Convention on Biological Diversity (CBD) and the Living Indus Initiative.
Business Model and Go-to-Market Strategy	○ Establish MAPs nurseries and demonstration plots. ○ Develop cooperatives for bulk collection and value addition. ○ Certification and branding as "Organic Gilgit-Baltistan Products. ○ Partnerships with herbal industries for supply contracts. ○ Explore carbon and biodiversity credits as co-financing streams.
Current Stage and Implementation Plan or Milestones	**Stage**: Concept → Pilot → Scale-up. Milestones: **Year 1**: Pilot nurseries, farmer training, and supply chain mapping. **Year 2–3**: Expansion of cultivation, processing units, and market linkages. **Year 4–5**: Large-scale commercialization and integration into national/international markets.
Key Metrics for Success	○ 500 hectares under sustainable MAPs cultivation. ○ 5,000 households engaged in MAPs value chains. ○ 40% women participate in producer groups. ○ 3–5 processing/value-addition units established. ○ Export contracts signed with at least 3 herbal industries.
Funding Needs/Current Status	Estimated USD 5–7 M over 5 years. Phased requirements: Year 1 (USD 1M), Year 2–3 (USD 3M), Year 4–5 (USD 2–3M).
Use of Proceeds	Establish nurseries and demonstration plots. Training and capacity building. Processing and value-addition infrastructure. Certification and branding. Market development and logistics.
Investment Structure	**Blended financing**: Grants (capacity building, biodiversity protection) + Equity/Impact Investment (processing units, export markets) + Carbon/Nature credits revenue.

Financial Highlights	○ Projected annual revenue of USD 3–4 M by Year 5. ○ 15–20% IRR expected for commercial processing units. ○ Long-term sustainability through export markets and biodiversity credits.
Cap Table Snapshot	**Community Cooperatives:** 40% **GBRSP/Partners:** 30% **Impact Investors:** 30%
Exit Strategy and Potential	**For investors:** potential buy-out by the herbal industry or transition to community-led cooperatives with steady export contracts. **For communities:** self-sustaining MAPs enterprises linked with global supply chains.
Monetized Carbon and Nature Co-Benefits	○ Carbon sequestration through sustainable cultivation. ○ Biodiversity protection by reducing wild harvesting pressure. ○ Soil conservation and water retention. ○ Nature credits and eco-certifications as future income.
SDG Alignment with KPIs	**SDG 1 (No Poverty):** Household income increased by 25–30%. **SDG 5 (Gender Equality):** 40% women inclusion. **SDG 8 (Decent Work):** 5,000+ jobs created. **SDG 13 (Climate Action):** Nature-based solutions scaled. **SDG 15 (Life on Land):** 500 hectares of biodiversity landscapes restored and protected.
Job Creation	Jobs: 800

53. NYSA ECO-RESORT

SECTION	DETAILS
Project Title	Nysa Eco-Resort
Project Overview	Nysa Studios is a de novo hospitality management business set up to operate various properties in the Gilgit-Baltistan, Chitral and Sakardu catchment areas. It has earmarked its launch project, based in Gulmit named Nysa Eco-Resort. The proposed Eco-friendly resort combines modern and traditional construction, utilizing local materials to preserve cultural aesthetics while reducing transportation and conventional concrete costs, thereby decreasing the construction carbon footprint. The resort utilizes renewable energy, passive climate control, and advanced insulation to achieve optimal energy efficiency. Adequate sewerage and waste management systems are integrated, minimizing environmental impact throughout the resort's lifespan. These measures highlight the industry's dedication to sustainable and culturally respectful practices.

Team Overview	○ Mr. Junaid Malik is the sole owner of the company. Junaid graduated from University of Washington, Seattle with a double degree in Economics (financial econometrics) and Theatre and later embarked on a similarly eclectic career path. ○ Mr. Zarak Ali, Development Partner: Leading the construction and development efforts. ○ Naqi Abbas, Chief Operating Officer: Naqi joins us as the Chief Operating Officer to design and operationalize service delivery infrastructure along with Human Resources training and development.
Proponents & Structure	The project will be owned and operated through Nysa Studios, a newly incorporated SMC under the law of the Islamic Republic of Pakistan.
Value Proposition and Market Opportunity	Gulmit, Hunza tourism growth has been in magnitude of multiples and remained unaffected despite pandemic related challenges. The uptick in tourist numbers has specially come from the higher income bracket in Pakistan with an added flavor of foreigners frequenting the area in the recent past.
Location	The location identified for the resort is located in Gulmit, Hunza, right on the Karakoram Highway. The area measures (~22,500 sq feet) and is exposed to the Hunza River at the rear side.
Policy & Regulatory Context	Our resort capitalizes on the existing Karakorum highway, which facilitates efficient logistics and accessibility. This well-established infrastructure is instrumental in ensuring a seamless experience for our guests.
Business Model & Go-to-Market Strategy	Our primary target market comprises individuals from the high end of the socio-economic spectrum who share a strong environmental consciousness and are committed to making positive changes through their consumption choices. Our customer base includes both domestic and international guests. Particularly within the international segment, we are experiencing a growing interest from Chinese visitors. These discerning travelers are seeking luxurious yet sustainable experiences that align with their values. **Go to Market / "Pull" Strategy** Providing seamless end-to-end services and world-class amenities; creating a customized "Curation of Experiences"; building strategic partnerships to enhance offerings; and targeting a new market segment focused on the 'work-vacation' clientele now accustomed to remote work.

Current Stage & Implementation Plan or Milestones	The land for the property has already been arranged and is available under an 18 year lease, extendable by another 10 years upon equity investment approval. Since this is a de novo project, the actual timelines from inception of project through launch of operations will depend on a number of variables beyond the sponsors' control, least of which is the funding time line, once done the project will take two years to complete. Construction of the property is expected to be completed approximately 18 months from the date of funding the transaction. Operations will commence within 6 months thereafter.
Key Metrics for Success	Development of Eco-friendly resort contributing to the socio-economic and environmental well being of locality
Funding Needs	The company is seeking to raise USD 2.5M in equity funding in exchange for a negotiated ownership stake in the project. The remainder (USD 0.13M) will be funded by the sponsors. Nysa Studios will operate the resort through a fixed term management agreement, for which it will charge a 5% management fee per annum on the net profitability. Returns for investors indicate a 30%+ IRR (in PKR terms) over a 10 year investment period.
Use of Proceeds	Development and operationalization of resort
Investment Structure	Equity currently 100% owned by Nysa Studio and new Equity will be decided.
Financial Highlights	**Construction Cost (including Finishing):** 1,566,667 USD **Green Tech:** 283,333 USD **MEP Equipment:** 166,667 USD **Interior Furnishings, Fittings & Equipment:** 560,000 USD **Total:** 2,576,667 USD ~ 2.576 M
Cap Table Snapshot	Owner + Investor (As agreed)
Exit Strategy & Potential	The business is set up to operate at a high cash churn and therefore makes for a dividend rich opportunity. Typically single asset resorts have limited exit mechanisms outside of strategic sales to potential larger hospitality groups. However, with Nysa's view on developing a portfolio of properties over time, the holding company could become an attractive option for a potential REIT listing, offering attractive cap rates to drive valuation.
SDG Alignment with KPIs	**SDG 13**: Climate Action **SDG 8**: Decent Work and Economic Growth **SDG 9**: Industry, Innovation and Infrastructure **SDG 15**: Life on Land

54. ESTABLISHING A DESIGNATED OPERATIONAL ENTITY (DOE) FOR VOLUNTARY CARBON MARKETS

SECTION	DETAILS
Project Title	Establishing a Designated Operational Entity (DOE) for Voluntary Carbon Markets
Project Overview	The project aims to establish Pakistan's first locally domiciled Designated Operational Entity (DOE) accredited under Article 6.4 of the UNFCCC. This DOE will provide independent validation, verification, and monitoring of carbon projects, ensuring compliance with international standards. By doing so, it will strengthen Pakistan's institutional capacity, improve access to voluntary carbon markets (VCMs), and enable the country to capture a larger share of the projected USD 40B global carbon credit market by 2030.
Team Overview	Karandaaz Pakistan will manage the project. At operational level, it may require experts in climate finance, carbon market, and regulatory policy experts with experience in MRV (Measurement, Reporting, Verification), sustainable finance, and UNFCCC compliance mechanisms. Partnerships will be sought with international DOEs/MRVs for knowledge transfer and technical training.
Proponents and Structure	A dedicated entity domiciled in Pakistan, aligned with MoCC&EC's VCM Policy Guidelines (2024). Structure: For purpose or hybrid entity (initially grant-funded, transitioning to fee-based services)
Value Proposition and Market Opportunity	Pakistan could generate up to USD 5B in carbon credits by 2030, but currently issues just 0.05% of global credits. Establishing a DOE reduces reliance on costly foreign "fly-in" services, improves trust in Pakistani carbon credits, and accelerates market growth. The DOE in Pakistan will provide critical support to developers and government, while creating long-term revenue through validation/verification fees.
Location	Islamabad, with operations across Pakistan, potentially going beyond boundaries.
Policy and Regulatory Context	○ Guided by Pakistan's 2024 Policy Guidelines for Trading in Carbon Markets. ○ Operates under UNFCCC Article 6.4 accreditation framework. • ○ Aligns with Paris Agreement obligations and ICVCM principles.

Business Model & Go-to-Market Strategy	○ **Phase 1**: Establishment, accreditation, and capacity building with grant support. ○ **Phase 2**: Revenue from validation, verification, and certification fees; advisory services to carbon project developers. ○ **Go-to-Market**: Engage local developers, international buyers, and policymakers; fill institutional capacity as Pakistan's first DOE.
Current Stage & Implementation Plan or Milestones	**Stage:** Concept development, seeking funding. **Milestones:** **Year 1-2**: Institutional setup, regulatory registration, UNFCCC accreditation under Article 6.4 and operationalization **Year 3**: validations/verifications; expansion into multiple sectoral scopes. **Year 4+**: Full financial sustainability through service revenues
Key Metrics for Success	○ UNFCCC accreditation achieved (within 2 years). ○ 10+ carbon projects validated/verified within 3 years. ○ Contribution to issuance of USD 100M+ in carbon credits from Pakistan by 2030. ○ Recognition as trusted DOE regionally.
Funding Needs	Estimated USD 1M per year for 3-4 years (grant-based) to cover setup, accreditation, and operations until breakeven
Use of Proceeds	○ Accreditation costs (UNFCCC fees, compliance) ○ Institutional setup (office, staff, systems) ○ Capacity building & technical training ○ MRV systems, legal recognition, sectoral scope expansion
Investment Structure	Potential blended finance structure: ○ Initial: Grant funding (public climate funds, philanthropy, development agencies). ○ Medium-term: Service-based revenue model (validation/verification fees).
Financial Highlights	○ **Early years**: Operating deficit covered by grants. ○ **Year 4+**: Revenue growth via increasing number of carbon projects. ○ **Long-term**: DOE sustainable via service revenues, with surplus reinvested in capacity.
Cap Table Snapshot	Endowment-based (grant-supported, independent governance structure). Governance to include MoCC&EC representation, technical experts, and development partners.
Exit Strategy & Potential	○ Transition from donor reliance to self-sustaining service provider. ○ Potential integration into the regional DOE ecosystem. Spin-off ○ opportunities for private-sector MRV and advisory services.

Monetized Carbon & Nature Co-Benefits	○ Unlocks Pakistan's potential USD 5B carbon revenue by 2030. ○ **Co-benefits:** improved forestry, renewable energy, sustainable agriculture, biodiversity protection
SDG Alignment with KPIs	**SDG 7:** Affordable clean energy (supporting renewable projects). **SDG 8:** Decent work and economic growth (green jobs created). **SDG 13:** Climate action (emission reduction validation). **SDG 15:** Life on land (forestry & biodiversity).
Job Creation	○ Initial 5–10 specialized technical and administrative staff. ○ Expansion to 100+ direct and indirect jobs within 5 years. ○ Capacity building for local consultants, project developers, and MRV specialists.

55. MANGO AGROFORESTRY CARBON PROJECT

SECTION	DETAILS
Project Title	Mango Agroforestry Carbon Project
Project Overview	Mirpurkhas is among Pakistan's poorest districts, despite being home to fertile mango land. Living Standard Score = 14.5 (vs. national avg. 31.5). Rural literacy is only 34.8% (male 46%, female 22%). 71% rural population, severely impacted by 2022 floods. Smallholders (88% own land) can't afford seeds, fertilizer, or wait 5-7 years for mango revenue. Many rely on debt or NGO support. An agroforestry model combining mango orchards with short-cycle crops will provide income diversification, carbon sequestration, soil stability, water management, biodiversity gains, and long-term resilience.
Team Overview	**Short-term:** Short-cycle, high-demand crops for early revenue; free mango saplings; borehole/rainwater harvesting. **Long-term:** Mango orchards mature in 5-7 years, creating decades-long income streams. Farmers integrate into the mango value chain (incl. value-added processing).
Proponents and Structure	**Resources Future:** feasibility, PDD development, MRV, carbon registration. **Sindh Community Foundation (SCF):** 18 years of grassroots development, 80+ projects, accredited with UN-ECOSOC & GCF.
Value Proposition and Market Opportunity	Governance involves Resources Future (developer), SCF (community engagement), and farmer groups. The participatory model ensures farmer ownership, equitable benefit-sharing, and alignment with local government.

Location	Agroforestry, Carbon Finance, Regenerative Agriculture, Climate Change Mitigation & Adaptation, Rural Livelihoods, Food Security
Policy and Regulatory context	Mirpurkhas District, Sindh Province, Pakistan
Business Model and Go-to- Market Strategy	Aligns with Pakistan's NDCs and GCF priorities. Supports adaptation (water and soil health) and mitigation (carbon storage in biomass/soil).
Current Stage and Implementation Plan or Milestones	Multi-revenue approach: short-cycle crops (early cash flow), mango orchards (long-term recurring income), carbon credits (global voluntary market), value-added mango processing. Revenue partially reinvested in community projects.
Key Metrics for Success	**Pre-feasibility (May-Aug 2025):** GIS mapping, farmer surveys (155 farmers engaged; 98% agree to participate), preliminary carbon modelling, MoUs. **Feasibility (Aug 2025-Feb 2026):** Carbon & socio-economic baselining, financial modelling, risk & gender equity plans, draft PDD. **Pilot (Feb 2026-2027):** 3,000 ha, farmer groups formed, nursery setup, sapling delivery, capacity building, monitoring, registration. **Scale-up (2027-2030+):** Expansion to 30,000 ha+ across Mirpurkhas. Carbon: Pilot = 1M tCO_2 (≈USD 20M @ USD 20/credit); Full = 9M+ tCO_2 (≈USD 190M+). **Farmer Reach:** Pilot 1,000 farmers; Scale 15,000+. **Social:** Improved literacy, health, clean water, training. **Environmental:** Soil stability, biodiversity, water regulation.
Funding Needs/Current Status	USD 10,000 pilot
Use of Proceeds	**Immediate**: USD 10,000 for on-ground pre-feasibility study (stakeholder consultations, eligibility, risk & revenue modelling, government engagement). **Medium/long term**: Capital for pilot & scale-up (nursery, saplings, water infra, farmer capacity, MRV systems).
Investment Structure	Pre-feasibility (farmer consultations, eligibility, risk & emissions assessment, partnerships). Future funds will be allocated toward agroforestry establishment, capacity building, infrastructure development, MRV, and community services.

Financial Highlights	Blended finance (carbon buyers, impact investors, donors, PPP). Revenue-sharing with farmers; a portion is reinvested in community uplift.
Cap Table Snapshot	**Pilot:** 3,000 ha = 1M tCO_2 (USD 20M potential). **Full scale:** 30,000 ha = 9M+ tCO_2 (USD 190M+). Additional revenues from mango sales and short-cycle crops.
Exit Strategy and Potential	Carbon credit monetization, sustainable mango supply chain, potential partnerships with agri-food companies.
Monetized Carbon and Nature Co-benefits	Better soil organic content, decreased erosion, groundwater regulation, water logging prevention. Income + carbon revenue.
SDG Alignment with KPIs	**SDG 2**: Zero Hunger **SDG 5**: Gender Equality **SDG 8**: Decent Work and Economic Growth **SDG 13**: Climate Action **SDG 15**: Life on Land **SDG 17**: Partnerships for the Goals

56. BUILDING CLIMATE-RESILIENT AGRICULTURE: INNOVATION, WATER, AND MARKETS

SECTION	DETAILS
Project Title	Building Climate-Resilient Agriculture: Innovation, Water, and Markets
Project Overview	A 5-year program to enhance agricultural productivity, strengthen climate resilience, restore degraded lands, and improve supply chains in Balochistan. Builds on GBI Phase I with focus on fruits, vegetables, and cotton.
Team Overview	**AE:** JS Bank; **Executing Entity:** Green Balochistan Initiative (GBI); **Technical Partner:** CABI; Government of Balochistan line departments.
Proponents and Structure	Led by Govt. of Balochistan (P&D Dept.), implemented through GBI, with technical and market linkages from CABI and PPPs.
Value Proposition and Market Opportunity	Balochistan produces 70% of national fruits, organic cotton potential, and emerging vegetable clusters. Huge domestic & export opportunities via “Green Balochistan Products”.

Location	Province-wide across agroecological zones (Quetta, Pishin, Kalat, Khuzdar, Kech, Panjgur, etc.).
Policy and Regulatory Context	Aligned with Pakistan NDCs, Balochistan Climate Change Policy 2024, Organic Agriculture Policy 2024, SDGs 1 (No Poverty), 2 (Zero Hunger), 13 (Climate Action), and 15 (Life on Land).
Business Model and Go-to-Market Strategy	Blended finance (GCF + Govt + PPP); model farms, biocontrol labs, cold storage, certifications (GAP, HACCP, Organic Cotton); branding & exports.
Current Stage and Implementation Plan or Milestones	2025 start; 2026 infra setup; 2027–2028 rollout (training, certification, PPPs); 2029–2030 scale-up & transition.
Key Metrics for Success	25k direct + 330k indirect beneficiaries; 15m trees planted; 50k acres restored; 30k man-months of jobs; 20% market share increase; 0.25 - 0.5 MtCO 2 eq sequestered annually.
Funding Needs/Current Status	USD 87.36m total; ~USD 50m GCF request; co-financing from Govt & private sector.
Use of Proceeds	Infrastructure (storage, irrigation, labs), training, certification subsidies, technology transfer, carbon monitoring.
Investment Structure	Blended (grants, equity, PPPs, endowment fund for O&M).
Financial Highlights	Export-driven income growth; reduced post-harvest losses; carbon credit revenue potential.
Exit Strategy and Potential	Green Endowment Fund, farmer cooperatives, PPPs, departmental mainstreaming.
Monetized Carbon and Nature co-Benefits	1.25 $MtCO_2e$ sequestration; biodiversity conservation, soil fertility, water retention, and pollinator services.
SDG Alignment with KPIs	**SDG 1:** (No Poverty) **SDG 2:** (Zero Hunger) **SDG 13:** (Climate Action) **SDG 15:** (Life on Land)
Job Creation	500 jobs

57. NATURE-BASED SOLUTIONS FOR CLIMATE RESILIENCE, LAND DEGRADATION CONTROL, AND LIVELIHOOD SECURITY (PHASE-II GREEN BALOCHISTAN INITIATIVE).

SECTION	DETAILS
Project Title	Nature-Based Solutions for Climate Resilience, Land Degradation Control, and Livelihood Security (Phase-II Green Balochistan Initiative)
Project Overview	The proposed project promotes sustainable olive cultivation and agroforestry along Balochistan's national highways to enhance domestic edible oil production and reduce dependence on imports. Through large-scale olive plantations, nurseries, processing units, and market linkages, it will establish a robust olive-based value chain, create employment opportunities, and enhance rural livelihoods through community engagement and skills development. Integrating honeybee rearing within olive areas will generate additional income through honey production while enhancing pollination, biodiversity, and ecosystem services. This olive–honey agroforestry model will diversify livelihoods, strengthen rural economies, and encourage the participation of women and youth. By adopting climate-smart practices, the project will enhance water-use efficiency, sequester carbon, and build resilience to climate change, while roadside green belts will improve microclimates and mitigate heat island effects. Optimizing marginal lands and fostering institutional collaboration will ensure long-term socio-economic and environmental sustainability for highway communities.
Team Overview	Technical Experts from government and private sector
Proponents and Structure	The Green Balochistan Initiative (GBI), a flagship program of the Government of Balochistan, is the project's proponent. Established to promote sustainable agriculture as a driver of ecological restoration, climate resilience, and rural development, GBI focuses on advancing agricultural systems, including agroforestry and apiculture, as well as community-based resource governance and management. With its institutional capacity and partnerships, GBI is well-positioned to implement the project, enhancing agricultural productivity and ensuring socio-economic sustainability for communities in Balochistan.

	○ The project will be implemented under the institutional framework of the GBI through its Project Management Unit (PMU). Oversight and policy guidance will be provided by the Project Steering Committee (PSC), chaired by the Additional Chief Secretary of the Planning and Development Department, Government of Balochistan. The PMU, led by the Project Director, will manage day-to-day operations including planning, monitoring, financial management, and stakeholder coordination. ○ Implementation will be supported by specialized technical teams in agriculture, agroforestry, apiculture (honeybee rearing and management), GIS/remote sensing, and socio-economic development. Field activities will be carried out in collaboration with the Agriculture Department, Forest & Wildlife Department, National Highway Authority (NHA), and local communities, ensuring capacity building, participatory approaches, and long-term sustainability.
Value Proposition and Market Opportunity	**Sustainable Livelihoods:** Directly benefits about 30,000 smallholder farmers and rural households and indirectly impacts ~100,000 household members. Edible Oil & Honey Production: Increases local olive oil production by 10–15% while simultaneously promoting honey and related by-products (beeswax, propolis, royal jelly) as high-value commodities, reducing import dependence and diversifying income streams. **Environmental Benefits:** Enhances biodiversity, pollination, microclimates, and carbon sequestration, benefiting nearly 300,000 residents of roadside communities, with potential monetization opportunities through climate finance. Integrated Value Chain: Combines nurseries, plantations, honeybee colonies, and processing units for both olive and honey, creating a complete, scalable model. **Market Potential:** High domestic demand and export opportunities to the Middle East for olive oil, honey, and value-added products, coupled with policy support and donor interest, create opportunities for private-sector engagement and provincial expansion.
Location	The national highways in Balochistan will be lined with olive plantations on both sides of the road, with a plant-to-plant spacing of 16 feet and a row-to-row spacing of 10 feet, measured from the edge of the road. **Proposed plantations along major highways include**: Quetta to Karachi (N-25, ~370 km): ~500,000 plants Quetta to Chaman (N-25, ~125 km): ~170,000 plants Quetta to Zhob (N-50, ~336 km): ~450,000 plants Quetta to Fort Monroe (N-50 and N-70, ~461 km): ~620,000 plants Quetta to Jaffarabad (N-65, ~340 km): ~470,000 plants Total: ~2,310,000 olive seedlings (including 10% extra to cope with potential mortality)

	To integrate apiculture with olive agroforestry, honeybee rearing and production sites will be established along highways at ~15 km intervals, with 25–30 hives per site, depending on floral availability. **Proposed hive management sites include**: Quetta to Karachi (N-25, ~370 km): ~25 sites having 625–750 hives Quetta to Chaman (N-25, ~125 km): ~8 sites having 200–240 hives Quetta to Zhob (N-50, ~336 km): ~22 sites having 550–660 hives Quetta to Fort Monroe (N-50 and N-70, ~461 km): ~31 sites having 775–930 hives Quetta to Jaffarabad (N-65, ~340 km): ~23 sites having 575–690 hives Total: About 109 hive sites having 2,725–3,270 hives. These plantations will create a green corridor along the national highways, contributing to carbon sequestration, roadside beautification, and soil conservation.
Policy & Regulatory Context	The project directly supports national and provincial policies by strengthening agriculture through olive cultivation and apiculture along the National Highways in Balochistan, while enhancing livelihoods, promoting green infrastructure, and mitigating climate change:
Business Model & Go-to-Market Strategy	Addressing land degradation and climate vulnerability while creating green jobs and carbon credits. Strong potential in voluntary carbon markets, NTFP-based value chains (including olive oil, honey, and other bee products), and climate-resilient agriculture through integrated olive–honey agroforestry.
Current Stage & Implementation Plan or Milestones	**Current Stage** Conceptualization Completed: Project idea, objectives, and scope defined. Feasibility Assessment: Preliminary site selection, assessment of highway corridors, and suitability for olive cultivation conducted. Stakeholder Engagement Initiated: Coordination with Agriculture Department, Forest & Wildlife Department, NHA, and local communities underway. Institutional Setup: PMU of GBI established with staffing and governance structure in place. **Implementation Plan (6-Year Timeline)** **Year 1:** Preparation & Planning ○ Finalize detailed project design and site surveys along national highways. ○ Recruit and train PMU staff, technical experts, and field teams. ○ Procure inputs: Olive seedlings, irrigation equipment, tractors, transportation vehicles, fertigation and water tanks, spray machines, fertilizers, growth regulators, pesticides/insecticides, as well as beekeeping equipment (hives, protective gear, honey extractors) and honeybees for rearing. ○ Establish monitoring, reporting, and data management framework.

Year 2: Nursery Development & Seedling Production, and Honeybee Rearing

- Establish and operationalize olive nurseries at strategic locations.
- Produce sufficient seedlings for plantation activities in subsequent years.
- Rear honeybee colonies on a mass scale in controlled apiaries, ensuring strong and healthy hives that will be shifted to olive plantation sites during field establishment
- Train local staff and community members in nursery management, fertilization, pest management, and irrigation techniques, as well as apiculture practices including honeybee rearing, hive management, and honey production.

Year 3: Plantation Establishment (Phase 1)

- Prepare plantation sites using tractors and irrigation/fertigation systems.
- Apply fertilizers, pesticides, and insecticides as per agricultural recommendations.
- Establish initial olive plantations along selected highway corridors.
- Begin operationalize spray and irrigation equipment/implements.
- Shift reared honeybee colonies from nurseries to plantation areas, where they will utilize surrounding flora to strengthen colonies and support biodiversity, while preparing for future olive pollination.
- Begin pilot-scale honey production and train local farmers in hive management, honey extraction, and colony maintenance.

Year 4: Plantation Expansion & Capacity Building

- Expand olive plantations along additional roadside areas.
- Apply fertilizers, pesticides, and insecticides as per agricultural recommendations.
- Expend and operate spray and irrigation support plantation growth.
- Increase honeybee rearing for larger-scale honey production, with bees feeding on olive trees (as they grow) and nearby plants.
- Set up community-level honey collection and processing units to ensure good quality and better market access.
- Diversify into other bee products (beeswax, propolis, royal jelly, pollen) to create more income opportunities.
- Train farmers and local communities in advanced beekeeping (hive care, seasonal management, honey extraction, and value addition) and continue training in climate-smart farming.
- Raise awareness on safe use of pesticides near beehives to protect colonies.

	Year 5 & 6: Full-Scale Operations, Monitoring & Sustainability ○ Complete plantation targets and ensure full irrigation and fertigation infrastructure is operational. ○ Fully operationalize olive oil processing units, honey processing units, and market linkages for both olive and honey value chains. ○ Strengthen local value chains, post-harvest handling, and community-based processing initiatives (olive oil, olive tea, and honey). ○ Conduct comprehensive monitoring, evaluation, and impact assessment. ○ Strengthen institutional collaboration and ensure sustainability of livelihoods, green infrastructure, biodiversity, and environmental resilience. ○ Explore carbon credit opportunities and promote integration of olive–honey agroforestry as a model for replication in other regions.
Funding Needs	Project Cost: USD 30 M
Investment Structure	The project has an estimated total cost of USD 30 M, which will be fully funded by donor support. The PMU of the GBI will manage and allocate the funds across key components. **Funds will be allocated as follows:** ○ 25% for plantation and nursery development along-with honeybee rearing and hive management, ○ 30% for irrigation infrastructure and insect and pest control, ○ 10% for training and capacity building (covering both olive cultivation and apiculture), 10% for olive oil and honey processing units, and ○ 25% for monitoring, administration, and community engagement. Financial oversight will be provided by the PSC, chaired by the Additional Chief Secretary of the Planning and Development Department, Government of Balochistan, to ensure transparency, accountability, and timely disbursement.
Financial Highlights	**Total Project Cost**: USD 30 M **Funding Source**: Fully funded by donor support **Fund Management**: Managed by the PMU of GBI, with oversight from the PSC to ensure transparency, accountability, and timely disbursement.

Exit Strategy & Potential	○ By the end of the sixth year, olive plantations will be transferred to local communities, with trained cooperatives overseeing irrigation, harvesting, and maintenance. ○ Honeybee colonies and apiaries will also be managed by the communities, ensuring continued honey production, pollination services, and diversification of income through bee products (honey, beeswax, propolis, royal jelly, pollen). ○ Processing units and value chain enterprises for both olive oil and honey products will be fully operated by the private sector, while the Government of Balochistan, through local authorities, will provide oversight to ensure sustainable management. ○ The project will generate a sustainable olive–honey based economy: boosting domestic oil and honey production, creating jobs, improving microclimates along highways, enhancing aesthetic landscapes, and strengthening ecological services.
Monetized Carbon & Nature Co-Benefits	**Carbon Sequestration:** Olive plantations, agroforestry, and honeybee forage areas are expected to sequester 42,000 tons of CO_2 annually, with potential monetization through carbon credits or climate finance.
SDG Alignment with KPIs	**SDG 1**: No Poverty **SDG 2**: Zero Hunger **SDG 8**: Decent Work and Economic Growth **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action **SDG 15**: Life on Land **SDG 17**: Partnerships for the Goals
Job Creation	1500 jobs

58. BOAT UPGRADATION WITH LONGLINING & FREEZING UNITS

SECTION	DETAILS
Project Title	Boat Upgradation with Longlining & Freezing Units
Project Overview	This project will retrofit fishing vessels in Balochistan with longlining systems for tuna and large pelagics, onboard freezing plants, and HACCP-compliant handling practices. The initiative reduces post-harvest losses, increases the incomes of fisherfolk, and ensures high-value exports.
Team Overview	Fisheries Dept. (lead), Boat Yards (retrofit), Fisherfolk Cooperatives, Exporters' Associations.

Proponents and Structure	PPP model with soft loans/grants for fisherfolk; government provides subsidies and training; exporters guarantee offtake.
Value Proposition and Market Opportunity	Tuna and significant pelagic exports are globally valued at USD 42B annually. Improved quality unlocks EU/Japan markets. Reduces losses from 40% to <10%.
Location	Gwadar, Lasbella & Hub District
Policy and Regulatory Context	Supports FAO HACCP standards, EU SPS requirements, Balochistan Fisheries Policy (2025–2035).
Business Model and Go-to-Market Strategy	Fisherfolk cooperatives upgrade boats via concessional finance. Exporters procure tuna/pelagics at premium rates. Branding and certification for EU/Japan markets.
Current Stage and iImplementation Plan or Milestones	**Year 1**: Pilot retrofit of 50 boats. **Year 2–3**: Scale to 500 boats. **Year 4–5**: Cover 5,000 boats.
Key Metrics for Success	5,000 boats retrofitted. Tuna exports increased by 40%. Post-harvest loss cut to <30%.
Funding Needs/Current Status	(~USD 4.05m).
Use of Proceeds	Freezing units, HACCP training, longlining gear. Cold chain strengthening.
Financial Highlights	**Payback**: 4 years. Export revenue ↑ USD 10m annually.
Cap Table Snapshot	20% private equity, 80% donor finance.
Exit Strategy and Potential	Scaling into full fleet modernization with commercial banks stepping in.
Monetized Carbon and Nature Co-Benefits	Fuel efficiency through modern gear. Lower bycatch → biodiversity protection.
SDG Alignment with KPIs	**SDG 14** (Life Below Water): Reduced bycatch. **SDG 8** (Jobs): Higher fisherfolk incomes.
Job Creation	Jobs: 1500

IX
CLIMATE RESILIENT INFRASTRUCTURE

(NO. OF PROJECTS: 7; AMOUNT: USD 350.25 M)

59. COMMUNITY-LED MICRO-WATERSHED RESTORATION FOR FLOOD RESILIENCE AND LIVELIHOOD SECURITY

SECTION	DETAILS
Project Title	Community-led Micro-Watershed Restoration for Flood Resilience and Livelihood Security
Project Overview	This five-year project (2025–2030) aims to restore 97 micro-watersheds across Khyber Pakhtunkhwa through community-driven watershed rehabilitation, afforestation, climate-smart agroforestry, water harvesting, and eco-enterprise development. It integrates structural and biological measures to reduce flood risks, improve ecosystem services, and strengthen livelihoods.
Team Overview	**Lead Agency**: Forest Department, Government of Khyber Pakhtunkhwa **Supporting Partners**: Local communities, Village Watershed Committees (VWCs), NGOs, and allied departments (Agriculture, Livestock).
Proponents & Structure	**Proponent**: Forest Department, Khyber Pakhtunkhwa Project Structure: Implemented through a Project Management Unit (PMU), divisional offices, and community-based VWCs.
Value Proposition and Market Opportunity	The project addresses critical challenges of land degradation, floods, and rural poverty. By restoring micro-watersheds and promoting sustainable livelihoods, it creates climate-resilient communities and generates eco-business opportunities (beekeeping, poultry, agroforestry, ecotourism). The project enhances water availability, food security, and local employment.
Location	Province-wide coverage: Selected valleys in Micro watershed throughout Khyber Pakhtunkhwa
Policy & Regulatory Context	Aligned with Khyber Pakhtunkhwa Sustainable Development Strategy (SDS), Provincial Watershed Management Policy, and Multilateral Environmental Agreements (UNFCCC, UN Strategic Plan for Forests 2030).
Business Model and Go-to-Market Strategy	**Community-based model**: Formation of 97 VWCs to co-manage restoration efforts, supported by institutional frameworks and digital monitoring. Livelihood activities (forestry, agro-enterprises, eco-tourism) will integrate communities into value chains, ensuring sustainability beyond project life.

Current Stage & Implementation Plan or Milestones	**Stage:** Project design finalized, ready for funding and rollout (2025). **Key Milestones:** **Year 1**: Establish nurseries, enclosures, VWCs, pilot interventions. **Years 2–3**: Scale afforestation, water conservation structures, agroforestry. **Years 4–5**: Consolidate livelihoods, visibility campaigns, provincial learning forum.
Key Metrics for Success	○ 97 watersheds rehabilitated ○ 1000+ soil & water conservation structures built ○ 1500 ha of degraded land restored ○ 39,000+ individuals benefiting directly ○ 97 VWCs established ○ 3000+ trained in sustainable land management ○ 30+ rainwater harvesting systems installed
Funding Needs	USD 285 M
Use of Proceeds	○ Afforestation and watershed rehabilitation ○ Engineering & bioengineering flood control measures ○ Community livelihood support and training ○ Establishment of nurseries ○ Capacity building, extension, visibility campaigns ○ PMU operations and monitoring
Investment Structure	Public sector-led with donor financing, implemented via Forest Department with community participation.
Financial Highlights	**Total Budget**: PKR 80,700 M (2025–2030) Annual phasing from PKR 6,500m (2025–26) to PKR 12,000m (2029–30).
Cap Table Snapshot	Not applicable (public sector project).
Exit Strategy & Potential	Sustainability ensured via VWCs, government support, and income-generating activities. Knowledge products and visibility campaigns will facilitate replication and scaling across Pakistan.
Monetized Carbon & Nature Co-Benefits	Afforestation and agroforestry to increase carbon sequestration & generate carbon credits. Soil and water conservation improves hydrology and groundwater recharge. Biodiversity conservation through habitat restoration.
SDG Alignment with KPIs	**SDG 1 & 2**: No Poverty, Zero Hunger **SDG 5**: Gender Equality **SDG 6**: Clean Water & Sanitation **SDG 12**: Responsible Consumption & Production **SDG 13**: Climate Action **SDG 15**: Life on Land

Job Creation	Direct employment for 2,500 households in watershed-based livelihoods Skilled and unskilled labor during construction & plantation phases Women and youth engagement through nurseries and eco-enterprises

60. COMMAND AREA DEVELOPMENT OF SMALL DAMS/CANAL

SECTION	DETAILS
Project Title	Command Area Development of Small Dams/Canal
Project Overview	Establishment of tertiary irrigation systems and improved/sustainable agriculture practices on farmers lands
Team Overview	Command area development of 29 dams & Bezai Canal
Proponents & Structure	74,000 acres new land under improved tertiary irrigation system
Value Proposition and Market Opportunity	Increased agriculture productivity
Location	Khyber Pakhtunkhwa
Policy & Regulatory Context	Supports SDGs, Water Policy & Agriculture Policy
Business Model & Go-to-Market Strategy	Implementation through community using Participatory approach
Current Stage & Implementation Plan or Milestones	Feasibility study conducted
Key Metrics for Success	74,000 acres of rainfed land will be brought under an improved irrigation system with advance agriculture practices.
Funding Needs	USD : 45 M
Use of Proceeds	Construction of tertiary irrigation system, land leveling, soil conservation structure, improved agriculture practices, etc
Investment Structure	100% donor funds

Financial Highlights	IRR more than 30%, CBR : 1:4.0
Exit Strategy & Potential	The system will be handed over to the water users association established/registered under the project for operation and maintenance.
Monetized Carbon & Nature Co-Benefits	Green sector interventions are generally environment friendly promoting green vegetative cover. There is no earth movement/excavation/displacement involved.
SDG Alignment with KPIs	**SDG 1**: No Poverty **SDG 2**: Zero Hunger **SDG 4**: Quality Education **SDG 13**: Climate Action **SDG 14**: Life Below Water **SDG 15**: Life on Land
Job Creation	More than one M jobs (direct/indirect) per annum

61. SOLARIZATION OF SEHAT KAHANI E-CLINICS FOR CLIMATE IMPACT AND HEALTHCARE DEMOCRATIZATION

SECTION	DETAILS
Project Title	Solarization of Sehat Kahani E-Clinics for Climate Impact and Healthcare Democratization
Project Overview	Sehat Kahani is a health tech impact initiative that aims to reduce climate impact and democratize healthcare, especially for underserved and marginalized communities. The platform reintegrates female doctors into the medical workforce using telemedicine. Currently operational across 40 E-Clinics and through its mobile health application, Sehat Kahani has reached ○ 3.3 M beneficiaries and provided health education to 7.1 M+ users. The project proposes solarizing these E-Clinics, making them solar-powered healthcare hubs. Solar panels will provide a dependable, clean, and renewable energy source to power Wi-Fi, laptops, and medical devices, ensuring uninterrupted consultations and reducing reliance on fossil-fuel-based electricity

Team Overview	**Founders**: Dr. Sara Saeed (CEO & Co-Founder), Dr. Iffat Zafar (COO & Co-Founder). **Key Management**: Mahek Karim Merchant (Lead, Grants), Nida Shehzad (Lead, Digital & Innovation), Rahim Damani (Lead, Finance Operations), Syed Atif Ali (Lead, Sales & Technical), Mohammad Sumair Khan (Clinical Managers), Rameza Rahman (Manager, HR).
Proponents & Structure	**Company**: Community Innovation Hub – Sehat Kahani **Registered With**: Securities Exchange Commission Pakistan (SECP)
Value Proposition and Market Opportunity	**Value Proposition:** Sehat Kahani offers accessible, affordable, and gender-inclusive telemedicine services. It reduces transportation costs, saves time, and empowers unemployed female doctors to contribute remotely. Solarization will cut operational electricity costs, enabling sustainable scale-up. **Market Opportunity (Energy):** Pakistan faces 8–16 hours of daily load shedding, with one-third of the population lacking electricity, primarily in rural areas. With a high solar potential, just 0.071% of land use for solar PV can meet the nation's electricity needs. **Market Opportunity (Telemedicine):** Post-COVID growth in telemedicine in Pakistan surged 800–900%, with tele-consulting holding 40% of market share in 2019.
Location	Pakistan (40+ E-Clinics across Pakistan; expansion planned in underserved rural & urban areas).
Business Model & Go-to-Market Strategy	**Verticals:** 1) Nurse-assisted E-Clinics (marginalized populations) 2) Mobile App (B2C & B2B segments). **Revenue:** Online OPD + value-added services (E-clinics); Corporate subscription plans (Silver, Gold, Platinum); Pay-as-you-go & retail subscriptions. **Growth:** Scale to 500 clinics, integrate AI & ML diagnostics, and strengthen the brand as a national leader in digital health. **Go-to-Market:** Focused expansion in rural/remote hubs + urban low-income areas using ATL, BTL & digital campaigns in English, Urdu & regional languages.
Current Stage & Implementation Plan or Milestones	**Current:** Incorporated 2017; 40 E-Clinics operational; USD 3.5M raised; GTV USD 3.2M. Partners: Grand Challenges Canada, WHO, UNDP, MIT, USAID. **Solarization Timeline:** 1) Feasibility study (1 month), 2) Hiring & committee formation (1.5 months), 3) Mini-grid setup (3 months), 4) Phase-wise solarization (6–8 months), 5) Ongoing monitoring & impact assessment.

Key Metrics for Success	**Financial:** Breakeven by FY 2023-24; ROI 25.43x, valuation USD 381M in 5 years. Scale Goals by 2025: 120 solar-powered E-Clinics; 10,000+ trained doctors & mobilizers; 30M+ active app users. **SDG Links:** SDG 3: Good Health and Well-being, SDG 5: Gender Equality, SDG 7: Affordable and Clean Energy, SDG 13: Climate Action.
Funding Needs	USD 3M (Series A round).
Use of Proceeds	**Breakdown:** Salaries USD 534K; Marketing USD 771K; OPEX USD 807K; Technology USD 261K; Regional Expansion USD 537K; Solar Panels USD 90K.
Investment Structure	**Series A round;** raising USD 3M via equity financing. Current commitments: USD 1.5M; Expected: USD 1M more from existing shareholders. 100% equity; no debt. Min. ticket: USD 50K.
Financial Highlights	**Historical**: USD 3.2M GTV; USD 1.8M revenue; USD 3.5M raised; 12 months cash buffer. **Projections**: Breakeven FY 2023-24; ROI 25.43x; USD 381M valuation in 5 years; Revenue FY 2026 = USD 85.9M.
Cap Table Snapshot	Dr. Sara Saeed (40.06%), Dr. Iffat Zafar (31.60%), Danish Elahi (6.83%), Islamic Development Bank (6.42%).
Exit Strategy & Potential	1) Investors exit 5–8x multiple, 2) Acquisition by insurance/healthcare/global partners, 3) Tech giant acquisition (e.g., Teladoc, Cisco, Apple Fit, Google), 4) IPO after profitability.
Monetized Carbon & Nature Co-Benefits	**Carbon Savings:** Telemedicine reduces emissions from travel by 40–70%. Solar replaces fossil fuel use, cutting emissions 20x more. **Environmental Benefits:** Paperless ops, waste reduction, eco-friendly power use. **Health Benefits:** Reliable solar power ensures continuity of cold chain for vaccines & medical equipment.
SDG Alignment with KPIs	**SDG 3**: Healthcare democratization via digital OPD & diagnostics. **SDG 5**: Employment for female doctors & access to women's reproductive health. **SDG 7**: Renewable energy integration in healthcare. **SDG 9**: Innovation through telehealth tech & AI. **SDG 10**: Inclusive health access for marginalized communities. **SDG 12 & 13**: Reduced carbon footprint, climate action through clean energy.
Job Creation	**Current**: 200+ staff + 7,000 at-home female doctors. **Future**: Train 10,000 doctors & mobilizers by 2025; engage 50,000 female doctors in the next decade.

62. THE EARTHBACK PROJECT

SECTION	DETAILS
Project Title	The Earthback Project
Project Overview	The Earthback Project aims to restore 10,000 acres of degraded farmland in Pakistan by applying high-quality compost to smallholder farmers. In the first year, compost will be provided at subsidized rates backed by interested businesses to encourage adoption, with full fledged adoption in later years as farmer confidence grows. By transforming organic and agricultural waste into compost, the project provides a nature-based solution that enhances soil health, boosts productivity, and reduces methane emissions.
Team Overview	Anusha Fatima – Founder & CEO Rahul Rai – Co-Founder & COO Zeeshan Akbar – Finance Associate Hunia Tanveer – Sustainability & Growth Lead Environmental scientist
Proponents & Structure	○ **Lead proponent**: TrashIt (Private) Limited ○ **Structure**: Private entity with social and environment focus ○ **Ongoing projects**: UNIDO Paidar ○ **Association**: GIZ Pakistan, WWF, FAO
Value Proposition and Market Opportunity	○ Soil restoration improves farmland productivity by up to 20% and farmer livelihoods. ○ Compost reduces dependency on chemical inputs. ○ Potential circular economy: treating agri-waste, producing compost, restoring land. ○ Long-term revenue: compost biofertilizer sales, composting setup consultations ○ Demand from corporations for sustainable waste systems.
Location	Sindh and Punjab
Policy & Regulatory Context	The Earth Back Project is aligned with Pakistan's national climate and agricultural frameworks. ○ It supports the objectives of the Climate Change Act 2017 and contributes to Pakistan's Nationally Determined Contributions (NDCs) by promoting nature-based solutions and soil restoration.

Business Model & Go-to-Market Strategy	○ **Year 1**: Compost production scaled from 20 tons to 2,800 tons sold to smallholder farmers with documented results on soil health and yield benefits ○ **Years 2–3**: Scaling compost hubs across tehsils / districts to reduce cost and increase product accessibility. Compost sales through online channels and distribution shops. ○ **Marketing Partners**: FAO, UN agencies, agriculture extension networks; corporates for sourcing waste or supporting ESG; development organizations and
Current Stage & Implementation Plan or Milestones	○ **Now**: Pilot underway with 18 farmers; compost product tested successfully across multiple crops and districts; leading to a potential network of more than 1.5 M farmers in Sindh ○ **Next 12 months**: Scale production and increase outreach to 1500 farmers; conduct baseline soil fertility and yield tests; deploy GIS-based mapping for land restoration impact mapping. ○ **Years 2**: Expand composting hubs; integrate on-farm agri-waste collection; initiate processes for international biofertilizer certification
Key Metrics for Success	○ **Acres restored**: Target 10,000 acres under compost-supported soil regeneration. **Farmer adoption**: Number of farmers onboarded and trained in sustainable practices. ○ **Compost applied**: Average 280kg compost per acre in combination with other fertilizer, scaled across project areas. ○ **Soil organic matter**: Expected 20% increase in soil organic matter within 2–3 years. ○ **Water retention**: Compost use is projected to improve water-holding capacity by 30%, reducing irrigation needs. ○ **Waste diversion**: 11,200 tons of organic/agri-waste diverted from landfills and open burning annually through composting hubs. ○ **Continuation rate**: increase in number of farmers purchasing compost/ recurring orders
Funding Needs	USD 1 M for 18 months
Investment Structure	**Blended Finance**: Debt, Equity Investment, Grants
Financial Highlights	**Revenue FY24** : USD 35,700 **Revenue FY25**: USD 42,600 **Projected Revenue from Project**: Rs. 84 M or USD 375K **Compost produced**: 2.8 M kgs **Land restored**: 10,000 acres **Waste processed**: 11.2 M kgs **Rate**: Rs. 37.5/kg

Cap Table Snapshot	Anusha Fatima – Founder – 50% Rahul Rai – Founder – 50%
Exit Strategy & Potential	○ **Franchise Expansion**: Once farmer adoption is proven, compost hubs will be replicated through regional franchise holders, enabling scale with local ownership and consistent quality under TrashIt's model. ○ **Corporate/Industry Uptake**: Large agri-businesses and corporate farms can integrate TrashIt compost into their supply chains, ensuring long-term demand and wider land restoration. ○ **Future Climate Finance**: Biofertilizer certification and eventual carbon credit readiness create additional revenue streams while strengthening alignment with Pakistan's Climate Prosperity Plan.
SDG Alignment with KPIs	**SDG 2**: Zero Hunger **SDG 11**: Sustainable Cities **SDG 12**: Responsible Consumption **SDG 13**: Climate Action **SDG 15:** Life on Land
Job Creation	The Earth Back Project is expected to create over 40 jobs within its first year.

63. WATER SECURITY IN CONTEXT OF CLIMATE CHANGE VULNERABILITIES

SECTION	DETAILS
Project Title	Water Security in Context of Climate Change Vulnerabilities
Project Overview	A 3-year climate-resilient initiative to enhance water security in GB by constructing 400 water storage reservoirs, installing 200 weir structures for glacier monitoring, and conducting feasibility studies for mini dams. The project safeguards mountain water systems, strengthens livelihoods, and supports downstream water needs.
Team Overview	Led by the Water Management & Irrigation Department, GB; supported by local farmer associations, community organizations, scientific institutions, and the Government of Gilgit-Baltistan.
Proponents and Structure	**Sponsoring Agency**: GB Government **Implementing Agency**: Water Management & Irrigation Dept. GB **Operation & Maintenance**: Targeted communities and farmers' associations post-handover.

Value Proposition and Market Opportunity	○ Secure water resources for 40,000 households ○ Increase crop yields, cropping intensity, and food security ○ Protect downstream water supplies for Ms ○ Position GB as a model for mountain water resilience projects attractive to climate financiers.
Location	All 10 districts of Gilgit-Baltistan, Pakistan
Policy and Regulatory Context	○ Aligned with Pakistan's NDC 3.0 adaptation targets ○ Supports National Water Policy and GB Development Strategy ○ Responds to global calls for mountain ecosystem protection (UNFCCC adaptation agenda).
Business Model and Go-to-Market Strategy	**Public sector–led with community ownership**: ○ Infrastructure built under government supervision ○ Communities manage and maintain post-completion ○ Potential for blended finance (government + donors + climate funds) to ensure viability.
Current Stage and Implementation Plan / Milestones	**Year 1**: Feasibility studies for mini dams; start reservoir and weir construction **Year 2**: Scale up to 200+ reservoirs, 100+ weirs **Year 3**: Completion of 400 reservoirs and 200 weirs; full community training and handover.
Key Metrics for Success	○ 400 water reservoirs constructed ○ 200 weir structures operational ○ 40,000 households benefit directly ○ 20–30% increase in crop yield and cropping intensity Improved water availability and reduced seasonal shortages.
Funding Needs / Current Status	USD 7.50 M
Use of Proceeds	○ Reservoir construction ○ Weir installation and glacier monitoring systems ○ Feasibility studies for mini dams ○ Watershed management and ecosystem restoration ○ Community capacity building and O&M training.
Investment Structure	**Government-led with potential for blended financing**: ○ Grants from climate funds (e.g., GCF, Adaptation Fund) ○ Public sector contributions ○ Community in-kind participation for O&M.
Financial Highlights	○ **Direct Benefits**: Increased cropped area, yield, and irrigation capacity ○ **Indirect Benefits**: Enhanced rural incomes, poverty reduction, food security ○ No direct revenue to the government, but significant economic multipliers via agriculture.

Exit Strategy and Potential	Post-project handover to community farmer associations Long-term sustainability through local O&M Government oversight ensures technical support.
Monetized Carbon and Nature Co-Benefits	Watershed restoration and reduced land degradation Ecosystem resilience and biodiversity protection **Climate adaptation**: resilience to floods/droughts, measured via avoided losses and improved water balance.
SDG Alignment with KPIs	**SDG 2 (Zero Hunger)**: Increase in food production, crop yields **SDG 6 (Clean Water)**: 400 reservoirs, improved water access **SDG 13 (Climate Action)**: Enhanced resilience to glacial melt/floods **SDG 15 (Life on Land)**: Ecosystem and watershed restoration.

64. INTEGRATED SOIL AND WATER CONSERVATION INTERVENTIONS

SECTION	DETAILS
Project Title	Integrated Soil and Water Conservation Interventions
Project Overview	The project "Integrated Soil and Water Conservation Interventions for Climate Prosperity Across Khyber Pakhtunkhwa" aims to address these issues through proven measures, including terrace development, check dams, water ponds, streambank stabilization, micro-watershed management, and low-cost agronomic practices. These interventions will protect farmland, reduce erosion, enhance groundwater recharge, and improve water availability while also restoring ecosystems, conserving biodiversity, and building climate resilience.
Team Overview	The project will be carried out by the Directorate General of Soil and Water Conservation, Government of Khyber Pakhtunkhwa—the provincial body responsible for protecting land resources, conserving water, and promoting sustainable farming practices. Led by the Director General (BPS-20) at the provincial headquarters in Peshawar, the Directorate operates through a strong network of district offices across the province.
Proponents & Structure	The project will be led by the Directorate General of Soil and Water Conservation, a specialized wing of the Khyber Pakhtunkhwa Government's Agriculture Department. Supervised by the Secretary of Agriculture at the Civil Secretariat, Peshawar, the Directorate ensures alignment with provincial agricultural policies. Leadership will be provided by the Director General (BPS-20), supported by Directors of Planning & Development and Soil Conservation (BPS-19), along with Deputy Directors (BPS-18) for project design, monitoring, and reporting.

Value Proposition and Market Opportunity	Khyber Pakhtunkhwa faces mounting climate threats including floods, droughts, erosion, and soil loss, putting food security and rural livelihoods at risk. This project introduces proven soil and water conservation measures, such as terraces, check dams, ponds, streambank stabilization, micro-watersheds, and low-cost agronomic practices, to protect farmland, restore soil fertility, and improve water storage. By strengthening agriculture, crop losses can be reduced, yields can be enhanced, and incomes can be stabilized.
Location	The project will be implemented across all districts of Khyber Pakhtunkhwa, covering both settled and merged areas.
Policy & Regulatory Context	The project aligns with Pakistan's Updated NDCs by promoting adaptation in water and agriculture, nature-based solutions, and mitigation co-benefits through healthier soils and vegetation. It operationalizes the KP Agriculture Policies (2015 & draft 2025), the Mountain Agriculture Policy (draft 2025), the National Food Security Policy 2018, and the KP Climate Change Policy 2022.
Business Model & Go-to-Market Strategy	The project will be implemented through the Directorate General of Soil and Water Conservation under the Agriculture Department, ensuring planning, execution, and monitoring within the provincial system. Interventions such as terraces, check dams, ponds, and micro-watershed management will be implemented with community participation and subsequently handed over for local ownership, supported by training and capacity building.
Current Stage & Implementation Plan or Milestones	The Directorate General of Soil and Water Conservation is currently implementing two major projects, each valued at PKR 1 billion, while a third integrated project worth PKR 600 M has been jointly developed with other agriculture directorates. This integrated initiative has already been submitted to the Provincial Development Working Party (PDWP) and is currently under review. Once cleared, it will be rolled out across all districts of Khyber Pakhtunkhwa. These projects are fully reflected in the Annual Development Programme (ADP) 2025–26 and are planned for implementation during the period 2025–28.
Key Metrics for Success	**The success of the project will be tracked through outputs, outcomes, and long-term impacts, with clear targets such as**: ○ Water Pond 270, Check dam 330, Water Reservoir 180, Inlet/Outlet/Spillway 170, Micro-Watershed Development 30, Terracing Development 220, Stream Bank Stabilization Structures 800, Low-Cost Agronomic Interventions 90. ○ Expected results include a 30–40% reduction in soil erosion, 15–20% rise in water availability, and 10–15% increase in crop yields, directly benefiting over 20,000 households and creating 5,000 jobs in project areas.

	○ Community participation will ensure at least 70% of interventions are maintained after handover, while protecting farmland, restoring vegetation, and contributing to Pakistan's NDCs and SDGs.
Funding Needs	USD 7.15 M
Investment Structure	The project will be primarily financed through the Government of Khyber Pakhtunkhwa's ADP, with potential co-financing from the Federal Government (PSDP) and development partners, including climate finance institutions. Communities will contribute in-kind support through labor, maintenance, and ownership of completed assets. This blended model ensures government ownership, community participation, and flexibility for external partners to strengthen and scale interventions.
Financial Highlights	Financial phasing will prioritize field-level works, with the majority of funds allocated to infrastructure development (check dams, ponds, reservoirs, terraces, spillways, and streambank stabilization). Remaining resources will support agronomic interventions, community mobilization, training, monitoring, GIS-based supervision, and project management. The Directorate's past experience demonstrates cost-effective designs that yield high economic returns by reducing flood and erosion losses, enhancing water availability, and increasing crop productivity.
Exit Strategy & Potential	The project has a clear exit strategy to ensure sustainability beyond three years, with completed interventions handed over to communities for operation and maintenance, supported by training and ongoing technical support from district-level staff. Integrated into the Department of Agriculture's regular planning, it will serve as a model for replication, reducing disaster losses, protecting soils, boosting productivity, and opening avenues for climate finance, carbon credits, and global partnerships.
SDG Alignment with KPIs	**SDG 1**: No Poverty **SDG 2**: Zero Hunger **SDG 6**: Clean Water and Sanitation **SDG 13**: Climate Action **SDG 15**: Life on Land By integrating SDG-focused KPIs, the project ensures that its progress can be tracked in both provincial development frameworks and Pakistan's international reporting commitments, while also attracting support from climate finance institutions that prioritize SDG-linked outcomes
Job Creation	The project will generate significant employment opportunities during both the implementation and post-implementation phases. In the short term, over 5,000 direct and indirect jobs will be created.

65. LANDSLIDE & AVALANCHE EARLY-WARNING SYSTEM

SECTION	DETAILS
Project Title	Landslide & Avalanche Early-Warning System
Project Overview	Climate change and fragile terrain in northern KPK trigger frequent landslides/avalanches (e.g. 43 killed in Chitral, 2007). No dedicated EWS exists. **Solution:** 200+ slope-monitoring sensors, satellite InSAR analysis, and solar-powered sirens in high-risk villages, providing ≥30 min lead time for evacuation. **Impact:** Protects ~100,000 people in >200 vulnerable settlements; targets ≥60% reduction in disaster mortality.
Team Overview	**Lead**: CMPO KPK (policy coordination). **Implementer**: PDMA KPK (EWS ops center, field roll-out). **Technical**: PMD (weather forecasts), SUPARCO (InSAR), local universities (sensors, AI/ML). **Community**: District govts & volunteer teams maintain sirens & lead evacuations.
Proponents and Structure	Saves lives, reduces disaster losses, builds resilience. EWS investments yield >10:1 ROI; project BCR ~7:1. Enables livestock evacuation, asset protection, and stronger community trust, positions KPK as pioneer in climate adaptation tech, model for replication in Gilgit-Baltistan & CVF countries.
Location	Hindu Kush Belt (Chitral, Swat, Dir, Kohistan, Mansehra). ~100,000 people in >200 high-risk villages; poverty >30%. Elevation: 1,000–7,000m.
Business Model and Go-to-Market Strategy	100% grant-funded (PKR 450M / USD 1.6M, 3 years). GoKP covers O&M (~PKR 20 M/year) post-project. **Cost-efficient design**: low-cost IoT sensors, solar sirens, community in-kind upkeep. **Deployment**: phased rollout (10 pilot 50 sites full 200+), integrated with PDMA SMS/FM alerts.
Current Stage and Implementation Plan or Milestones	**Current**: Concept finalized; hazard mapping done; proposal under review. **Phase 1** (0–6m): Design, procurement. **Phase 2** (7–18m): 50-site pilot, drills. **Phase 3** (19–30m): Full rollout (>200 sites). **Phase 4** (31–36m): Optimization, PDMA takeover.

Key metrics for success	≥30 min warning lead time; ≥200 sensors/sirens; 100% coverage of >200 settlements; ≥60% mortality reduction; ≥90% evacuation during drills; ≥95% uptime; >85% community trust.
Funding needs/Current Status	USD 1.60 M **Breakdown**: Equipment 55% (sensors, sirens), Training 11%, Mgmt 18%, O&M 9%, M&E 2%, Contingency 4%. GoKP contributes approximately PKR 50 M in-kind.
Use of proceeds	**Cost**: ~USD 16/person (protected). E-IRR >20%; BCR ~6–7:1; NPV PKR 1.5–2B (10 years). O&M sustainable (PKR 20 M/year = fraction of GoKP budget).
Investment structure	**Cost**: ~USD 16/person (protected). E-IRR >20%; BCR ~6–7:1; NPV PKR 1.5–2B (10 years). O&M sustainable (PKR 20 M/year = fraction of GoKP budget).
Monetized Carbon and Nature Co-Benefits	Solar sirens avoid ~50–75 tCO_2; preserves slope forests & ecosystems by reducing catastrophic events. Co-benefits: clean rivers, biodiversity protection, knowledge for slope management.
SDG Alignment with KPIs	**SDG 11**: Disaster risk reduction (≥60% mortality cut). **SDG 13**: Climate adaptation capacity. **SDG 1**: Protects poor households from climate shocks. **SDG 3**: Health & well-being. **SDG 9**: Resilient infrastructure. **SDG 15**: Mountain ecosystem protection.
Jobs Creation	~120 short-term jobs (engineers, technicians, trainers, labor), 20+ project staff, 10 permanent PDMA staff post-project, 200+ community focal persons. ~500 people trained (40% women).

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INCREASING ACCESS TO FINANCIAL PROTECTION

(NO. OF PROJECTS: 4; AMOUNT: USD 121.45 M)

66. EMERGING PAKISTAN GREEN FUND

SECTION	DETAILS
Project Title	Emerging Pakistan Green Fund
Project Overview	The Emerging Pakistan Green Fund is the country's first debt/hybrid green investment fund focused on SMEs and non-SMEs. It targets transformative investments across renewable energy, energy efficiency, sustainable transport, green buildings, agriculture/forestry, and water & waste management. The Fund combines commercial discipline with climate finance objectives, aiming to mobilize blended capital for climate-resilient growth
Team Overview	Led by Karandaaz Pakistan
Proponents & Structure	Karandaaz Pakistan (non-profit under Section 42, backed by FCDO & Gates Foundation) will establish the Fund through a licensed Private Fund Management Company. The Fund is also pursuing GCF accreditation
Value Proposition and Market Opportunity	○ Pakistan ranks amongst most vulnerable country to climate change ○ Annual losses of USD 3.79bn from extreme weather; USD 19bn adaptation need ○ Untapped opportunity in renewable energy, energy efficiency, EVs, sustainable agriculture, and waste to-energy ○ Proprietary deal pipeline worth USD 51 M (14 transactions)
Location	Nationwide, with initial focus on renewable energy (C&I solar, wheeling), EV infrastructure, green buildings in Karachi, timber harvesting pilots, and agri/land-use projects (Punjab/KPK)
Policy & Regulatory Context	○ Aligned with Pakistan's NDC (50% GHG reduction by 2030) ○ EV Policy 2029 (targets: 30% new car sales by 2030, 90% by 2040) ○ Vision 2025 & National Climate Change Policy.
Business Model and Go-to-Market Strategy	○ Private debt/hybrid fund providing credit, guarantees, hybrid instruments, and climate bonds. ○ Invests in commercially viable green projects with measurable impact ○ Leverages Karandaaz's established SME and green investment platforms to source deals

Key Metrics for Success	○ **Target**: 53.8 Mt CO_2e net emissions reduction ○ ~34,000 jobs created ○ Installed RE capacity (MW), hectares under sustainable land management, climate finance mobilized
Funding Needs	Raising ~USD 50m in blended finance / co-investors from DFIs and private sector
Use of Proceeds	○ Credit lines for RE/EE/EV projects ○ Co-financing with banks for SMEs & corporates ○ Equity capital for forestry and NbS projects ○ Risk participation and guarantees
Investment Structure	○ Debt & hybrid instruments (private credit, risk participation, climate bonds) ○ 2% management fee + 0.5% operating expenses
Financial Highlights	○ USD 11.5 M already committed to green projects (2020–2024) ○ Proprietary pipeline of USD 51 M ready to deploy ○ Targeted Return: Capital Preservation – Long Term US inflation rate
Cap Table Snapshot	○ Karandaaz anchor investor (~USD 10 M) ○ DFIs & private investors as senior capital
Exit Strategy & Potential	○ Steady coupon/dividend returns via debt instruments ○ Liquidity through repayments of credit facilities ○ Potential securitization/climate bond issuance in later stages
Monetized Carbon & Nature Co-Benefits	○ Avoided deforestation, afforestation/ARR projects (130,000 tCO_2e/yr from forestry pipeline) ○ Improved water/soil resilience in agri & waste projects ○ Gender-inclusive financing platforms
SDG Alignment with KPIs	**SDG 7**: Affordable & Clean Energy (RE deployment) **SDG 9**: Industry, Innovation, Infrastructure (EE tech, EV infra) **SDG 11**: Sustainable Cities (green buildings, transport) **SDG 13**: Climate Action (53.8 Mt GHG avoided) **SDG 15**: Life on Land (forestry & NbS)
Job Creation	~34,000 jobs across sectors – construction, transport, forestry, renewable energy

67. ACCELERATING LOW CARBON EMISSION INVESTMENT IN MSME SECTOR

SECTION	DETAILS
Project Title	Accelerating Low Carbon Emission Investment in MSME Sector
Project Overview	The MSME Low-Carbon Investment Program is a national initiative designed to accelerate the adoption of low-carbon technologies among micro, small, and medium enterprises (MSMEs) in Pakistan. The program addresses key barriers to green investments by deploying concessional financing, blended capital solutions, risk mitigation instruments, and to create an enabling ecosystem for sustainable MSME growth. This project is specifically designed to catalyze green investments in Pakistan's MSME sector by enabling access to low-carbon technologies and sustainable practices. It targets environmental sustainability, energy efficiency, and reduced greenhouse gas (GHG) emissions by facilitating access to finance, particularly for underserved MSMEs. The program helps MSMEs transition to clean technologies by addressing critical barriers, such as high upfront costs and limited financial inclusion. **Core Objectives:** ○ Facilitate MSME adoption of low-carbon technologies by providing affordable, subsidized financing and guarantees tailored to needs. ○ Promote investments in renewable energy, energy efficiency, sustainable water and waste management, and resource efficiency projects. ○ De-risk early-stage green investments through blended finance structures, guarantee facilities, and concessional loans to reduce financial barriers. ○ Establish a scalable financing architecture combining grants, guarantees, concessional and commercial capital for long-term market sustainability. Thus, this program represents a strategic intervention to transform Pakistan's MSME sector by unlocking green investment potential, reducing carbon footprints, and fostering sustainable economic growth. It offers a replicable blueprint for integrating concessional finance to drive large-scale, market-based decarbonization across diverse industries.
Team Overview	The program will be spearheaded by the Sustainable Finance Department in conjunction with the core Investment Banking Team of JS Bank Limited (JSBL). Additionally, internal business units, including the SME division and other pertinent departments, will be actively involved in its leadership and execution.

Proponents & Structure

This initiative presents a systemic approach to accelerating the decarbonization of Pakistan's MSME sector through financial inclusion and climate-aligned lending. The program will be structured, managed, and deployed by JSBL. **The operating model is built around two key pillars:**

a. Blended and Subsidized Financing (The Facility)
To address the chronic financial exclusion of MSMEs and their inability to invest in climate-positive technologies due to cash flow unpredictability and lack of collateral, the facility will deploy two core models:

Option 1: Concessional PKR Lending via Climate Grant Support
MSMEs will be offered PKR-denominated loans at subsidized rates made possible through a climate grant mechanism. The grant bridges the gap between commercial and concessional lending. This allows MSMEs to adopt green-related assets.

Option 2: Blended Finance via Co-Financing Partners
The facility will deploy a blended capital stack in which 50% of financing is provided by JSBL while the remaining 50% will be sourced from concessional capital (e.g., climate funds, development partners). This structure enables the delivery of subsidized interest rates in local currency, without exposing MSMEs to foreign exchange risks that they cannot hedge.
Note: JSBL will require the funded facility to be denominated in Pakistani Rupees (PKR), as the institution will be exposed to currency fluctuation risks since the revenues or stream of the facility will be in the local currency.

b. Risk Mitigation Through Guarantee Coverage Facility (Unfunded)
Recognizing high historical delinquency and lack of collateral available in the MSME segment, the project will integrate an unfunded credit coverage guarantee mechanism which will be structured in the following manner:

- Portfolio-Level Loan Loss Guarantee: Partial coverage of aggregate portfolio defaults, protecting lending institutions and reducing risk aversion toward MSME loans.
- Transaction-Level Guarantee: Individual loan guarantees will be provided to reduce exposure and unlock capital.

This dual-layer guarantee structure ensures that credit institutions can extend financing to previously excluded MSMEs, particularly in underserved sectors

Value Proposition and Market Opportunity	**1. MSMEs (Micro, Small & Medium Enterprises)** Gain access to concessional financing for the first time, allowing them to invest in low-carbon technologies with reduced upfront cost and flexible repayment structures. **2. Financial Institution** JSBL will benefit from de-risked lending structures and risk-sharing facilities that reduce exposure to defaults and expand the bankable MSME base. **3. Government & Policymakers** This program supports Pakistan's climate goals, including a 50% reduction in GHG emissions by 2030 (conditional and unconditional), and promotes resource efficiency through the NDCs. **4. Development Partners & Impact Investors** Leverage concessional capital to unlock significant co-financing and impact.
Location	Pakistan
Business Model & Go-to-Market Strategy	The project will leverage existing financial institutions and emerging MSME lending portfolios. Green projects will be financed at subsidized rates in PKR to align with MSMEs' domestic revenue streams and avoid currency hedging risks. A guarantee facility will be introduced to mitigate high default risk due to lack of collateral and historical delinquency among MSMEs.
Current Stage & Implementation Plan or Milestones	**Phase 1: Concept Structuring & Validation** Timeline: Months 1-5 Objective: Finalize product design, risk mitigation tools, and partner alignments. Milestones: ○ Project concept finalized and approved by internal stakeholders ○ Structure and finalize concessional finance and guarantee facility terms with development partners and climate funds ○ Prepare pilot financing documentation and credit approval frameworks **Phase 2: Pilot Rollout & Learning** Timeline: Months 6-11 Objective: Controlled deployment of green financing products for MSMEs in key sectors and regions. Milestones: ○ Launch pilot financing window targeting MSMEs ○ Establish monitoring framework to track loan performance, ○ energy/water savings, and GHG reduction

	Phase 3: National Scale-Up Timeline: Months 12-24 Objective: Expand geographic reach, optimize delivery mechanisms, and mobilize additional capital. Milestones: ○ Scale financing operations to cover MSMEs nationwide across multiple sectors ○ Begin monetization of carbon and water savings benefits through verified impact channels ○ Implement comprehensive monitoring & evaluation system with regular reporting on disbursements, impact, and financial performance
Funding Needs	Program amount PKR equivalent of USD 50 M Component Amount Concessional Finance (Option 1) USD 3,360,000 (approx.) Concessional Finance (Option 2) USD 25,000,000 Guarantee Facility (Provide 50% USD 25,000,000 portfolio-level and 90% individual loan risk coverage) Assumed parity 1 USD : PKR 281
Use of Proceeds	Use of proceeds will focus on financing projects aimed at reducing greenhouse gas (GHG) emissions and water consumption, specifically in the following categories: Renewable Energy, Energy Efficiency, Sustainable Water and Waste Management and Waste Management and Resource Efficiency. **Funded Facility**: Option 1: Blended Concessionary Finance through a Grant Component Under this option, grants from impact financiers will be used to subsidize sub-loans extended to MSMEs. Loans for green projects, such as energy efficiency, water conservation, and renewable energy, will be priced at a relevant tenor KIBOR + 2.5%-4 % p.a. The sub-borrower will pay the relevant KIBOR rate, while the spread will be covered through the grant subsidy, thereby reducing the effective cost of capital and encouraging the uptake of low-carbon investments. Option 2: Blended Finance through a Concessionary Loan This option involves blending concessional loans with commercial capital to offer sub-loans below market rates, such that the effective borrowing cost remains below or equal to relevant KIBOR. Unfunded Facility: Loan Loss Risk Coverage The facility will provide loan loss coverage guarantees at both portfolio and individual loan levels to de-risk lenders. Given the emerging nature of MSME green financing and the limited secondary markets for collateral, the guarantee will partially mitigate losses from defaults and reduce credit risk exposure, encouraging greater lending to MSMEs for low-carbon projects.

Investment Structure - Option 2	**Funded facility**: ○ Unsecured facility to JSBL ○ Tenor: Loan up to 5 years ○ Grace Period: will depend on the sub-loans and will be linked with the project implementation period ○ Concessionary rate applicable ○ Currency: PKR **Unfunded facility**: ○ Unsecured facility to JSBL ○ **Tenor**: to match with the sub-loans maturity
Exit Strategy & Potential	The program is structured to ensure a gradual and responsible transition from concessional support to commercially sustainable operations. The primary exit for impact financiers and concessional capital providers will be achieved through the scheduled repayment of sub-loans and the wind-down of guarantee facilities, aligned with the maturity of the underlying MSME financing portfolios. Over the medium term, as adoption of low-carbon technologies increases and MSMEs improve their creditworthiness, concessional financing will be progressively phased out. This will allow transition fully to commercial lending models supported by enhanced risk-based pricing, credit assessment tools.
SDG Alignment with KPIs	The MSME Low-Carbon Investment Program directly supports the achievement of multiple United Nations Sustainable Development Goals, including: **SDG 6**: Clean Water and Sanitation **SDG 7**: Affordable and Clean Energy **SDG 8**: Decent Work and Economic Growth **SDG 9**: Industry, Innovation, and Infrastructure **SDG 12**: Responsible Consumption and Production **SDG 13**: Climate Action

68. CLIMATE SHIELD RISK INSURANCE & GUARANTEE FUND

SECTION	DETAILS
Project Title	Climate Shield Risk Insurance & Guarantee Fund
Overview	Community-based insurance & guarantee fund to protect households in 16 GLOF valleys, covering lives, assets, and livelihoods.

Team	GBRSP (implementing); Provincial Govt GB; UNDP; Donors; Insurance cost; Banks; Community Orgs.
Proponents	Govt of GB, GBRSP, UNDP, Donor agencies, Insurance partners.
Value Proposition	First household-level climate insurance in Pakistan; covers 10,150 HHs (5,075 highly vulnerable); sustainable risk-sharing model.
Location	16 valleys, 11 districts of GB (~83,382 people).
Policy Context	Anchored in NAP 2023, NDC 3.0; supports SDGs 1, 5, 8, 11, 13.
Business Model	Guarantee Fund invested profits used for premiums + Community Fund Fintech payouts in disasters.
Stage	Concept note completed; pilot for 16 valleys; expansion to 14 more valleys planned.
Metrics	**HHs covered:** 10,150 (50% vulnerable, 5,075); **Pop:** ~83k; **Avg HH shield:** PKR 1M (USD ~3,637).
Funding Needs	USD 18.45 M
Use of Funds	Premium payments, payouts, Community Climate Fund, livelihood recovery, mgmt.
Investment Structure	Donor & Govt guarantee; insurance cos manage fund; fintechs deliver payouts.
Financials	One-time permanent guarantee fund; revolving via interest/profits.
Exit Strategy	Sustainable revolving fund; scalable to KP, AJK.
Carbon/Nature Co-Benefits	Supports low-carbon green recovery; enhances adaptive capacity.
SDGs	**SDG 1**: No Poverty **SDG 5**: Gender Equality **SDG 8**: Decent Work and Economic Growth **SDG 11**: Sustainable Cities and Communities **SDG 13**: Climate Action
Jobs	**Direct:** Fund management & insurance ops; **Indirect:** recovery & climate-smart livelihoods (focus on women/youth).

69. PAKISTAN GREEN IMPACT BOND FOR CLIMATE-SMART ENTERPRISES

SECTION	DETAILS
Project Title	Pakistan Green Impact Bond for Climate-Smart Enterprises
Project Overview	The proposed Green Impact Bond (GIB) will support investments in critical green sectors, including waste management, plastic recycling, clean air technologies, water efficiency, and sustainable agriculture. The bond will pool capital from private and institutional investors, with repayment linked to both financial performance and the achievement of verified climate impact indicators (e.g., GHG reductions, waste diverted, and energy savings). Building on the experience of GreenFin Innovations (GFI)—which has financed 13 SMEs, greentech firms and NGOs with over USD 1.3 M since 2021—the GIB will leverage this proven pipeline and expertise to channel larger volumes of finance into high-impact climate solutions.
Team Overview	Karandaaz GreenFin Innovations Team, results monitoring from Development Impact Team at Karandaaz, partnerships with third parties for impact verification.
Proponents & Structure	**Proponent**: Karandaaz Pakistan (DFI, nonprofit). **Bond Issuer**: Parwaaz Financial Services (PFSL), wholly owned subsidiary of Karandaaz Pakistan Limited (KRN), **Outcome Funders**: Development partners, climate funds. **Investors**: Local and international impact investors, ESG funds, DFIs.
Value Proposition and Market Opportunity	Growing Need for Climate-Smart Financing in Pakistan. SMEs face financing gaps despite offering scalable solutions in renewable energy, sustainable agriculture, circular economy, and water conservation. The GIB allows investors to support high-impact projects while de-risking investments through blended finance (including guarantees, grants, concessional capital such as first-loss tranches, subordinated debt, and technical assistance)
Location	Pakistan (urban centres, semi-urban, rural areas depending on SME portfolio and their sector focus)
Policy & Regulatory Context	Aligned with Pakistan's National Climate Change Policy, NDCs, and Green Taxonomy. Supports CVF-V20 Climate Prosperity Plan objectives. Complies with SECP's bond issuance and green finance guidelines
Business Model & Go-to Market Strategy	Bond proceeds channelled through GFI's lending portfolio to vetted SMEs. Returns generated from SME repayments. Investor outreach via ESG/impact investor networks.

Current Stage & Implementation Plan or Milestones	1) Conceptualization stage (2025) 2) Stakeholder consultations with donors, regulators, and investors 3) Setup & structuring 4) First bond issuance pilot 5) Disbursement to SMEs & monitoring (2026–2030).
Key Metrics for Success	○ Capital raised (USD 3 M first issuance) ○ Number of SMEs financed (target 50–70) ○ GHG emissions avoided (tons CO_2e) ○ Waste diverted (tons) ○ Renewable energy generated (MW) ○ Jobs created (esp. green/technical).
Funding Needs	Initial issuance size USD 3 M (expandable based on market appetite).
Use of Proceeds	On-lending to SMEs in green and climate change sectors, technical assistance for capacity building, impact monitoring, transaction costs for bond structuring
Investment Structure	**Blended finance model**: Private investors + concessional anchor investors + outcome funders. Returns from SME repayments (cash flow-backed) + impact-linked outcome payments.
Financial Highlights **Sector**	**GFI track record**: USD 1.3 M disbursed across 13 SMEs and non-profits with strong impact potential.
Cap Table Snapshot	○ **Donors/DFIs**: 30% (first-loss or concessional capital) • ○ **Karandaaz (Sponsor/Anchor)**: 10% (equity/guarantee support)
Exit Strategy & Potential	**Private/Institutional Investors**: 60% (senior tranche, commercial returns) Investors repaid from SME loan repayments & outcome funds over 5–7 years. Successful pilot could be scaled into recurring bond issuances for USD 10–15m.
Monetized Carbon & Nature Co-Benefits	Verified carbon credits from emission reductions and nature-based solutions. Potential sale of carbon offsets in voluntary markets. **Co-benefits:** improved air quality, water savings, biodiversity, climate resilience.
SDG Alignment with KPIs	**SDG 7:** Clean Energy **SDG 8**: Decent Work **SDG 9**: Industry & Innovation **SDG 11**: Sustainable Cities **SDG 12**: Responsible Consumption **SDG 13**: Climate Action **KPIs**: SMEs supported, emissions avoided, renewable energy generated, waste reduced.
Job Creation	**Direct**: Green jobs in SMEs. **Indirect**: Supply chains, waste management systems, renewable energy installations.

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The Pakistan Climate Prosperity Plan (CPP) Investor Book presents a transformative pipeline of bankable, climate-aligned projects designed to transform Pakistan's climate vulnerability intro climate prosperity.