Final Workshop of the Study on the National Cooling Action Plan

(26 October 2026, IBIS Rabat, Morocco)

Mission Report



RCREEE |Morocco| NCAP

This report is prepared by the Regional Center for Renewable Energy and Energy Efficiency (RCREEE) and commissioned by the United Nations Development Programme (UNEP).

About UNEP

The United Nations Environment Programme (UNEP) is the leading global authority on the environment; supports its 193 Member States. UNEP's mission is to inspire, inform, and enable nations and peoples to improve their quality of life without compromising that of future generations. For over 50 years, UNEP has worked with governments, civil society, the private sector and UN entities to address humanity's most pressing environmental challenges - from restoring the ozone layer to protecting the world's seas and promoting a green, inclusive economy.

UNEP is driving transformational change by drilling down on the root causes of the triple planetary crisis: the crisis of climate change, the crisis of nature, land and biodiversity loss, and the crisis of pollution and waste. UNEP's work is focused on helping countries transition to low-carbon and resource-efficient economies, strengthening environmental governance and law, safeguarding ecosystems, and providing evidence-based data to inform policy decisions. Through cutting-edge science, coordination and advocacy, UNEP aims to assist its Member States to achieve the Sustainable Development Goals and live in harmony with nature.

About RCREEE

The Regional Center for Renewable Energy and Energy Efficiency (RCREEE) is an intergovernmental organization with diplomatic status that aims to enable and increase the adoption of renewable energy and energy efficiency practices in the Arab region. Having today 17 Arab countries among its members, RCREEE is the strategic partner for Arab countries in driving energy transition towards a better life for all our people.

Through its solid alliance with the League of Arab States, RCREEE is committed to tackle each country's specific needs and objectives through collaborating with Arab policy makers, businesses, international organizations, and academic communities in key work areas: capacity development and learning, policies and regulations, research and statistics, and technical assistance. The center is also involved in various local and regional projects and initiatives that are tailored to specific objectives. RCREEE partners with national governments, international organizations, and private companies to initiate and lead clean energy policy dialogues, strategies and capacity development in order to increase Arab states' share of tomorrow's energy.

TABLE OF CONTENTS

1. INTRODUCTION 4

1.1. OVERVIEW AND OBJECTIVES 4
1.2. REGIONAL PROJECT BACKGROUND 4
1.3. WHY MOROCCO: NATIONAL CONTEXT? 4

2. MOROCCO NCAP FINAL WORKSHOP 6

2.1. OVERVIEW 6
2.2. AGENDA 6
2.3. OPENING REMARKS 8
2.4. MODERATION 9
2.5. SESSION (1) THE IMPORTANCE OF PLANNING THE COOLING SECTOR 9
2.6. SESSION (2) MAPPING MOROCCO'S COOLING LANDSCAPE 10
2.7. SESSION (3) NCAP MODELLING METHODOLOGY & DEVELOPMENT ROADMAP 11
2.8. SESSION (4) NCAP SCENARIOS' RESULTS AND RECOMMENDATIONS 12
2.9. NATIONAL KEY PRIORITIES DISCUSSION 13
2.10. SESSION (5) INTEGRATION OF THE NCAP RESULTS WITH THE BTR 2 15
2.11. SESSION (6) POTENTIAL BUSINESS MODELS FOR NCAP AND BEST PRACTICES 16
2.12. MODERATED DISCUSSION ON NEXT STEPS: FINANCING AND IMPLEMENTATION 17
2.13. OFFICIAL LAUNCH AND CLOSING REMARKS 18

3. POST-WORKSHOP ALIGNMENT MEETING & IMMEDIATE NEXT STEPS 18

4. ANNEXES: 20

4.1. ATTENDEES LIST (26 OCTOBER 2026) 21

المملكة المغربية
ⵜⴰⴳⵍⴷⵉⵜ ⵏ ⵍⵎⵖⵔⵉⴱ
Royaume du Maroc
وزارة الطاقة والمعادن والتنمية المستدامة
ⵜⴰⵎⴰⵡⴰⵙⵜ ⵏ ⵜⵣⵟⴰⵕⵜ ⴷ ⵉⵣⵓⵖⴰⵣ ⴷ ⵜⴳⵎⵉ ⵜⴰⵙⵓⵍⴰⵏⵜ
Ministère de L'Energie, des Mines et du Développement Durable
CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS a UNEP convened initiative
Cool Coalition
UN environment programme
RCREEE Regional Center for Renewable Energy and Energy Efficiency المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

1. Introduction

1.1. Overview and Objectives

This report presents the outcomes of the final workshop on Morocco's National Cooling Action Plan (NCAP), held on 26 October 2026. The development of the National Cooling Action Plan involved collecting sector-specific cooling data, analysing greenhouse gas emissions across relevant sectors, and formulating corresponding cooling interventions.

The workshop aims to:

- Present the approach and steps followed in developing NCAP-Morocco;
- Present the final results of the NCAP-Morocco;
- Engage key cooling-sector stakeholders to foster national ownership and support NCAP implementation.

1.2. Regional Project Background

The NCAP is a long-term framework designed to advance sustainable cooling through targeted policies, programs, and technologies, and to address the country's growing cooling demands in a sustainable, equitable, and climate-resilient manner while minimising environmental impacts. Within the framework of the Cool Coalition, UNEP, in Collaboration with RCREEE, has initiated a regional cooling program supporting the preparation and implementation of the NCAPs across the MENA region around three core outputs:

- Output 1: Preparing a regional NCAP methodology for the MENA region.
- Output 2: Adapting the NCAP in two MENA countries: Morocco and Djibouti.
- Output 3: Capacity building and policy integration.

1.3. Why Morocco: National Context?

Morocco is well positioned to implement the NCAP and is emerging as a regional leader in sustainable cooling in the MENA region for several reasons:

- Rising cooling demand: Cooling needs across space cooling, healthcare, food chains, and industrial processes are growing due to rising temperatures driven by climate change and rapid urbanisation.
- Alignment with national and international commitments: The NCAP aligns with Morocco's national priorities as well as international commitments, including the Global Cooling Pledge (GCP), the Methane Pledge, the Kigali Amendment, and engagement with the Climate and Clean Air Coalition (CCAC).

- Broader development and climate impact: it supports addressing environmental challenges and advancing a sustainable energy transition as part of wider national climate and development goals.
- Continuity with prior action: It builds on the implementation of the 2021 action plan targeting short-lived climate pollutants (CH4, HFCs, BC, O3), developed with technical and financial support from the CCAC.
- NDC energy-efficiency measures: Morocco's Nationally Determined Contribution (NDC) incorporates a set of energy-saving measures including minimum energy performance standards (MEPS) for refrigerators and air conditioners.

The following sections will provide further details on the workshop activities, including the insights gained and the next steps

RCREEE experts' team

- Dr. Mostafa Hassanen
- Eng. Alshimaa Shafey

Morocco Focal Point Team

- Dr. Mouna Benmbarek

UNEP Team

- Mr. Roberto Borjabad
- Dr. Lorena Carvalho
- Eng. Zhuolun Chen
- Eng. Amr Saleem



المملكة المغربية
ⵜⴰⴳⵍⴷⵉⵜ ⵏ ⵍⵎⵖⵔⵉⴱ
Royaume du Maroc
وزارة الطاقة والمعادن والتنمية المستدامة
ⵜⴰⵎⴰⵡⴰⵙⵜ ⵏ ⵜⵣⵎⴰⵔⵜ ⴷ ⵉⵣⵓⵖⴰⵣ ⴷ ⵜⴳⵎⵉ ⵜⴰⵙⵓⵍⴰⵏⵜ
Ministère de L'Energie, des Mines et du Développement Durable
CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS a UNEP convened initiative
Cool Coalition
UN environment programme
RCREEE Regional Center for Renewable Energy and Energy Efficiency المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

2. Morocco NCAP Final Workshop

2.1. Overview

The results of the development of the Morocco National Cooling Action Plan (NCAP) were successfully presented on October 26, 2026, Held at the Ibis Hotel, Rabat. The event brought together key stakeholders, including representatives from the Moroccan ministries and agencies. Most sessions are served in Fresh. The workshop gathered different participants (47 physical + 6 online) from the following:

- AfDB / BAD (African Development Bank)
- AMEE (Moroccan Agency for Energy Efficiency)
- Ministry of Industry and Commerce (MIC / Industrie & Commerce)
- Ministry of Transport and Logistics (MTL - DTR / DSPCT)
- Department of Sustainable Development (DDD / DSDD / MEMDD)
- Department of Tourism (Département Tourisme)
- Department of Agriculture (Département de l'Agriculture / DSS / DDFP)
- Department of Maritime Fisheries (Département de la Pêche Maritime / DIPM)

2.2. Agenda

The event agenda, as detailed below, opened with welcoming remarks and high-level interventions from the Ministry of Energy Transition and Sustainable Development, UNEP (Cool Coalition), and RCREEE, followed by a framing presentation on the global importance of planning the cooling sector. The technical sessions then explored Morocco's national assessment, covering the cooling landscape mapping, data collection strategy, technical demand assessment, and sub-sectoral data requirements.

Building on this baseline, the agenda moved into analytical findings and policy alignment, featuring the NCAP modelling methodology and development roadmap, scenario results and recommendations, and the integration of NCAP outputs into Morocco's Second Biennial Transparency Report (BTR 2), alongside a dedicated discussion on national priorities and key cooling sectors.

In the afternoon, discussions shifted toward implementation and financing through an exploration of potential business models and best practices, a multi-stakeholder panel on next steps with representatives from the Ministry and the African Development Bank (AfDB), and an open discussion, closing with the official launch of the National Cooling Action Plan in Morocco. Each of these sessions is analyzed in detail in the following sections of this report.

Moderator: Dr. Mouna Benmbarek/Dr Lorena Carvalho		
09:00 - 09:30	**Registration**	
09:30 – 10:00	Welcoming remarks, high-level interventions	▪ **Ms Hafsa Lakhlifi,** Director of Circular Economy and Pollution Control, at the Ministry of Energy Transition and Sustainable Development ▪ **Mr. Roberto Borjabad**, Programme Management Officer, UNEP, Cool Coalition - Climate Change Division. ▪ **Ms Hind Abdaoui,** Head of Service for Renewable Energies and Energy Efficiency at the Department of Energy Transition, Board of Trustees of RCREEE in Morocco
10:00 - 10:15	The Importance of Planning the Cooling Sector	**Dr Lorena de Carvalho Araujo**, Passive Cooling and Energy Specialist, Cooling and Buildings Unit, UNEP
10:15 – 10:20	**Group picture**	
10:20 – 10:50	Mapping Morocco's Cooling Landscape: Data Collection Strategy, Technical Demand Assessment, and sub-sectoral data collection.	**Eng. Salma Boumhaouad,** NCAP Consultant, IRESEN
10:50 – 11:00	Q&A session	IRESEN team, NCAP Consultant
11:00– 11:20	**Coffee Break**	
11:20 – 11:40	NCAP Modelling Methodology & Development Roadmap.	**Dr Zakaria**, NCAP Consultant, EDIC-NRJ30
11:40 – 12:20	The NCAP scenario results and recommendations.	**Dr Touzani**, NCAP Consultant, EDIC-NRJ30
12:20 – 12:30	Integration of the NCAP results with the BTR 2	**Dr Zhuolun Chen,** Senior Advisor and Senior Principal Engineer of Energy Efficiency & Green Finance, UNEP
12:30 - 13:00	**Discussion** - Priorities and Key Sectors for Sustainable Cooling in Morocco	Moderator: **Dr Mouna Benmbarek,** Head of the Gas Emissions Service - the Ministry of Energy Transition and Sustainable Development
13:00 – 13:30	**Coffee Break**	
13:30 – 14:00	Potential Business Models for NCAP and Best Practices	**Dr Zhuolun Chen,** Senior Advisor and Senior Principal Engineer of Energy Efficiency & Green Finance, UNEP
14:00 – 14:30	Discussion about next steps and implementation **Moderator: Amr Seleem**, UNEP	▪ **Mr Radouane Hanan –** Head of Pollution Control Division. ▪ **Jalel Chabchoub,** Chief Investment Officer, AfDB
14:30 – 14:45	Open Discussion	**Moderator: Amr Seleem**, UNEP
14:45 – 15:00	**Launching the National Cooling Action Plan in Morocco**	
15:00 – 16:00	**Networking Lunch**	

2.3. Opening Remarks







The workshop officially commenced with high-level welcoming remarks delivered by Ms. Hafsa Lakhlifi (Director of Circular Economy and Pollution Control at the Ministry of Energy Transition and Sustainable Development - MTEDD), Mr. Roberto Borjabad (Programme Management Officer at UNEP, Cool Coalition - Climate Change Division), and Ms. Hind Abdaoui (Head of Service for Renewabl\e Energies and Energy Efficiency at the Department of Energy Transition and Representative on the Board of Trustees of RCREEE). Each speaker opened the session by warmly welcoming the delegates, national stakeholders, and international experts assembled for the final Morocco NCAP Workshop. In their respective interventions:

- Ms. Hafsa Lakhlifi welcomed participants on behalf of the Ministry, emphasizing Morocco's proactive leadership in addressing escalating cooling demands and highlighting the nation's institutional commitment to establishing a resilient, energy-efficient cooling sector tailored to national priorities.

- Mr. Roberto Borjabad extended UNEP's welcome, underscoring the vital role of international collaboration through the Cool Coalition in facilitating technical support, phasing down high-GWP refrigerants, and accelerating sustainable cooling transitions across the MENA region.

- Ms. Hind Abdaoui welcomed attendees on behalf of RCREEE, stressing the strong regional partnership between RCREEE, UNEP, and Moroccan institutions in driving energy

efficiency, strengthening national capacities, and supporting climate-aligned policy planning.

The speakers reaffirmed Morocco's dedication to managing growing cooling requirements under a long-term sustainable vision fully aligned with national and global climate pledges و most notably the Kigali Amendment to the Montreal Protocol, the Global Cooling Pledge, and Morocco's updated Nationally Determined Contributions (NDC 3.0).

2.4. Moderation

Throughout the workshop, Dr. Mouna Benmbarek (Head of the Gas Emissions Service at the Ministry of Energy Transition and Sustainable Development - MTEDD) and Dr. Lorena de Carvalho Araujo (Passive Cooling and Energy Specialist at UNEP – Cool Coalition) served as the main moderators (French speakers) for the entire day's proceedings while actively facilitating interactive Q&A exchanges among line ministries, international agencies, and national stakeholders.





2.5. Session (1) The Importance of Planning the Cooling Sector

Dr. Lorena de Carvalho Araujo, Passive Cooling and Energy Specialist in the Cooling and Buildings Unit at the United Nations Environment Programme (UNEP – Cool Coalition), presented a presentation titled "The Importance of Planning the Cooling Sector". Her presentation framed cooling as essential developmental infrastructure protecting public health, food security, and economic resilience, while emphasising the urgent need for integrated national planning to curb rising energy demand and greenhouse gas emissions.

المملكة المغربية
ⵜⴰⴳⵍⴷⵉⵜ ⵏ ⵍⵎⵖⵔⵉⴱ
Royaume du Maroc
وزارة الطاقة والمعادن والتنمية المستدامة
ⵜⴰⵎⴰⵡⴰⵙⵜ ⵏ ⵜⵣⵟⴰⵔⵜ ⴷ ⵉⵣⵓⵖⴰⵣ ⴷ ⵜⴳⵎⵉ ⵜⴰⵙⵓⵍⴰⵏⵜ
Ministère de L'Energie, des Mines et du Développement Durable
CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS a UNEP convened initiative
Cool Coalition
UN environment programme
RCREEE Regional Center for Renewable Energy and Energy Efficiency المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

Key Highlighted Points

- Surging Global Cooling Demand: Globally, cooling accounts for 10% of electricity consumption, with capacity projected to triple by 2050 (from 22 TW to 68 TW) and emissions nearly doubling to 7.2 Gt CO_2e per year if left unmanaged.
- Severe Environmental Costs: Outdoor waste heat rejected by air conditioners worsens urban heat islands by +5 to 10 °C, while legacy refrigerants like R-404A have global warming potentials up to 4,000 times higher than CO_2.
- Vital Lifeline Across Different Sectors: Reliable cooling is crucial for healthcare (preserving vaccines), agriculture (reducing post-harvest losses), fisheries (maintaining export quality), and tourism.
- Strategic Unified Roadmap: The National Cooling Action Plan (NCAP) integrates energy efficiency, passive building designs, and low-GWP refrigerant phasedowns, directly aligning national policies with NDC 3.0, the Kigali Amendment, and the Global Cooling Pledge.

2.6. Session (2) Mapping Morocco's Cooling Landscape

Eng. Salma Boumhaouad, NCAP Consultant at the Research Institute for Solar Energy and New Energies (IRESEN), delivered a technical presentation titled "Mapping Morocco's Cooling Landscape: Data Collection Strategy, Technical Demand Assessment, and Sub-sectoral Data Collection". Speaking on behalf of IRESEN's R&D and Innovation Directorate, she detailed IRESEN's role as the central technical unit responsible for gathering, consolidating, and spatially mapping Morocco's baseline cooling data across key socioeconomic sectors to ground the National Cooling Action Plan.



Key Takeaways:

- Central Technical Reference: IRESEN built the national baseline dataset for the NCAP by consolidating 29 sector sheets across nine economic perimeters, coordinating data inputs from public ministries, agencies, and private operators.
- National Equipment & Refrigerant Baseline: Morocco's cooling stock comprised 10.06 million installed units in 2021, consuming an estimated 2,148 tonnes of refrigerants, with

high-GWP HFCs (R-404A at 42.1% and HFC-134a at 20.6%) making up 62.7% of total usage.

- Surging Imports & Data Harmonisation: HFC imports grew by +128% between 2015 and 2019, highlighting the necessity to reconcile trade data discrepancies across customs (ADIL), Portnet, and import registers.
- Sectoral Consumption Breakdown: Building air conditioning (36%) and domestic refrigeration (28%) account for 64% of total refrigerant use, followed by industrial cold storage (18%), commercial cooling (12%), and mobile transport (6%).
- GIS Spatial & Building Mapping: Geographic Information System (GIS) tools and QGIS building footprint extractions were integrated to model residential air conditioning demand across Morocco's six climate zones.
- Quantifying Cold Chain Losses: Mapping 1.12 million tonnes of regional cold storage capacity identified severe post-harvest losses caused by cold chain gaps, including around 136,000 tonnes of apples and 145,000 tonnes of potatoes.

2.7. Session (3) NCAP Modelling Methodology & Development Roadmap

Dr. Zakaria, NCAP Consultant at EDIC-NRJ30, presented the session titled "NCAP Modelling Methodology & Development Roadmap". His presentation established the foundational modelling framework and data architecture used to project Morocco's long-term cooling energy demand. He detailed the structure of the national Low Emissions Analysis Platform (LEAP) model, baseline year selection (2019), and data consolidation logic across economic sectors.



Key Takeaways:

- LEAP Modelling Architecture: Structured the national Low Emissions Analysis Platform (LEAP) model across five main demand sectors (Residential, Tertiary, Industry, Agriculture/Livestock, Transport) along with fugitive refrigerant emissions.

- Baseline & Projections: Established 2019 as the reference baseline year, utilizing historical data (2019–2024) and activity growth rate formulas to project cooling demand up to 2040 and 2050.

- Dual Consumption Approach: Applied a hybrid calculation approach combining an equipment-stock method (equipment count × annual unit consumption) with useful cooling demand logic (annual cooling load ÷ seasonal performance).

- Multi-Sector Data Integration: Consolidated technical data from IRESEN, EDIC-NRJ30, and the Ministry of Industry, establishing indicators while considering data gaps in refrigerated transport and cold room operating hours.

- Emissions Baseline Allocation: Determined that energy/electricity consumption generates 75% of national cooling GHG emissions (heavily weighted toward urban residential ACs), while fugitive refrigerant leaks account for 25%.

2.8. Session (4) NCAP Scenarios' Results and Recommendations

Dr. Touzani, NCAP Consultant at EDIC-NRJ30, delivered the session titled "The NCAP Scenario Results and Recommendations". His presentation detailed the future emission trajectories under various policy scenarios through 2050, evaluating specific mitigation levers, refrigerant transition impacts, public health co-benefits, and the proposed governance and MRV framework required for national implementation.



Key Takeaways:

- Cumulative Emission Reduction: Demonstrates that cumulative energy efficiency and policy measures cut national cooling GHG emissions by 18% by 2035 and 32% by 2050 compared to Business-As-Usual (BAU).

- Refrigerant Transition Impact: Showed that replacing legacy HCFC-22 and high-GWP HFCs with low-GWP natural refrigerants (Hydrocarbons) and HFOs reduces direct refrigerant emissions down to near zero by 2040–2050.

- Air Quality & Health Co-benefits: Lowering cooling power demand cuts major air pollutants (NOx, PM2.5, PM10, SO2), preventing an estimated 380 premature pollution-related deaths annually by 2040–2050.

- High-Impact Policy Levers: Identified mandatory energy labelling (MEPS under Law 47-09) and renewable energy integration in industry and agriculture as the most effective decarbonization drivers.

- Governance & MRV Framework: Recommended establishing an NCAP MRV Unit under ANME and an Intersectoral Committee to track progress and ensure alignment with Morocco's NDC 3.0 and BTR reports.

2.9. National Key Priorities Discussion

An interactive discussion among representatives from key line ministries, public agencies, and technical experts has been established to validate priority sectors and foster national ownership over the National Cooling Action Plan.

Key Takeaways & Session Highlights:

- Pipeline of Bankable Projects: Emphasised the urgent need to structure the NCAP from a high-level policy document into concrete, bankable project proposals tailored to attract international climate finance and private investment.

- Prioritisation & Clear Action Plan: Focused on establishing clear immediate priorities, identifying quick-win interventions, and setting step-by-step implementation sequences across key demand sectors.

- Ministry-Specific Implementation Roadmaps: Highlighted the necessity of developing tailored roadmaps for each line ministry, explicitly defining every entity's role, responsibilities, and regulatory tools for each proposed cooling measure.

- Active Private Sector Engagement: Stressed bringing private sector operators, importers, and manufacturers directly into policy discussions to identify real-world market barriers and resolve implementation challenges early.

- Integration into Technical & Vocational Education (TVET): Called for embedding sustainable cooling, low-GWP refrigerant handling, and energy efficiency standards directly into national vocational training curricula and technical education programs.

- Green Procurement & Equipment Selection: Advocated for updating public procurement systems to establish clear criteria for optimal equipment selection, prioritizing high-efficiency and climate-friendly cooling technologies.

- Promoting Passive & Free Cooling: Highlighted the importance of prioritising passive building design, natural ventilation, and free cooling techniques to reduce reliance on mechanical refrigeration.

- Operational Best Practices: Underlined the establishment of national best-practice guidelines for equipment operation, maintenance, and leak prevention to maintain optimal energy performance over equipment lifecycles.

- Model Validation (LEAP vs. BTR Data): Stressed ensuring continuous data validation and harmonisation between LEAP scenario projections and empirical data collected for international reporting under the Biennial Transparency Report (BTR).

- Strategic Climate Alignment: Reaffirmed the necessity of aligning sectoral priorities with Morocco's commitments under the Kigali Amendment, the Global Cooling Pledge, and updated NDC targets.






2.10. Session (5) Integration of the NCAP Results with the BTR 2



Dr Zhuolun Chen, Senior Advisor of Energy Efficiency & Green Finance at UNEP (and UNFCCC roster of experts for BTR & AR6.2 review), presented two session; 1st session titled "From Morocco's NCAP to NDC Tracking: Cooling Action in the Second Biennial Transparency Report (BTR2)". His presentation outlined a practical roadmap for integrating Morocco's National Cooling Action Plan (NCAP) outputs into international climate reporting under the Paris Agreement's Enhanced Transparency Framework ahead of the December 31, 2026 BTR2 submission deadline.

Key Takeaways:

- BTR2 Submission Alignment: Establishes the December 31, 2026 deadline for Morocco's BTR2, utilizing NCAP historical baseline data and policy progress to report on Nationally Determined Contribution (NDC) achievements.
- Unified NCAP-to-BTR Data Framework: Replaces redundant spreadsheets with a streamlined 4-step data pipeline (Source Systems → Data Dictionary → Reconciliation → BTR Products) to support both national implementation tracking and formal reporting.
- Policy & Measure Integration: Translates core NCAP initiatives (MEPS labelling, public building retrofits, cold chain upgrades, and HFC phasedowns) into BTR-ready Policy-and-Measure records and Common Tabular Formats (CTF 4 & 5).
- Robust Quality Controls: Establishes five essential technical controls, reconciling AR6 vs. AR5 GWP metrics, separating ex-ante forecasts from ex-post monitored savings, and archiving data logs for UNFCCC reviewability.
- Governance & Data Ownership: Implements a "one owner per datum, one approval route" operating model under MTEDD oversight, assigning clear data custodianship across line ministries, customs authorities, and finance institutions.

2.11. Session (6) Potential Business Models for NCAP and Best Practices

Chen's 2nd presentation was titled "Potential Business Models for Morocco's National Cooling Action Plan: Turning NCAP Priorities into Investable Cooling Services and Operating Models". His presentation focused on translating Morocco's cooling targets into bankable, investable projects by introducing a four-gate commercial screening tool, matching specialised operating models (such as CaaS and ESCO contracts) to distinct customer segments, and outlining a layered capital strategy to scale private investment.

Key Takeaways:

- Four Commercial Assessment Gates: Projects must evaluate four criteria before financing: metered demand, an identified payer/cash flow, defined system scale, and explicit risk allocation, to ensure project readiness before procurement.
- Tailored Sectoral Business Models: Matches transaction pathways to specific buyers: Energy Performance Contracts (ESCOs) for public buildings, Cooling-as-a-Service (CaaS) for commercial sites, District Cooling for dense urban anchors, and Cold-Chain Leasing for agriculture and fisheries.
- Cooling-as-a-Service (CaaS) Advantages: Shifts asset ownership and performance risk to service providers, delivering global benchmarks of 23% lower cooling costs and 49% lower emissions through optimized operation and refrigerant control.
- Cold Chains as Trade Assets: Frames agricultural cold chains (for citrus, berries, and tomatoes) as strategic trade assets near ports and logistics hubs, protecting export value and cutting post-harvest losses.
- Refrigerant Stewardship & Carbon Finance: Converts HFC phase-downs and recovery into monitorable service markets, creating a secondary climate-linked revenue stream that serves both Montreal and UNFCCC reporting.
- Actionable Pilot Roadmap: Recommends initiating 2–3 immediate pilot projects with visible demand, standardized transaction briefs, and pre-agreed M&V calculation methods to build a repeatable project pipeline.

2.12. Moderated Discussion on Next Steps: Financing and Implementation



Moderator: Eng. Amr Seleem (Country Engagement and Climate Policy Lead, UNEP)

Panellists: Mr Radouane Hanan (Head of Pollution Control Division, Ministry of Energy Transition and Sustainable Development - MTEDD) and Mr Jalel Chabchoub (Chief Investment Officer, African Development Bank - AfDB)

Key Takeaways

- Clear Priority Action Plan & Costing: Emphasised the necessity of establishing a clear, prioritised national action plan with estimated cost breakdowns for each initiative, allowing international financial institutions (such as AfDB) to align funding with the state's immediate investment priorities.
- AfDB Readiness & Sector-Specific Financing: Confirmed the African Development Bank's strong commitment and readiness to support Morocco's cooling transition through dedicated RAC programs, noting that financing structures and interest terms will be tailored based on the specific sector or industry.
- Steering Committee & Bankable Pipeline: Underlined the pivotal role of the Intersectoral Steering Committee in establishing sectoral priorities and converting medium-to-long-term cooling goals into a concrete pipeline of bankable projects.
- One Million Units Replacement Program: Highlighted Morocco's ambition to replace 1 million obsolete, inefficient cooling units, stressing that line ministries must be engaged from the outset to select the optimal replacement technologies.
- Market Availability of Replacement Tech: Insisted that chosen replacement equipment and low-GWP technologies must be readily available in the local commercial market to ensure practical adoption and scalable procurement.
- National Scrapping & Recycling Program: Called for establishing a structured equipment scrapping and safe recycling program to manage decommissioned RAC units, prevent improper disposal, and safely recover legacy refrigerants.

- Technician Capacity Building & Safety: Stressed the urgent need to involve technicians and system operators directly through comprehensive capacity-building programs, focusing on the safe handling, installation, and maintenance of next-generation refrigerants, particularly toxic or flammable alternatives.

2.13. Official Launch and Closing Remarks

The workshop concluded with the formal closing ceremony and the official launch of Morocco's National Cooling Action Plan (NCAP), led by the Ministry of Energy Transition and Sustainable Development (MTEDD) alongside its international and regional partners, UNEP (Cool Coalition) and RCREEE. This historic milestone signifies Morocco's official transition from analytical study, data collection, and scenario modelling into full-scale national implementation and market transformation.

Key Launch Highlights:

- Multi-Stakeholder Ownership: Reaffirmed shared institutional ownership across line ministries, research bodies (IRESEN), technical consultants (EDIC-NRJ30), private sector operators, and financial partners to coordinate execution.
- Transition to Bankable Execution: Marked the end of the planning phase and initiated immediate steps toward project preparation, pilot selection, and capital mobilisation for priority interventions.
- Sustained Governance & Monitoring: Mandated the activation of the Intersectoral NCAP Steering Committee and MRV framework to track sectoral progress, ensure transparency, and report results through UNFCCC BTR channels.

3. Post-Workshop Alignment Meeting & Immediate Next Steps

Following the conclusion of the workshop, a dedicated follow-up alignment meeting was convened, bringing together the NCAP Core Team, RCREEE, UNEP, EDIC-NRJ30, and key financial institutions to outline immediate next steps and finalise the technical deliverables required for report completion and investment readiness.

During the discussion, consensus was reached on three core deliverables that EDIC-NRJ30 will finalise and integrate into the NCAP framework by the end of the week:

Key Concluding Commitments:

- Priority Actions & Programs: A structured list of prioritized policy, technical, and market interventions, clearly establishing the recommended implementation sequence across short-term, medium-term, and long-term horizons for government adoption.

- Institutional Responsibilities & Mandates Matrix: A clear matrix mapping specific institutional roles, lead regulatory authorities, and supporting mandates across line ministries and public agencies to ensure accountability and seamless inter-agency governance.

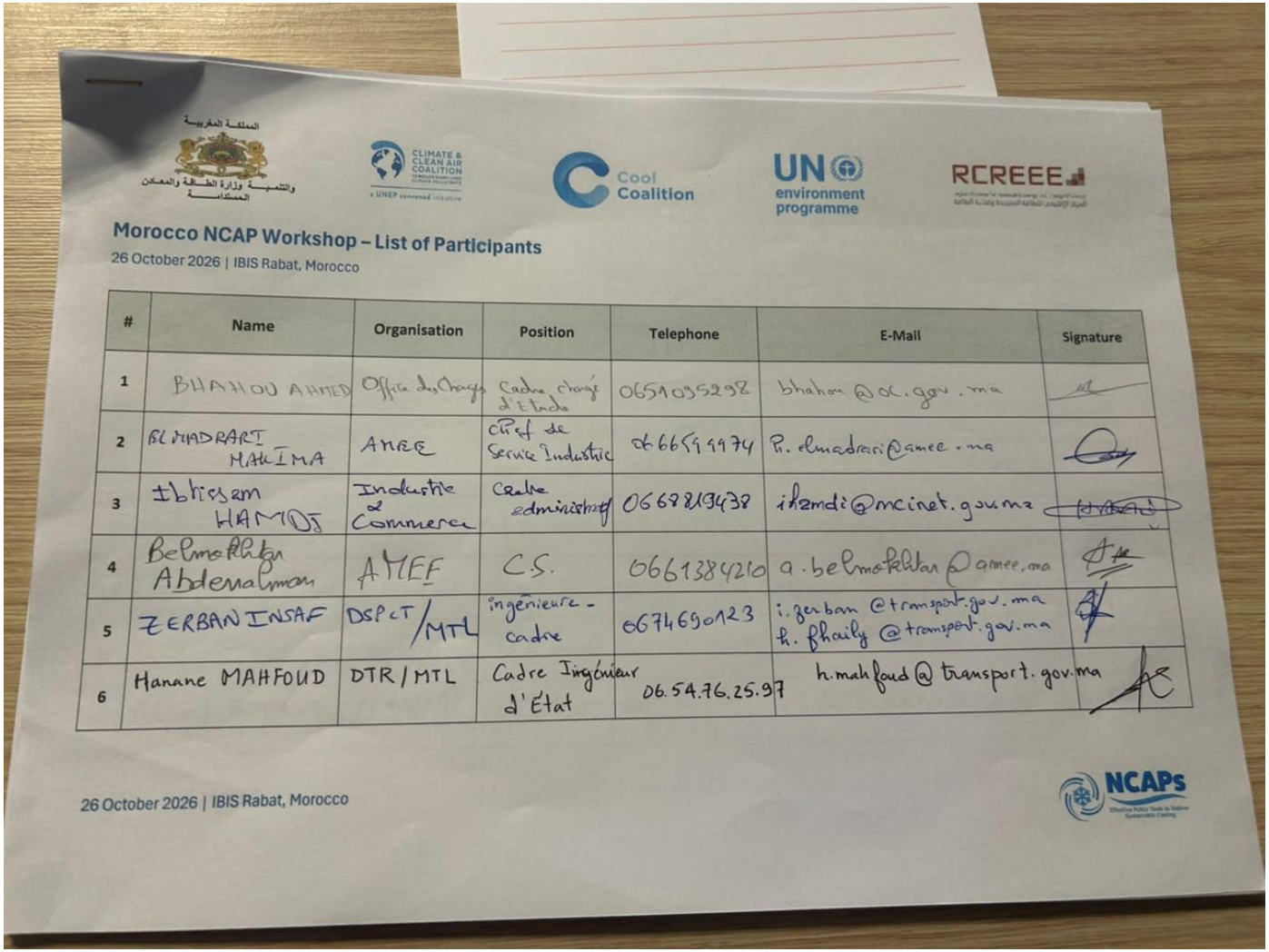
- Action Summary & Financial Roadmap Table: A consolidated summary table detailing proposed actions alongside crucial metrics, including anticipated energy/emission savings (%), estimated implementation costs, project timelines, and designated lead/supporting actors, providing financial institutions with the necessary data to proceed with financing Morocco's NCAP implementation.



4. Annexes:

- Please find photos at the following link: Capacity building workshop
- Attendees list

4.1. Attendees list (26 October 2026)



المملكة المغربية
والتنمية وزارة الطاقة والمعادن المستدامة

CLIMATE & CLEAN AIR COALITION
a UNEP convened initiative

Cool Coalition

UN environment programme

RCREEE

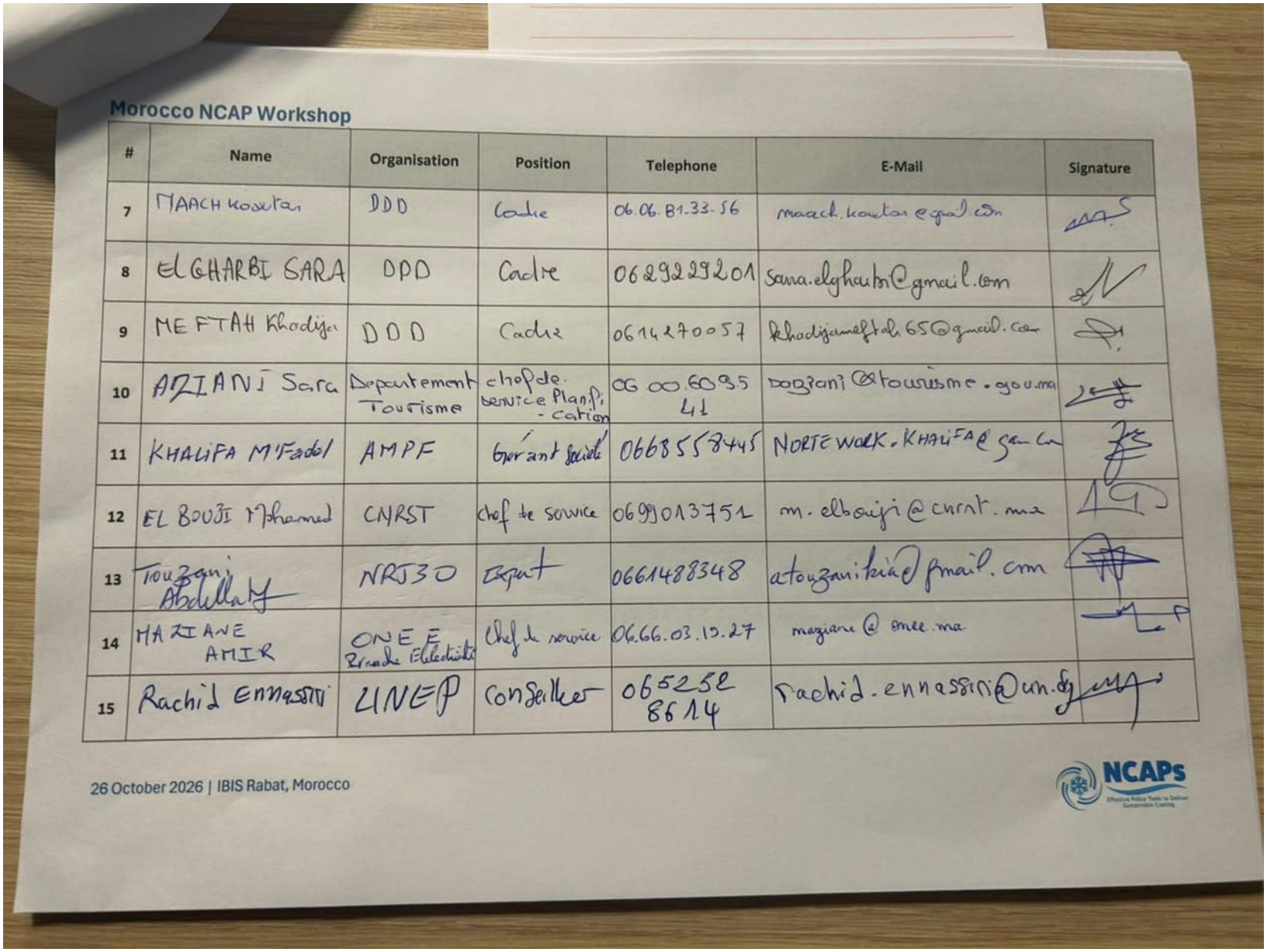
Morocco NCAP Workshop – List of Participants

26 October 2026 | IBIS Rabat, Morocco

#	Name	Organisation	Position	Telephone	E-Mail	Signature
1	BHAHOU AHMED	Office des Changes	Cadre chargé d'Etude	0651095298	bhahou@oc.gov.ma	
2	EL MADRARI MAKIMA	AMEE	Chef de Service Industrie	0666599974	h.elmadrari@amee.ma	
3	Ibtissam HAMDI	Industrie & Commerce	Cadre administratif	0668819438	ihamdi@mcinet.gov.ma	
4	Belmokhtar Abderrahman	AMEE	C.S.	0661384210	a.belmokhtar@amee.ma	
5	ZERBAN INSAF	DSPCT/MTL	ingénieure - cadre	0674690123	i.zerban@transport.gov.ma h.fhaily@transport.gov.ma	
6	Hanane MAHFOUD	DTR/MTL	Cadre Ingénieur d'État	06.54.76.25.97	h.mahfoud@transport.gov.ma	

26 October 2026 | IBIS Rabat, Morocco

NCAPs

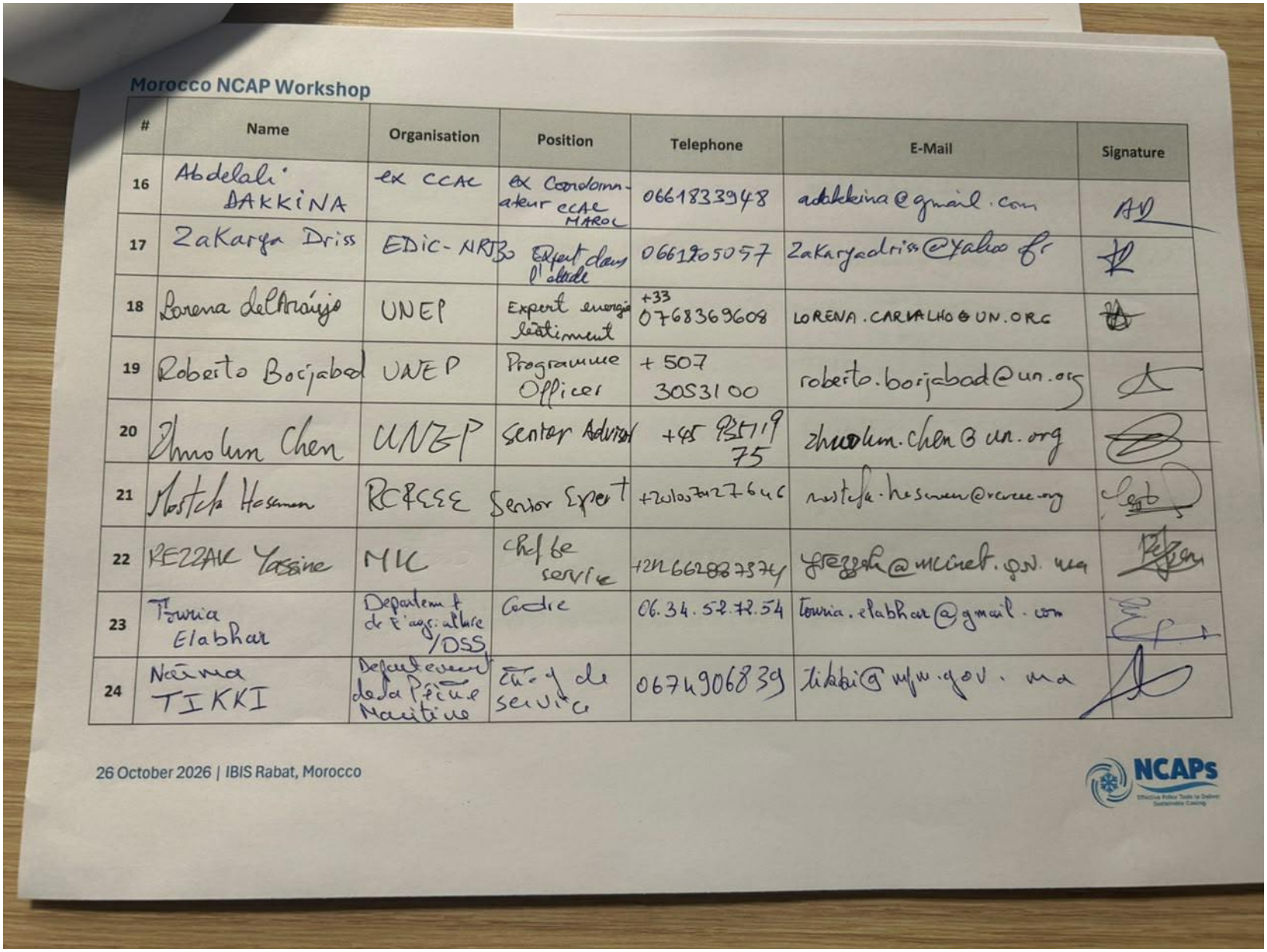


Morocco NCAP Workshop

#	Name	Organisation	Position	Telephone	E-Mail	Signature
7	MAACH Kawtar	DDD	Cadre	06.06.81.33.56	maach.kawtar@gmail.com	
8	EL GHARBI SARA	DPD	Cadre	0629229201	sara.elghaibi@gmail.com	
9	MEFTAH Khadija	DDD	Cadre	0614270057	Khadijameftah65@gmail.com	
10	AZIANI Sara	Departement Tourisme	chef de service Planifi-cation	06.00.6095 41	saziani@tourisme.gov.ma	
11	KHALIFA M'Fadel	AMPF	Gérant Société	0668557445	NORTEWALK.KHALIFA@gmail.com	
12	EL BOUJI Mohamed	CNRST	chef de service	0699013751	m.elbouji@cnrst.ma	
13	Touzani Abdellaty	NRJ30	Expert	0661488348	atouzanikia@gmail.com	
14	MAZIANE AMIR	ONEE Branche Electricité	Chef de service	06.66.03.10.27	maziane@onee.ma	
15	Rachid Ennassiri	UNEP	conseiller	065252 8614	rachid.ennassiri@un.org	

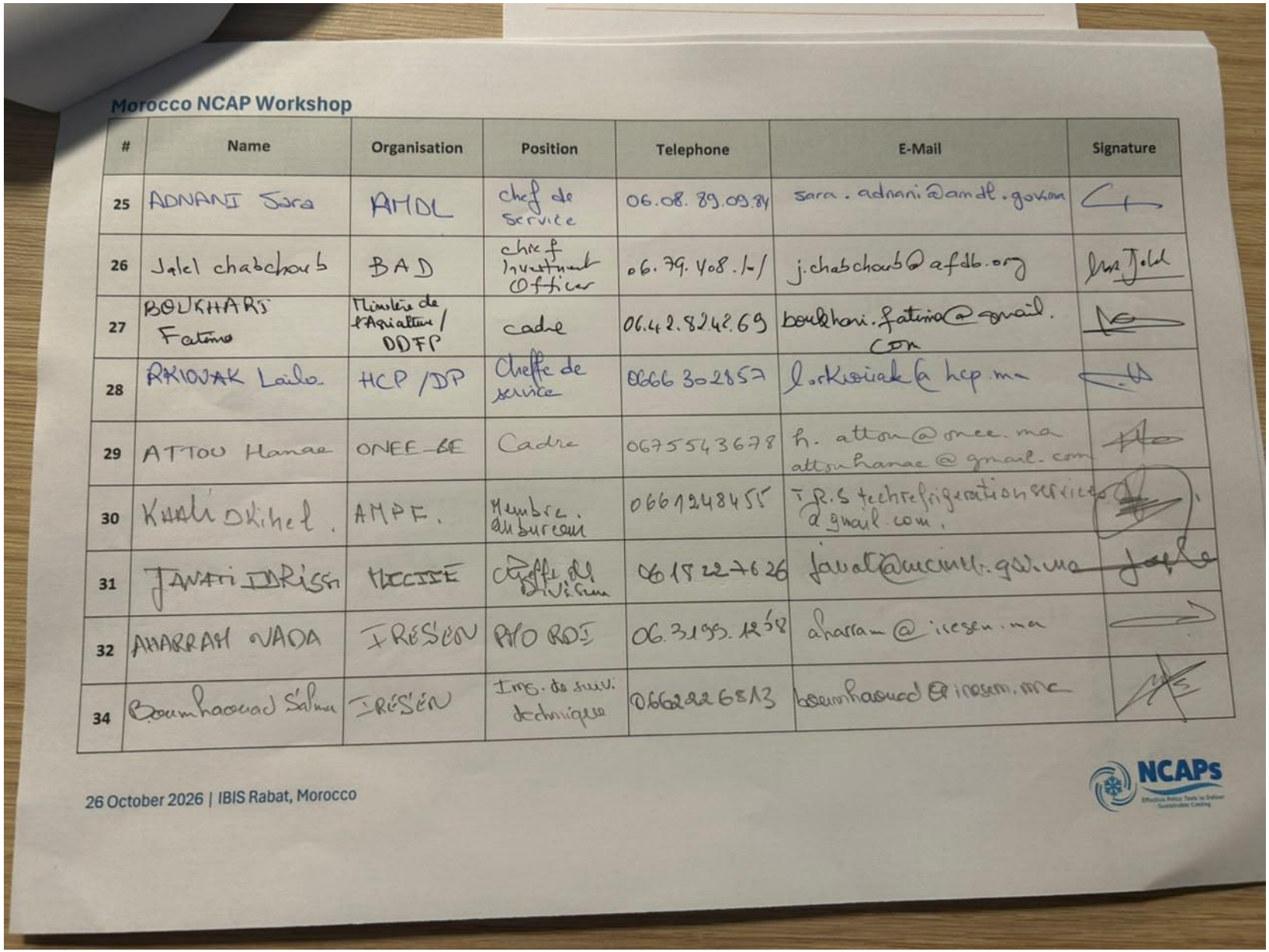
26 October 2026 | IBIS Rabat, Morocco

NCAPs
Effective Policy Tools to Deliver Sustainable Cooling



Morocco NCAP Workshop

#	Name	Organisation	Position	Telephone	E-Mail	Signature
16	Abdelali DAKKINA	ex CCAC	ex Coordonnateur CCAC MAROC	0661833948	adakkina@gmail.com	
17	Zakarya Driss	EDIC-NRJ	Expert dans l'étude	0661205057	Zakaryadriss@yahoo.fr	
18	Lorena de Carvalho	UNEP	Expert energie batiment	+33 0768369608	LORENA.CARVALHO@UN.ORG	
19	Roberto Borjabad	UNEP	Programme Officer	+507 3053100	roberto.borjabad@un.org	
20	Zhuolun Chen	UNEP	Senior Advisor	+45 [illegible] 75	zhuolun.chen@un.org	
21	Mostefa Hasnaoui	RCREEE	Senior Expert	+216 [illegible]	mostefa.hasnaoui@rcreee.org	
22	REZZAK Yassine	MIC	Chef de service	+212 662887374	yrezzak@mcinet.gov.ma	
23	Tounia Elabbar	Departement de l'agriculture /DSS	Cadre	06.34.52.72.54	Tounia.elabbar@gmail.com	
24	Naïma TIKKI	Departement de la Pêche Maritime	Chef de service	0674906839	tikki@mpm.gov.ma	

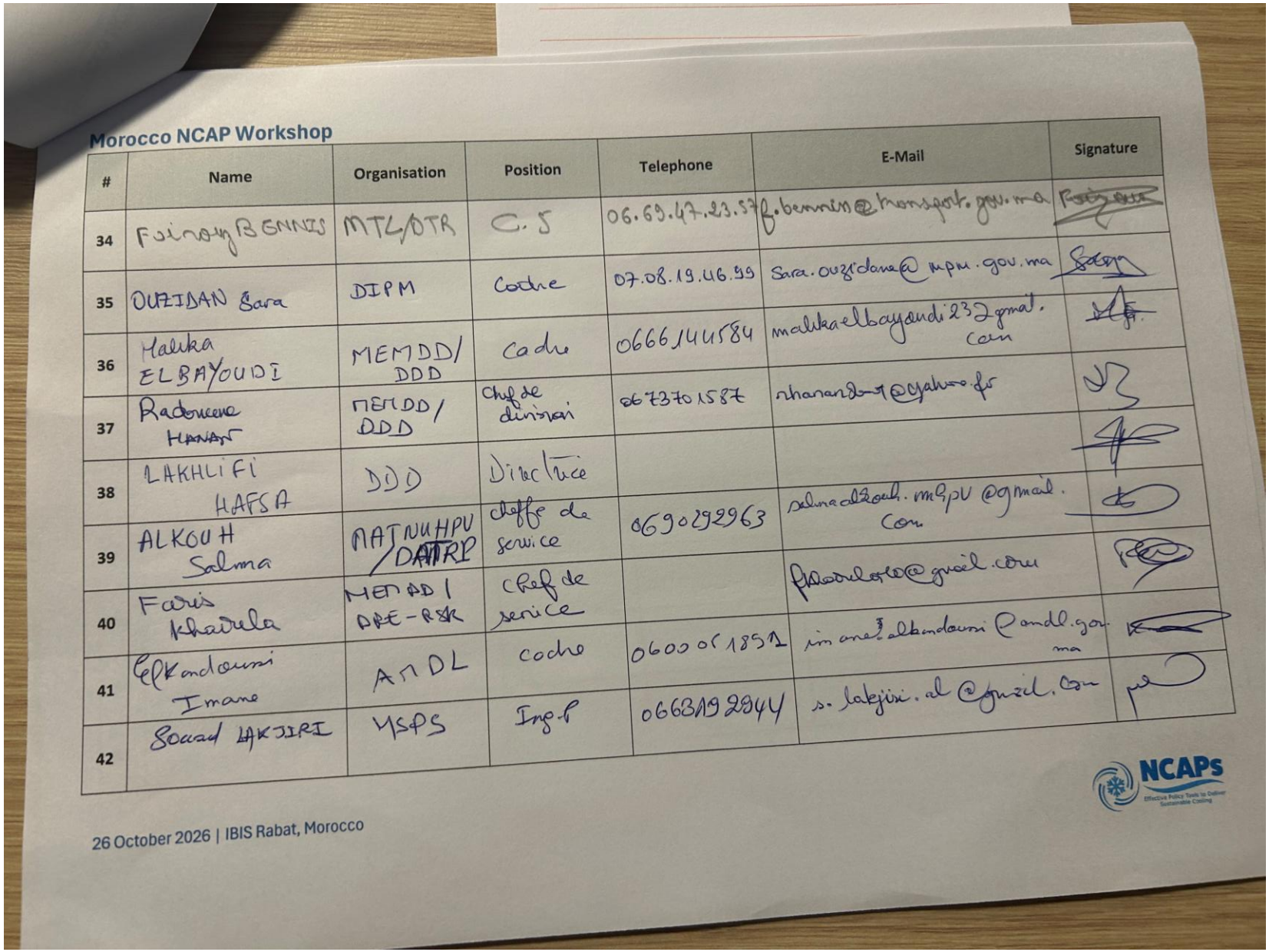


Morocco NCAP Workshop

#	Name	Organisation	Position	Telephone	E-Mail	Signature
25	ADNANI Sara	AMDL	chef de service	06.08.89.09.84	sara.adnani@amdl.gov.ma	
26	Jalel chabchoub	BAD	chief Investment Officer	06.79.408.101	j.chabchoub@afdb.org	
27	BOUKHARI Fatima	Ministère de l'Agriculture / DDFP	cadre	06.42.82.42.69	boukhari.fatima@gmail.com	
28	RKIOUAK Laila	HCP / DP	Cheffe de service	0666 302857	l.rkiouak@hcp.ma	
29	ATTOU Hanae	ONEE-BE	Cadre	0675543678	h.attou@onee.ma attouhanae@gmail.com	
30	KHALI DKihel.	AMPF.	Membre du bureau	0661248455	T.R.S techrefrigerationservices@gmail.com.	
31	JANATI IDRISSI	MCCIIE	Cheffe de Division	0618227626	janati@mcinet.gov.ma	
32	AHARRAM NADA	IRESEN	PMO RDI	06.3199.1258	aharram@iresen.ma	
34	Boumhaouad Salma	IRESEN	Ing. de suivi technique	0662226813	boumhaouad@iresen.ma	

26 October 2026 | IBIS Rabat, Morocco

NCAPs



Morocco NCAP Workshop

#	Name	Organisation	Position	Telephone	E-Mail	Signature
34	Fairoy BENNIS	MTL/DTR	C.S	06.69.47.23.57	f.bennis@transport.gov.ma	[signature]
35	OUZIDAN Sara	DIPM	Cadre	07.08.19.46.99	Sara.ouzidane@mpm.gov.ma	[signature]
36	Malika ELBAYOUDI	MEMDD/DDD	Cadre	0666144584	malikaelbayoudi232gmail.com	[signature]
37	Radouane HANAN	MEMDD/DDD	Chef de division	0673701587	rhanan2[illegible]@yahoo.fr	[signature]
38	LAKHLIFI HAFSA	DDD	Directrice			[signature]
39	ALKOUH Salma	MATNUHPV/DATRP	chef de service	0690292963	salmaalkouh.mhpv@gmail.com	[signature]
40	Faris Khairela	MEMDD/DRE-RSK	Chef de service		fkhairela@gmail.com	[signature]
41	Elkandoussi Imane	AMDL	cadre	0600051891	imane.elkandoussi@amdl.gov.ma	[signature]
42	Souad LAKJIRI	MSPS	Ing.P	0663192944	s.lakjiri.al@gmail.com	[signature]

NCAPs
Effective Policy Tools to Deliver Sustainable Cooling

26 October 2026 | IBIS Rabat, Morocco

Morocco NCAP Workshop

#	Name	Organisation	Position	Telephone	E-Mail	Signature
43	BOU-IKHAMOUNE Kaoutar	MSPS	Ingénieur d'état		kaoutar.boukhamoune@gmail.com	
44	Chetouani Zakaria	DDD/DSDD	Chef de service		chetouani@environnement.gov.ma	
45	Alshimaa Hussien	RCREEE	Senior RE/EE Specialist	01125511562	alshimaa.shafey@rcreee.org	
46	Houssmi Hafsa.	MI	Ingénieur d'état	0663809406	hhoussmi@interieur.gov.ma.	
47	Amr Seleem	UNEP	country engagement Lead	+49178384181-557	amr.seleem@un.org	
48						
49						
50						
51						

RCREEE

Regional Center for Renewable Energy and Energy Efficiency

المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

Hydro Power Building (7th Floor)
Block 11 - Piece 15, Melsa District
Ard El Golf, Nasr City, Cairo, Egypt
Telephone: +20 2 2415 4755
Fax: +20 2 2415 4661

مبنى المحطات المائية (الدور ٧)
بلوك ١١ - قطعة ١٥، عمارات ملسا
أرض الجولف، مدينة نصر، القاهرة، مصر
الهاتف: ٠٢ ٢٤١٥ ٤٧٥٥+
الفاكس: ٠٢ ٢٤١٥ ٤٦٦١+

www.rcreee.org