Skills-based Labor Mobility as a Strategy for Climate Change Adaptation

Prepared for:

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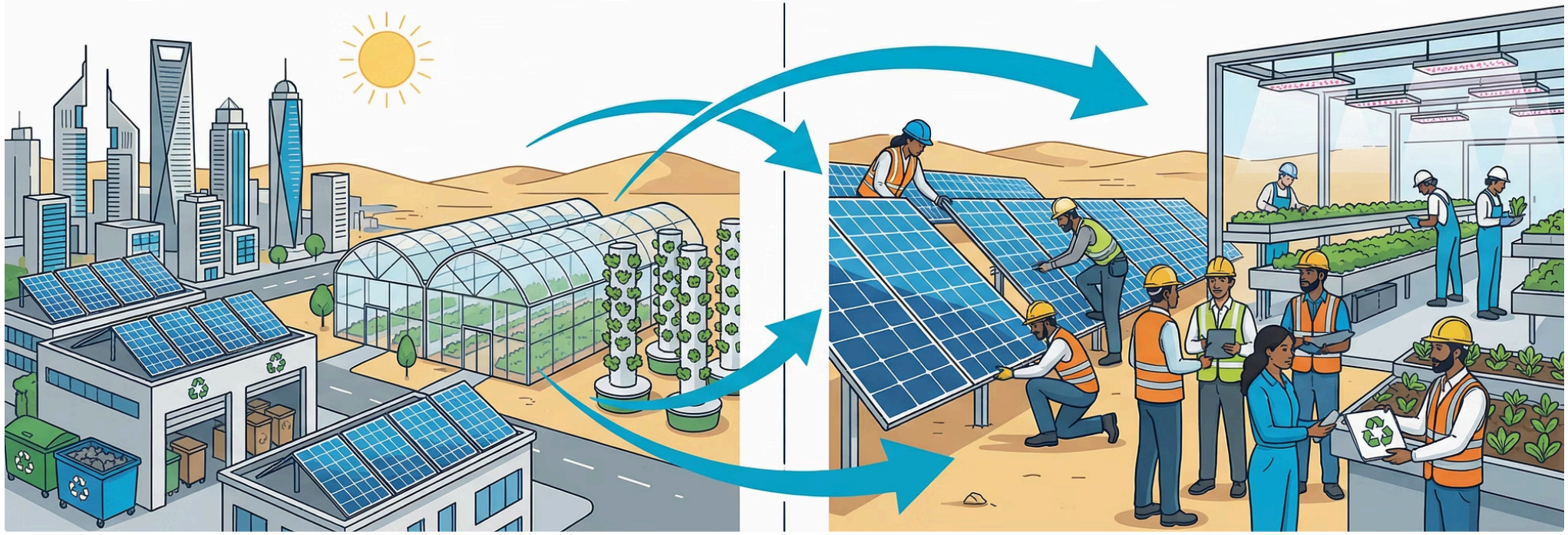
Skills Mobility Partnerships: Bridging Climate Action and Workforce Innovation in the GCC

The Gulf Cooperation Council stands at a unique crossroads where climate resilience meets labor market transformation. As demand for sustainable solutions intensifies across the region, Skills Mobility Partnerships emerge as a powerful strategy to bridge critical workforce gaps while advancing climate adaptation goals.



Research Methodology

LITERATURE REVIEW

- International literature on SMPs and climate adaptation
- Policy analysis of GCC national strategies
- Labor market assessments for CEA and waste management

PRIMARY RESEARCH

- In-depth interviews with major CEA companies in the GCC
- Email surveys to employers in UAE and Egypt
- Analysis of existing quantitative data from the "Needs Assessment for Climate-Smart Agriculture Skills Development"

FOCUS COUNTRIES

Egypt and India were selected as illustrative countries of origin based on:

- Scale and large youth populations
- Existing migration linkages with GCC
- Data availability
- Emerging case experience in CEA and waste management

The Climate-Skills Nexus: A Regional Challenge

Climate Pressures Intensifying

- Food insecurity deepening
- Water stress at critical levels
- Waste generation accelerating
- Billions invested in green solutions

GCC Scaling Climate-Smart Sectors

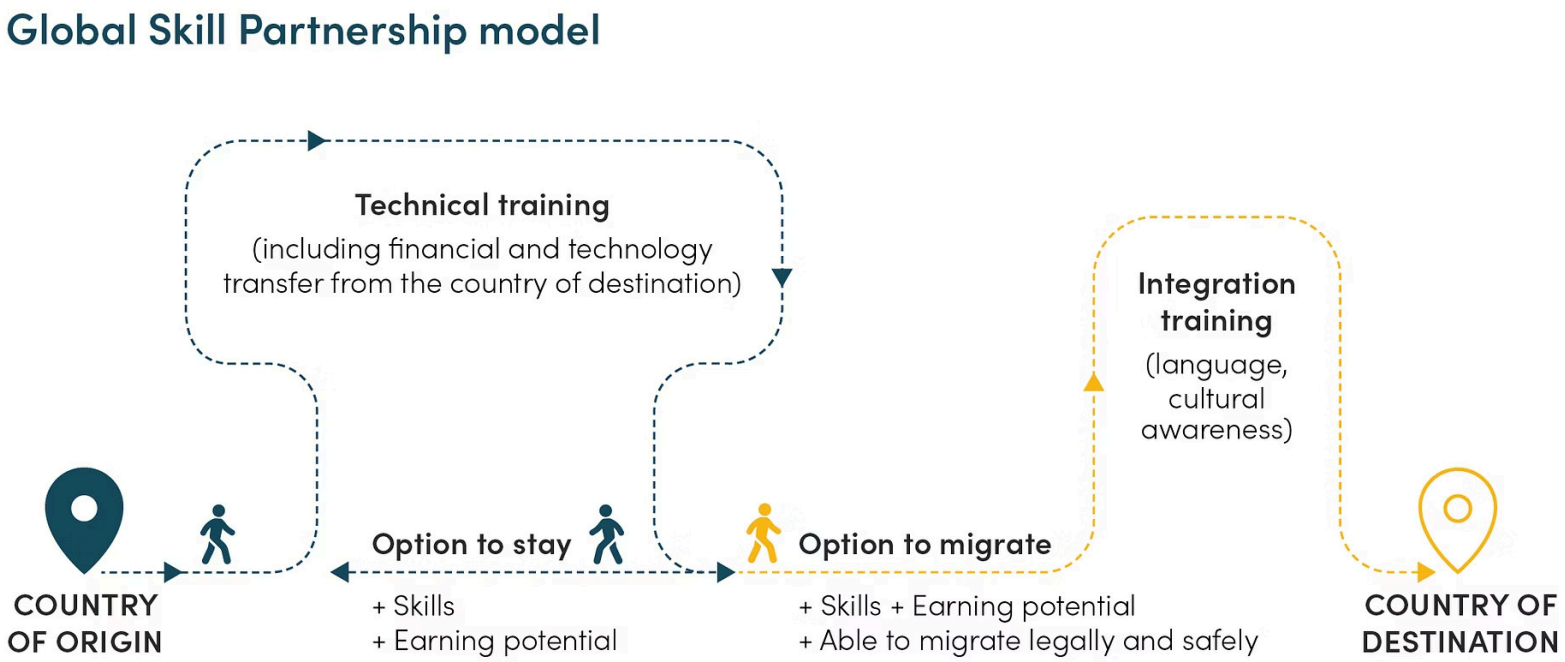
- UAE: 50,000 green jobs by 2030
- Saudi Vision 2030: food security focus
- All dependent on trained workforce

Widening Skills Gap

- Shortage of skilled technicians
- Dependence on short-term consultants
- No sustainable labor pipeline

Technology and capital are outpacing the supply of skilled workers. Without trained technicians, multi-billion dollar investments risk underperforming.

What are Skills Mobility Partnerships? (SMPs)



Skills Mobility Partnerships (SMPs) are structured agreements between origin and destination countries that **align training, certification, and job placement with real labor demand**, enabling **safe, legal, and mutually beneficial migration** while strengthening skills systems in both countries.

8 Essential Elements of Skills Mobility Partnerships (SMPs)

Long- and mid-term planning

Skills classification & recognition

Data for setting sustainable systems and schemes

Addressing social aspects of employment and mobility

Multi-stakeholder & policy coherence

Integration of migration procedures and considerations

Local development & job creation

Reduction and sharing of costs

What Makes SMPs Different from Traditional Recruitment?

Traditional	SMPs
Transactional: Fills immediate vacancies	Transformational: Builds sustainable workforce pipelines
Workers arrive with inconsistent skills	Workers arrive certified to GCC standards
Employers bear costly on-the-job training	Day-one productivity, minimal retraining needed
High turnover (20-25% annually)	Improved retention through structured pathways
Heavy reliance on expensive consultants ($3M+ annually)	Local expertise reduces consultant dependency
Narrow private benefit	Public good: protects sovereign investments
Workers often pay recruitment fees	Zero worker-paid fees (IRIS standards)

SMPs in Action: Global Success Stories

PLAY - Egypt-Italy Tourism

AICS-IOM initiative improving Egyptian youth employability through tourism-sector training. Modernizes curricula to international hospitality standards while creating legal mobility channels to Italy.

EAGLE - Egypt-Austria Transport

EU-funded partnership training 135 participants in metal technology and welding. Includes 6-month upskilling with technical, soft, and German language training based on rigorous skills assessments.

THAMM Plus - Morocco-Tunisia-Italy

4,500 construction workers trained in Tunisia, 1,500 mechatronic engineers in Morocco. Collaboration between national federations ensures programs meet real labor market needs.

Why SMPs Matter Now: Three Converging Dynamics

Countries of Origin Have People, Not Pathways

Egypt and India possess surplus graduates but lack workers skilled in modern green sectors. Existing agricultural education systems aren't calibrated to GCC's controlled-environment agriculture and waste management needs.

GCC Scaling Climate-Smart Sectors

UAE aims for 50,000 green jobs by 2030. Saudi Vision 2030 centers food security and waste-to-energy. Qatar, Oman, Kuwait pursuing similar strategies—all dependent on trained workforce availability.

Evidence of Widening Skills Gap, Especially in AgTech

UAE faces significant shortage for climate-smart farms. Many large-scale operations remain dependent on short-term expatriate consultants rather than sustainable labor pipeline.

Case Study 1: Controlled Environment Agriculture

What is CEA?

Controlled Environment Agriculture uses technology to optimize climate conditions for crop growth through:

- Hydroponics systems
- Vertical farming
- Climate-controlled greenhouses

CEA uses up to **90% less water** than conventional farming while enabling year-round production—essential for arid regions.

Major GCC CEA Investments

The GCC has committed billions to controlled environment agriculture:

Saudi Arabia

- $220 million in high-tech greenhouses since 2021
- $3.7 billion in agri-tech deals with China
- $114 million partnership with Netherlands for greenhouses and vertical farms
- Agricultural Development Fund covers up to 50% of indoor-farming equipment costs

UAE

- $100 million invested by Abu Dhabi Investment Office in agritech companies (2020)
- Bustanica: $40 million vertical farm (world's largest)
- Pure Harvest Smart Farms: $180.5 million raised
- Dubai Food Tech Valley developing GigaFarm (900,000 sq ft AI-driven vertical farm)
- Silal's Innovation Oasis: 300,000 m² R&D and training facility

Other GCC States

- Bahrain: 50,000 m² sustainable vertical farm in Hamala
- Kuwait: World's largest aeroponic greenhouse (expanding to 24,000 m²)
- Qatar: Targeting 70% self-sufficiency in vegetable production
- Oman: Leveraging coastal and monsoon (Khareef) microclimates to scale hydroponic and net-house vegetable production.

The CEA Skills Gap: Quantifying the Challenge

92%

Operators

Reported interest in hiring additional skilled labor

75%

Premium Pay

Would pay 11-25% more for certified workers

1,700

Roles Needed

Certified positions required by 2030

~$38M

Annual Cost

Opportunity cost of skills shortage

Critical Skills Required

- Operating and maintaining irrigation and fertigation systems
- Managing climate control technologies, sensors, and AI-based monitoring
- Implementing integrated pest management in closed systems
- Overseeing food safety, quality assurance, and traceability standards

Training Institutions: Bridging the Gap

Countries of Origin have strong training foundations that can be adapted for GCC needs:

Egypt

- American University in Cairo (AUC): Water, Energy, Food Technologies (WEFT) Diploma (18 credit hours)
- AUC Desert Development Center: Hands-on training facilities
- AUC Center for Applied Research on the Environment and Sustainability (CARES): Solar-powered greenhouses and aquaponics labs
- IOM-backed hydroponics training with Schaduf and Gebal Egypt

India

- Institute of Horticulture Technology (IHT): Two-week Commercial Hydroponics Training
- Indian Agricultural Research Institute (ICAR-IARI): Three-month Skill Development Course on Hydroponics and Aeroponics
- National Skill Development Corporation (NSDC): Standardized Hydroponics Technician Qualification Packs
- Indian Institute of Skill Development Training (IISDT): Two-month online Certificate in Hydroponics

The Gap: These programs need curriculum augmentation to align with GCC-specific automation systems, standards compliance, and operational procedures—making SMPs efficient and cost-effective.

Case Study 2: Waste Management Revolution

262.7M	192M	50%	75%
Tons Collected	**Tons Treated**	**CDW Portion**	**Regional Share**
Total waste in GCC by 2023, marking 153.7% increase since 2019	Waste processed, reflecting 128.5% increase in treatment capacity	Construction and demolition waste constitutes over half of GCC waste production	Saudi Arabia and UAE account for three-quarters of total waste generated

Flagship projects include Sharjah's BEEAH WtE plant (first commercial-scale in Middle East) and Dubai's Waste-to-Energy Centre (converting 5,666 tons MSW daily into electricity). The transformation requires skilled technicians across collection, treatment, recycling, and waste-to-energy operations.

GCC Waste Management: Rapid Growth & Investment

Significant investments are being made across the region:

- **Abu Dhabi:** 900,000 t/year facility, 80 MW capacity
- **Dubai Warsan:** 1.9 Mt/year, 200 MW (processes 45% of Dubai's municipal waste)
- **Sharjah BEEAH:** 300,000 t/year, 30 MW (Middle East's first commercial WtE plant)
- **Barka, Oman:** 3,000 t/day, 95-100 MW
- **Qatar DSWMC:** 2,300 t/day, 50 MW ($1.09 billion investment)
- **Bahrain:** 390,000 t/year planned, 25 MW

Job Creation Targets

- **Saudi Arabia:** ~100,000 jobs by 2040
- **Qatar:** 9,000-19,000 jobs by 2030

Waste Management Skills Requirements

Modern waste management requires diverse, specialized skills across the entire value chain:

01

Entry Level (RQF 2-3)

- Operating heavy vehicles and collection systems
- Transfer station operations
- Basic sorting and handling

Training: Few weeks to several months

02

Intermediate (RQF 3-4)

- Running recycling and composting plants
- Waste-to-energy plant operations
- Treatment and valorization processes

Training: Several months of structured hands-on training

03

Advanced (RQF 4-5)

- Environmental monitoring and compliance
- Quality, health, and safety standards
- Air quality control

Training: 6 months to 1 year

04

Specialized (RQF 5-7)

- Data engineering and IoT for smart logistics
- Thermal waste-to-energy process engineering
- E-waste management
- Construction and demolition material recovery
- Polymer chemistry for advanced recycling

Training: 1-2+ years of specialized education

Building the Green Skills Pipeline: Joint SMP Framework

Strategic Planning & Assessment

1

GCC employers identify specific shortages (CEA climate-control operators, WtE technicians). CoOs assess worker availability and domestic demand to ensure training creates value both locally and in GCC markets.

Evidence-Based Training Design

2

Technical colleges in Egypt and ICAR centers in India adapt curricula to GCC requirements. Vendor-certified modules embedded with hands-on learning at practical training farms and waste innovation labs.

Governance & Recognition

3

Co-design with employers, institutions, and ministries. Portable "Green Technician" framework co-developed with IOM, ensuring credential portability and job-readiness across borders.

Ethical Mobility & Benefits

4

IRIS-standard ethical recruitment with zero worker fees. Training strengthens CoO labor markets; returnees connect to agritech incubators and circular enterprises for local impact.

SMP Financing Model: Shared Investment

SMPs use a cost-sharing, multi-stakeholder model to ensure sustainability and fairness:

Program Implementation Costs:

- Curriculum development and training delivery
- Trainer capacity building
- Skills recognition and matching
- Program administration

Funded by:

01

Country of Destination Governments

Policy alignment, bilateral aid, legal pathways

02

Country of Origin Governments

Educational infrastructure, facilities, trainers (in-kind)

03

Private Sector/Employers

Direct investment in training, ensuring demand-driven skills

04

Development Partners

World Bank, IOM, Islamic Development Bank, African Development Bank

05

Impact Investors & Climate Finance

Funding tied to measurable climate and social outcomes

Triple Dividends: A Climate-Smart Future

For GCC States

Reliable pipeline of skilled workers to realize national food security and circular economy goals, reducing dependence on consultants while maximizing green infrastructure returns.

For Origin Countries

Enhanced workforce productivity and international competitiveness. Ability to attract FDI through skilled workforce availability. Meaningful reintegration opportunities strengthening home resilience.

For Migrant Workers

Decent formal economy jobs at home and safe, dignified mobility pathways abroad with career advancement prospects and portable skills certification.

The Abu Dhabi Dialogue can lead by example

By launching the first climate-focused SMPs in CEA and waste management by 2026, ADD states can set a global precedent—proving that migration, skills, and climate action are not competing agendas, but converging solutions for a resilient future.

Policy Roadmap: Abu Dhabi Dialogue Leadership

1 Strengthen Skills Development and Recognition

Mandate joint curricula between GCC employers and CoO institutions. Establish mutual recognition framework for "Green Technician" credentials. Fund Training-of-Trainers programs for independent, scalable delivery.

2 Design Predictable Labor Mobility Pathways

Pilot mobility schemes between Egypt, India, and GCC facilities with IRIS ethical recruitment standards. Integrate SMPs into bilateral agreements covering visas, contracts, and worker protections.

3 Promote Public-Private Partnerships

Establish sector consortia to co-finance training hubs. Partner with development banks and UN agencies for blended financing models ensuring zero worker-paid fees.

4 Establish Robust Governance Standards

Create GCC-CoO Task Force under GCC Executive Office. Institutionalize 30-40% female participation targets. Require evidence-based monitoring tracking placement, retention, and productivity data.

Thank You

Q&A Time