WASTE MANAGEMENT IN ISLAND REGIONS
CAPE VERDE AND SAO TOME AND PRINCIPE

UN CLIMATE CHANGE CONFERENCE | COP 22

SIDE EVENT UN

NOV. 16TH 2016

Marrakech, Bab Ighli
11:30 am-1:00 pm | Pacific Room

BIO&ENERGY

SAO TOME AND PRINCIPE PROJECT

FINANCING: Fundo português de Carbono

SUPPORT: Camões Instituto da Cooperação e da Língua Portugal; Agência Portuguesa do Ambiente

PROMOTER: Direcção Geral do Ambiente

IMPLEMENTATION: ecovisão

SIDE EVENT CO-ORGANIZATION: euronatura

ROADMAP

DOS RESÍDUOS EM CABO VERDE

FINANCING: Fundo português de Carbono

SUPPORT: Camões Instituto da Cooperação e da Língua Portugal; Agência Portuguesa do Ambiente

PROMOTER: ANAS

IMPLEMENTATION: ecovisão; Águas de Portugal Internacional; tese

SIDE EVENT CO-ORGANIZATION: euronatura

BIO&ENERGY SAO TOME AND PRINCIPE PROJECT ROADMAP DOS RESÍDUOS EM CABO VERDE

OPENING SESSION

Rita Sousa
Euronatura

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BIO&ENERGY SAO TOME AND PRINCIPE PROJECT ROADMAP DOS RESÍDUOS EM CABO VERDE

Portuguese Cooperation on Climate Change Towards Development Strategy: Bioenergy and Waste Roadmap Projects

João Pedro Matos Fernandes
Minister of Environment of Portugal

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ROADMAP
DOS RESÍDUOS EM CABO VERDE

Portuguese Cooperation on Climate Change Towards Development Strategy: Waste Roadmap Project

Gilberto Correia Carvalho Silva
Minister of Agriculture and Environment of Cape Verde

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Portuguese Cooperation on Climate Change Towards Development Strategy: Bioenergy Project

Carlos Vila Nova
Minister of Public Works,
Infrastructure and Environment of São Tomé and Príncipe

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ROADMAP
DOS RESÍDUOS EM CABO VERDE

Waste Management in Cape Verde: The Roadmap Project

Hercules Vieira
President of ANAS – Water and Wastewater National Agency of Cape Verde

Susana Palminha
Implementing Consortium Local Coordinator – Ecovisão Cape Verde

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FRAMEWORK

A problem of waste management

Cape Verde:

10 islands

22 municipalities

≈ half a million of inhabitants

Difference between islands:

socioeconomic

climate

cultural

characterization of the waste management sector

SOLUTION

Creation of a Waste Roadmap

ROADMAP
DOS RESÍDUOS EM CABO VERDE

Problem ⟵ ***Roadmap*** ⟶ **Solution**

Overview:

- Gathering of data of waste production
- Map of technologies, waste disposal locations, collection methods
- Association to mitigation of GHG
- Definition of actions for qualification and legal framework
- Creation of environment awareness campaign
- Creation of showcase project of the operationalization of the strategy of waste management

THE WASTE ROADMAP OF CAPE VERDE

The creation of a project

ROADMAP
DOS RESÍDUOS EM CABO VERDE

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ACHIEVEMENTS

Roadmap Main Achievements

ROADMAP
DOS RESÍDUOS EM CABO VERDE

RESULTADOS
RESULTS

Relátório da caraterização da produção de resíduos e diagnósticos de locais de deposição e tratamento de resíduos e outras atividades relacionadas

Waste production characterization report and diagnosis of landfilling and waste processing sites and other related activities

Plano Estratégico Nacional de Prevenção e Gestão de Resíduos PENGER

National Strategic Plan for Waste Management and Prevention – NSPWMP

População, serviços, indústria e quadros técnicos capacitados em recolha, tratamento, e gestão de resíduos

Population, services, industry and technical staff trained in waste collection, processing and management

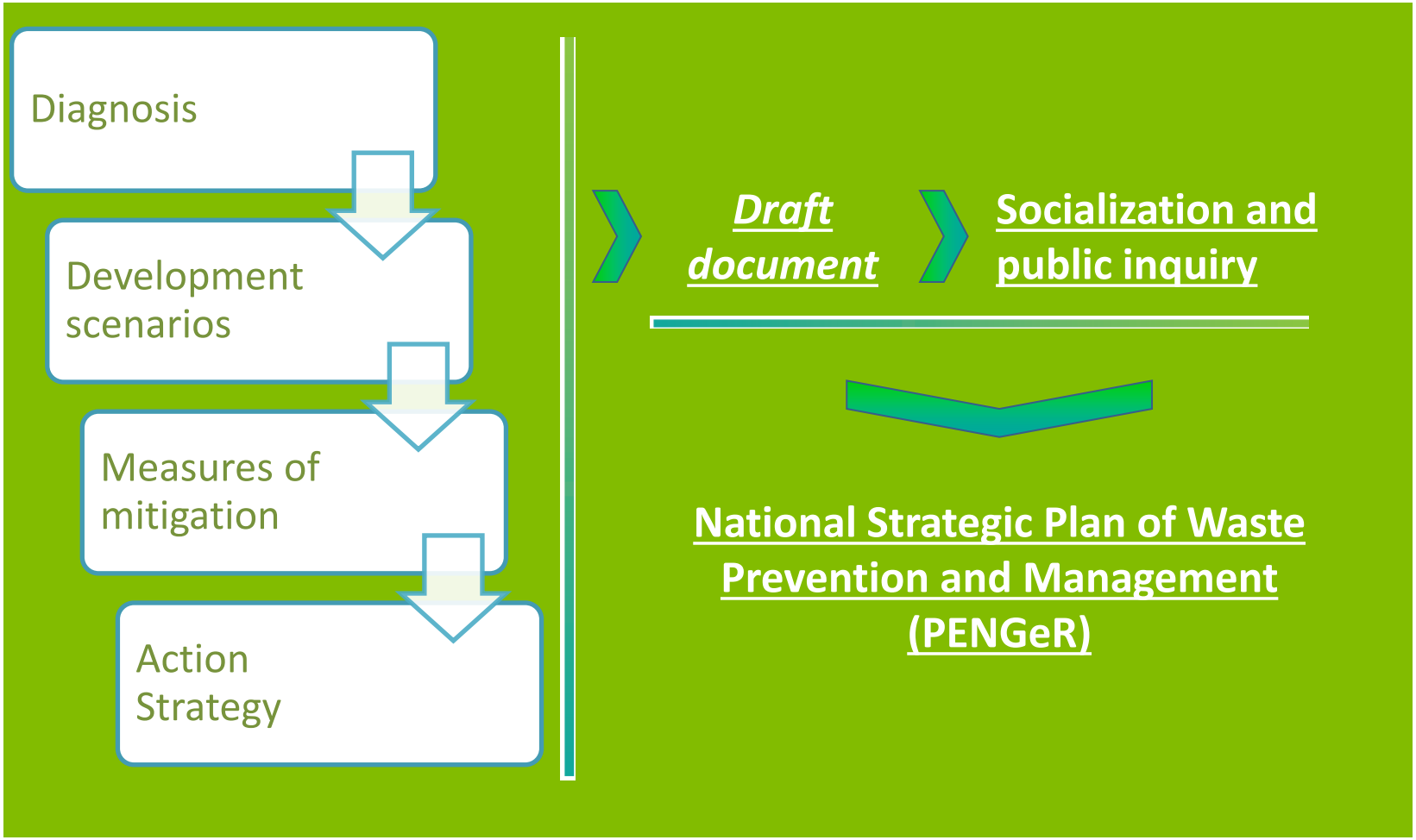
Desenvolvimento dos planos operacionais para 5 ilhas

Development of Operational Plans for 5 islands

ACHIEVEMENTS: STRATEGIC PLAN

Roadmap Main Achievements

ROADMAP
DOS RESÍDUOS EM CABO VERDE

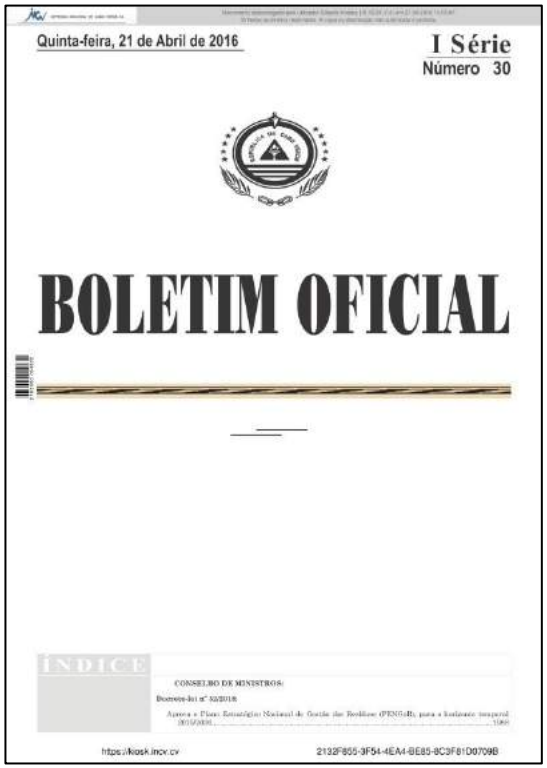


STRATEGIC PLAN RELEASE

Official Release of the National Strategic Plan of Waste Prevention and Management

ROADMAP
DOS RESÍDUOS EM CABO VERDE

- **Published in Official Journal of April, 21 2016, Series no. 1 no. 30**
- **Other related laws:**
  - **General Law regarding Waste**
  - **Transportation**
  - **Management of landfill sites**



Quinta-feira, 21 de Abril de 2016

I Série
Número 30

BOLETIM OFICIAL

ÍNDICE

CONSELHO DE MINISTROS

Decreto-Lei n.º 32/2016

https://kiosk.incv.cv 2132F855-3F54-4EA4-BE85-8C9F81D0709B

1088 I SÉRIE — Nº 30 «B. O.» DA REPÚBLICA DE CABO VERDE — 21 DE ABRIL DE 2016

CONSELHO DE MINISTROS

Decreto-Lei n.º 32/2016

de 21 de Abril

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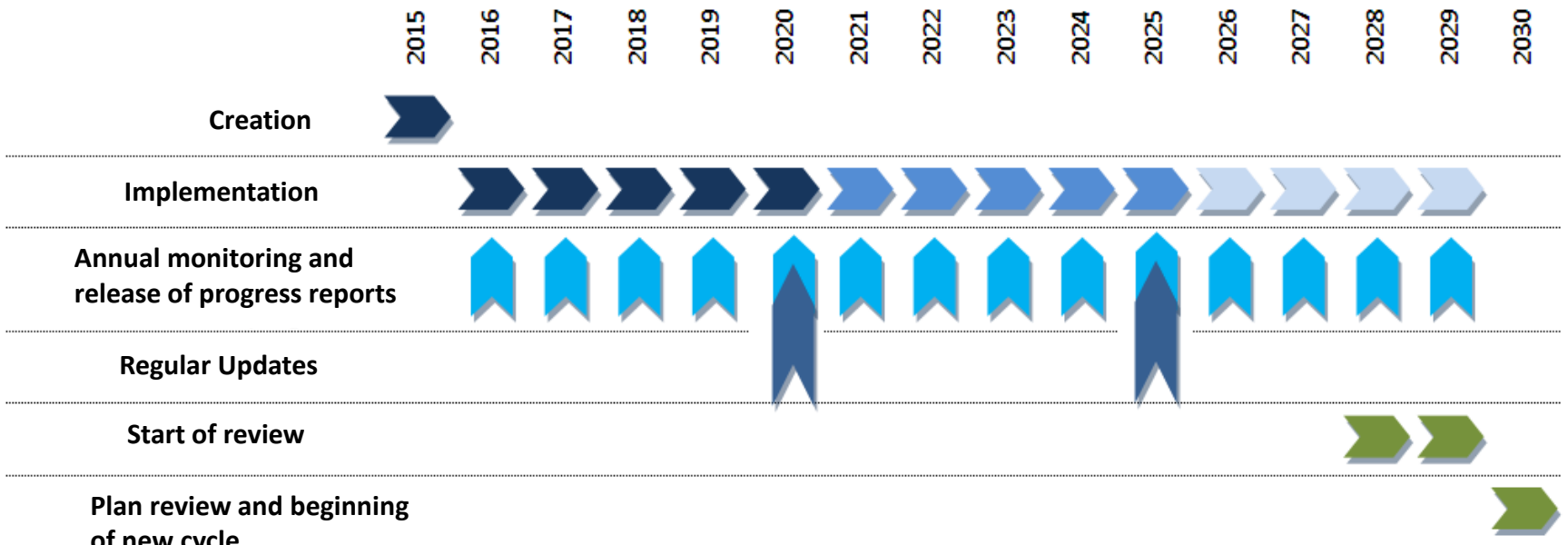
STRATEGIC PLAN: REVIEW AND MONITORING

Plan follow-up

ROADMAP
DOS RESÍDUOS EM CABO VERDE

- *Monitoring of the Plan based on indicators*
- *Info required regarding follow-up of the implementation, updates and reviews*



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OPERATIONALIZATION OF THE STRATEGY

Creation of Operational Plans

ROADMAP
DOS RESÍDUOS EM CABO VERDE

Sal

Fogo

S. Vicente

Brava

Santo Antão

- Definition of operational plans of waste management:
  - Resources of operational planning in order to show how the goals can be reached and achievements of the Strategic Plan defined.

- In line with the UNFCCC and the Paris Agreement for the future integration of climatic concerns in the waste section in the INDC.

THE PATH FOLLOWED

Step by step

ROADMAP
DOS RESÍDUOS EM CABO VERDE

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CHARACTERIZATION OF WASTE COLLECTION

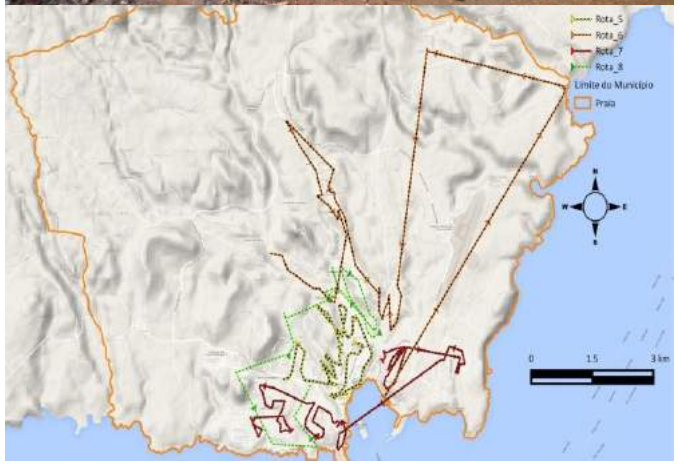
Diagnosis

ROADMAP
DOS RESÍDUOS EM CABO VERDE

- 22 municipalities characterized

- 17 official waste disposal locations and 153 uncontrolled identified, visited and characterized

- 5 collection circuits characterized per municipality (average), representing the total coverage (georepresentation)



CHARACTERIZATION OF WASTE COLLECTION

Diagnosis

ROADMAP
DOS RESÍDUOS EM CABO VERDE

- 104 waste sampling with weighing, characterization and composition analysis

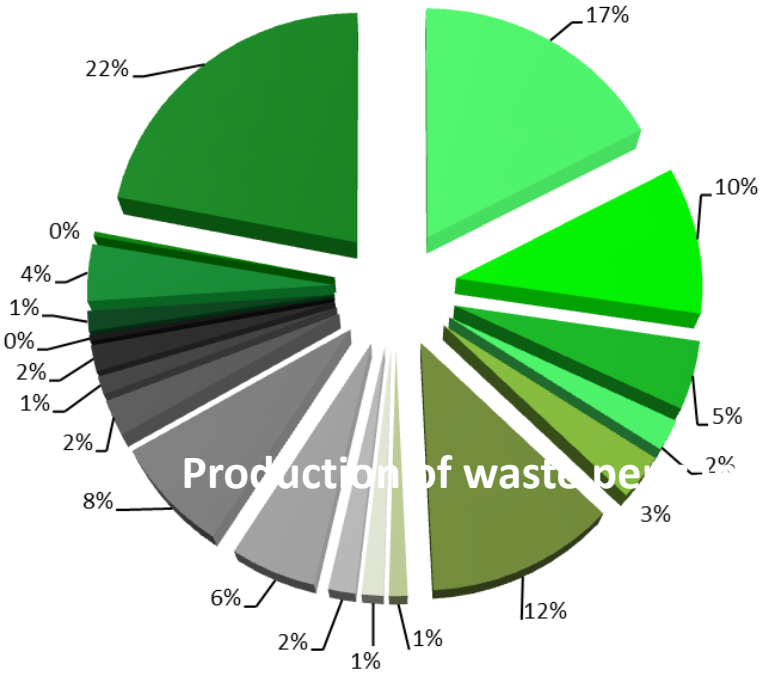
- Sampling of 33 tons and 296 m^3 of waste

CHARACTERIZATION RESULTS

New national database

ROADMAP
DOS RESÍDUOS EM CABO VERDE

National Caracterization of waste



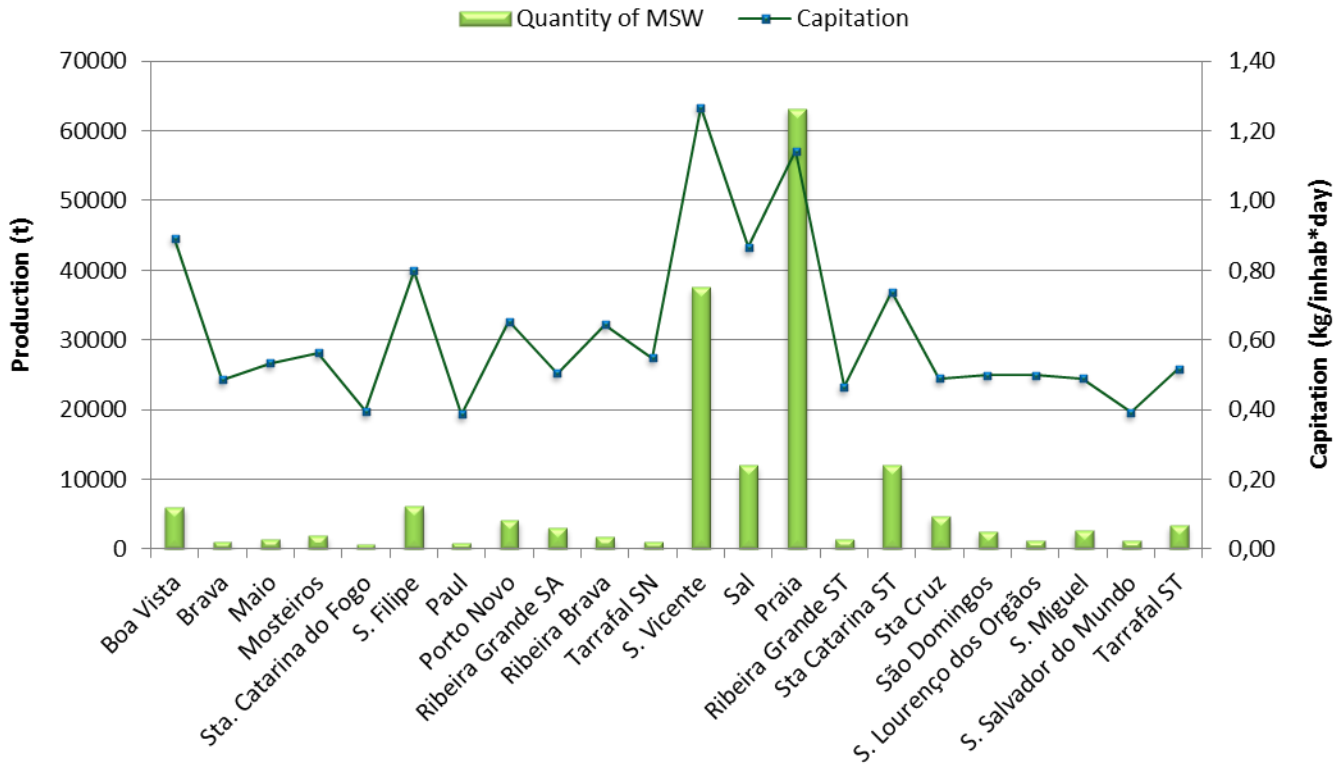
- Bio-waste 17,3%
- Paper/Cardboard 10%
- Thin plastics 4,7%
- PET plastics 2,1%
- Other Plastics 3,1%
- Glass bottles 12%
- Other types of glass and porcelain 1,2%
- TetraPak' composites 1,4%
- Other composites 1,7%
- Textile and footwear 5,5%
- Hygienic consumables 7,6%
- Cans 2,4%
- Other metals 1,2%
- Woods 1,7%
- Hazardous wastes 0,5%
- Electrical and electronic wastes 1,4%
- Contruction and demolition wastes 3,9%
- Hospital wastes 0,3%
- Other wastes (fine soils, rubbers) 21,9%

CHARACTERIZATION RESULTS

New national database

ROADMAP
DOS RESÍDUOS EM CABO VERDE

Production of waste per capita: 0,84 kg, per inhabitant, per day

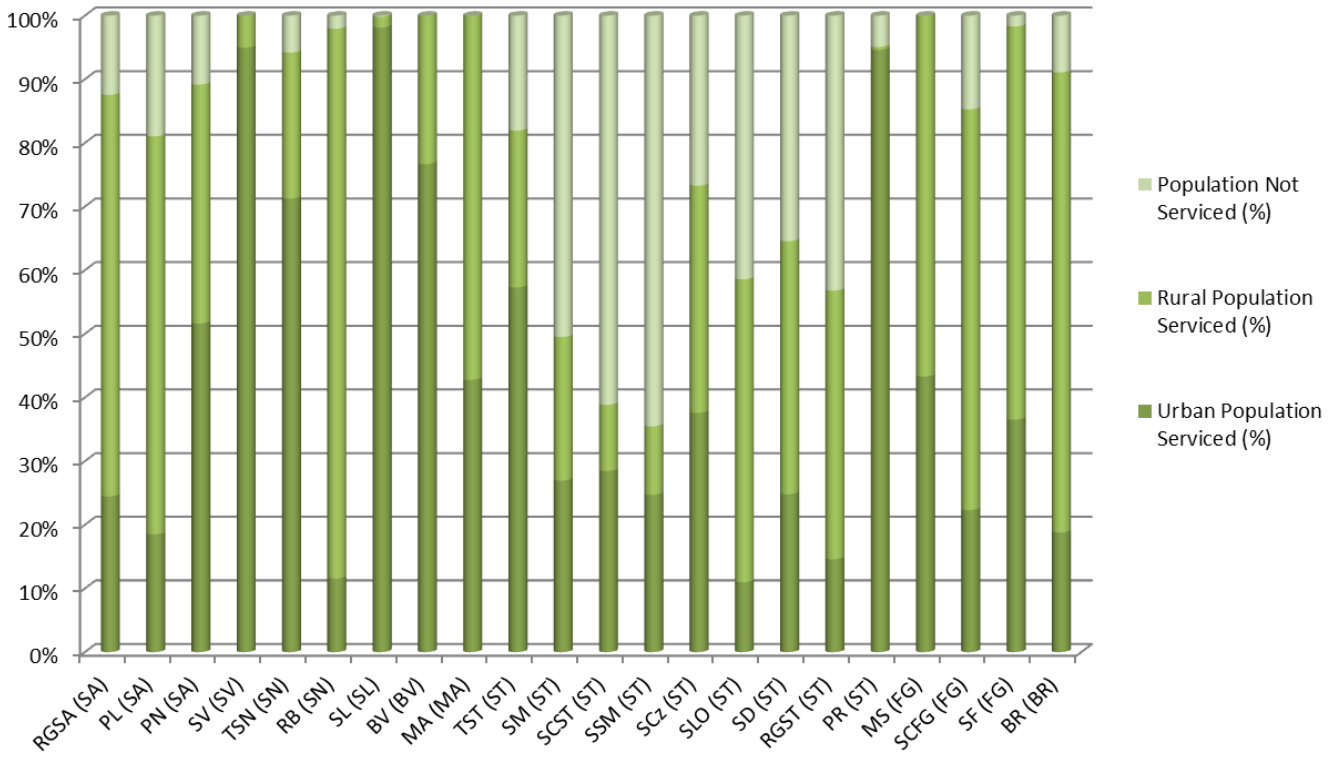


CHARACTERIZATION RESULTS

New national database

ROADMAP
DOS RESÍDUOS EM CABO VERDE

Coverage rates



OTHER QUALITATIVE DATA

Characterization of management and other producers

ROADMAP
DOS RESÍDUOS EM CABO VERDE

Completed surveys:

- *Municipal management*
- *Health center*
- *Companies*
- *Informal market*

ANEXO II – Questionário sobre a Gestão de Resíduos – Unidade de Saúde

GESTÃO HOSPITALAR

QUALIFICATION OF TECHNICAL STAFF

Qualification measures

ROADMAP
DOS RESÍDUOS EM CABO VERDE

- Qualification of climatic changes and waste management

- Technical staff of central administration, local administration and the public

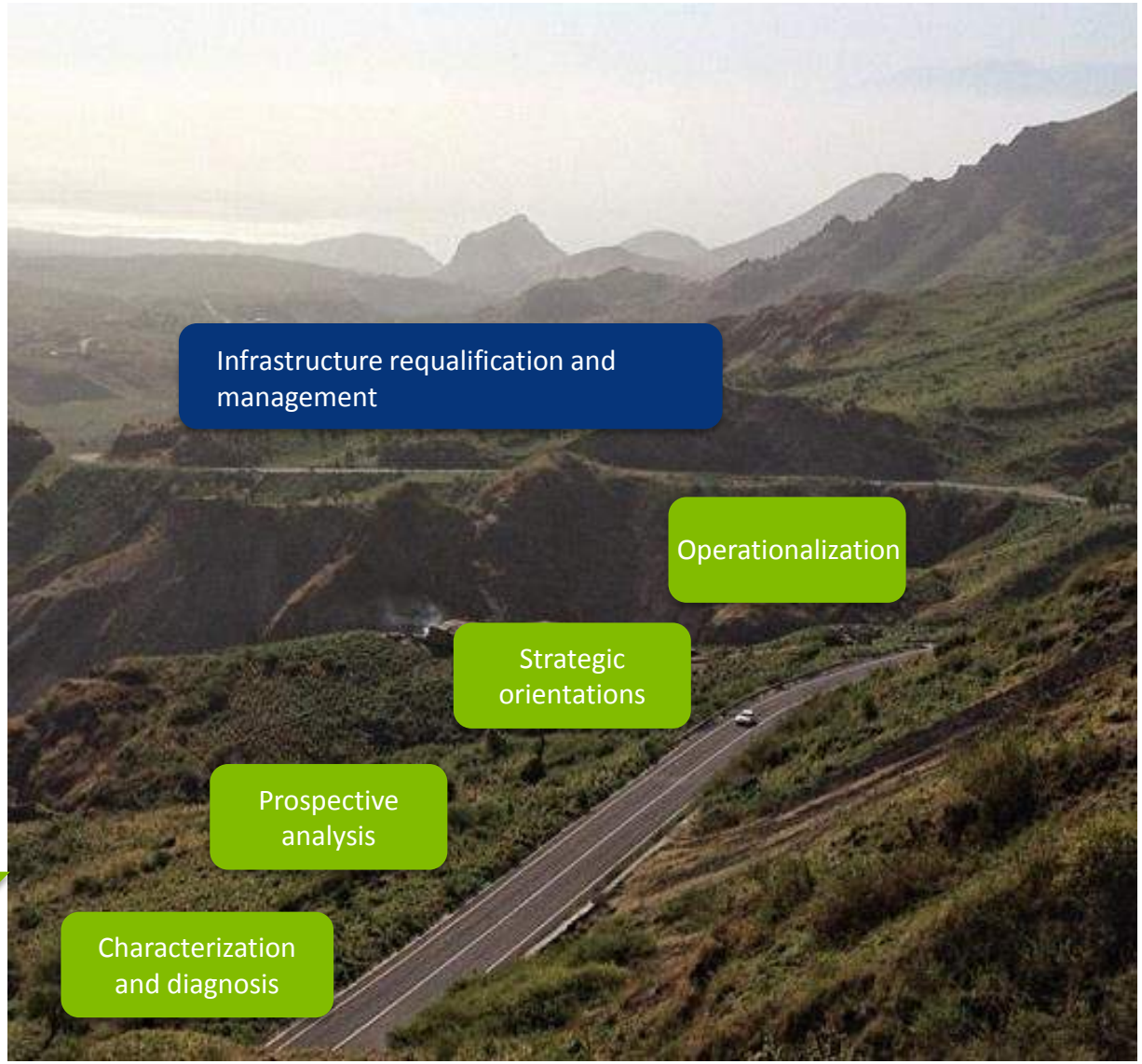
- Staff of environment and sanitation, education, health, inspection and customs sectors, to name just a few

ROADMAP AND 2014 – 2030

National strategy

ROADMAP
DOS RESÍDUOS EM CABO VERDE

Mitigation of climate change



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SAO TOME AND PRINCIPE PROJECT

Waste Management in São Tomé: The Bioenergy Project

Arlindo Carvalho
General Environment Director of São Tomé and Príncipe

Debora Carneiro
Implementing Entity Local Coordinator – Ecovisão

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GEOGRAPHIC FRAMEWORK

Small island state

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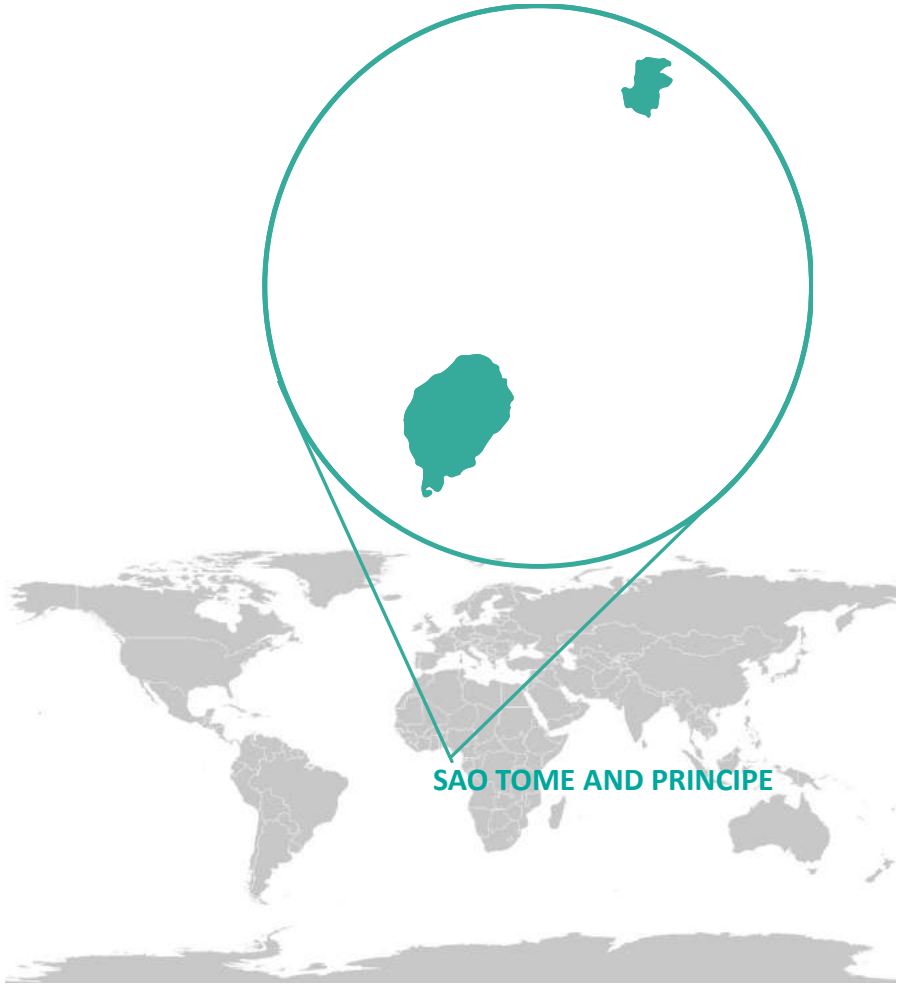
Small island state with two islands – São Tomé and Príncipe and several islets (uninhabited)

Located in the Gulf of Guinea, 300 km of African Coast

One of the smallest countries in Africa with 1001 km²

Total population of about 187.000 inhabitants

Tropical climate characterized by hot and humid conditions, influenced and modified by the mountainous topography with two seasons



GEOGRAPHIC FRAMEWORK

Small island state

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One of the most affected countries by climate change such as storm tides, flows and long dry seasons, with consequences for coast communities and agriculture. Recently heavy rains caused a lot of damages.

WASTE MANAGEMENT

Key Problems

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- The destiny of waste in STP is mainly:
  - disposal in non controlled dumps or in undifferentiated and improper locations around communities
  - incineration

- This constitutes a huge problem of public health due to contamination of air, water and soil.

- The waste management needs to be improved.

WASTE MANAGEMENT

Waste anaerobic treatment technology

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Introduction of waste anaerobic treatment technology for biogas production, through the use of local domestic adapted small stoves.

The source for biogas production is the locally produced waste in household activities.

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BIOENERGY PROJECT

How it works

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RESULTS
Anaerobic Digesters

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With the Bio&Energy project, 5 anaerobic digesters where designed and installed in the rural communities of Lembá, Mé-Zóchi and Cantagalo.

SELECTION CRITERIA
Methods

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Selection criteria

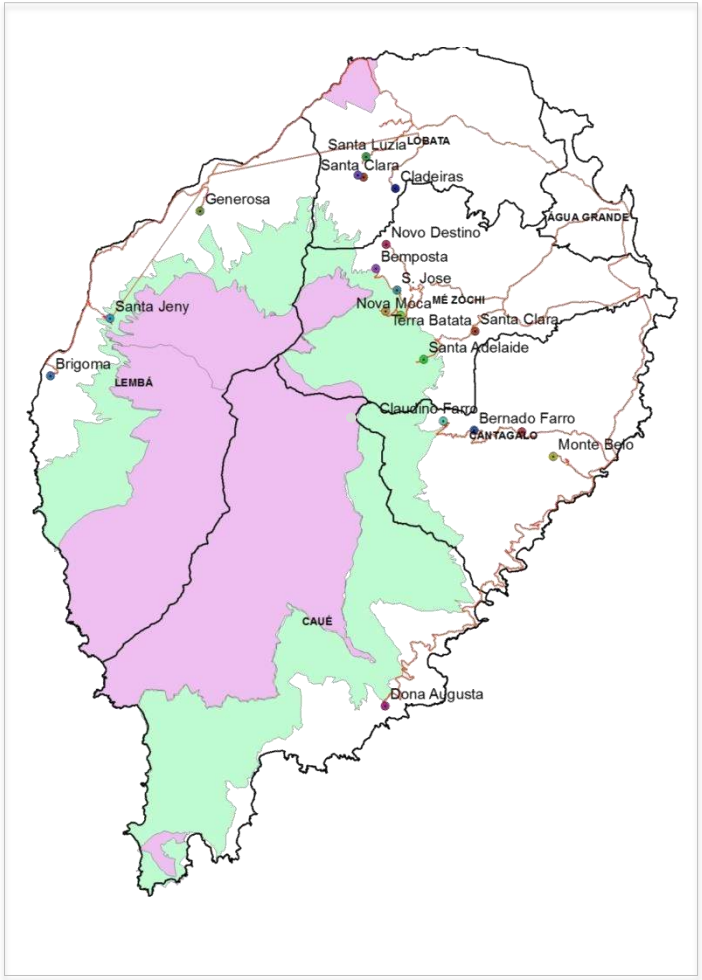
- Number and dimension of families

- Lack of electrical energy

- Agriculture and livestock potential

- Access and organization of the community

- Proximity to the Obô Natural Park.



SELECTION CRITERIA
Methods

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Surveys to families

Surveys conducted to 126 families, 531 people in total. Coverage rate of 98%.

Characterization and weighting campaign.

SOLUTIONS
Design of ready-made digester

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SAO TOME AND PRINCIPE PROJECT

Novo Destino and Santa Jenny

Solutions: ready-made digesters of 6 m^3 easy to install.

Work undertaken:

- *creation of ditches for the installation of the digesters*
- *installation of digesters and gas network*
- *landfill and external works*

SOLUTIONS
Design of ready-made digester

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SOLUTIONS
Design of ready-made digester

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SAO TOME AND PRINCIPE PROJECT

Mendes da Silva

- *Solution: combination of brick and mortar construction of the waste retention tank with the ready-made dome in fiberglass. The construction works included:*
  - *In situ definition of the most functional layout*
  - *construction of the foundation*
  - *construction*
  - *gas network installation*
  - *landfill and external works*

SOLUTIONS

Design of digester with local materials

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QUALIFICATION AND AWARENESS

Technical staff and communities

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Qualification and awareness measures in local communities and to the technical staff:

- Qualification of 30 technical staff from the environment, waste and energy sectors

- 25 home visits and 6 workshops and family awareness campaigns

QUALIFICATION AND AWARENESS

Technical staff and communities

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ACHIEVEMENTS
Gas and light

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SAO TOME AND PRINCIPE PROJECT

The Bio&Energy project in São Tomé benefits 18 families, about 70 people in total.

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The role of technology transfer on climate change cooperation: Bioenergy and Waste Roadmap projects overview and next steps

Maria João Martins
Implementing Entities Coordinator - Ecovisão

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Technology Transfer Cooperation

The role of technology transfer on the challenge of climate change

BIO&ENERGY ROADMAP
SAO TOME AND PRINCIPE PROJECT
DOS RESÍDUOS EM CABO VERDE

- Technology transfer results from the combined actions, networks and partnerships between many stakeholders

- The technology should fit local needs and priorities, and find new sustainable paths for development

- Ways of interaction vary with sector, country and type of technology: joint venture, government support, R&D cooperation, to name just a few.

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Technology Transfer Cooperation

The experience exchange between countries

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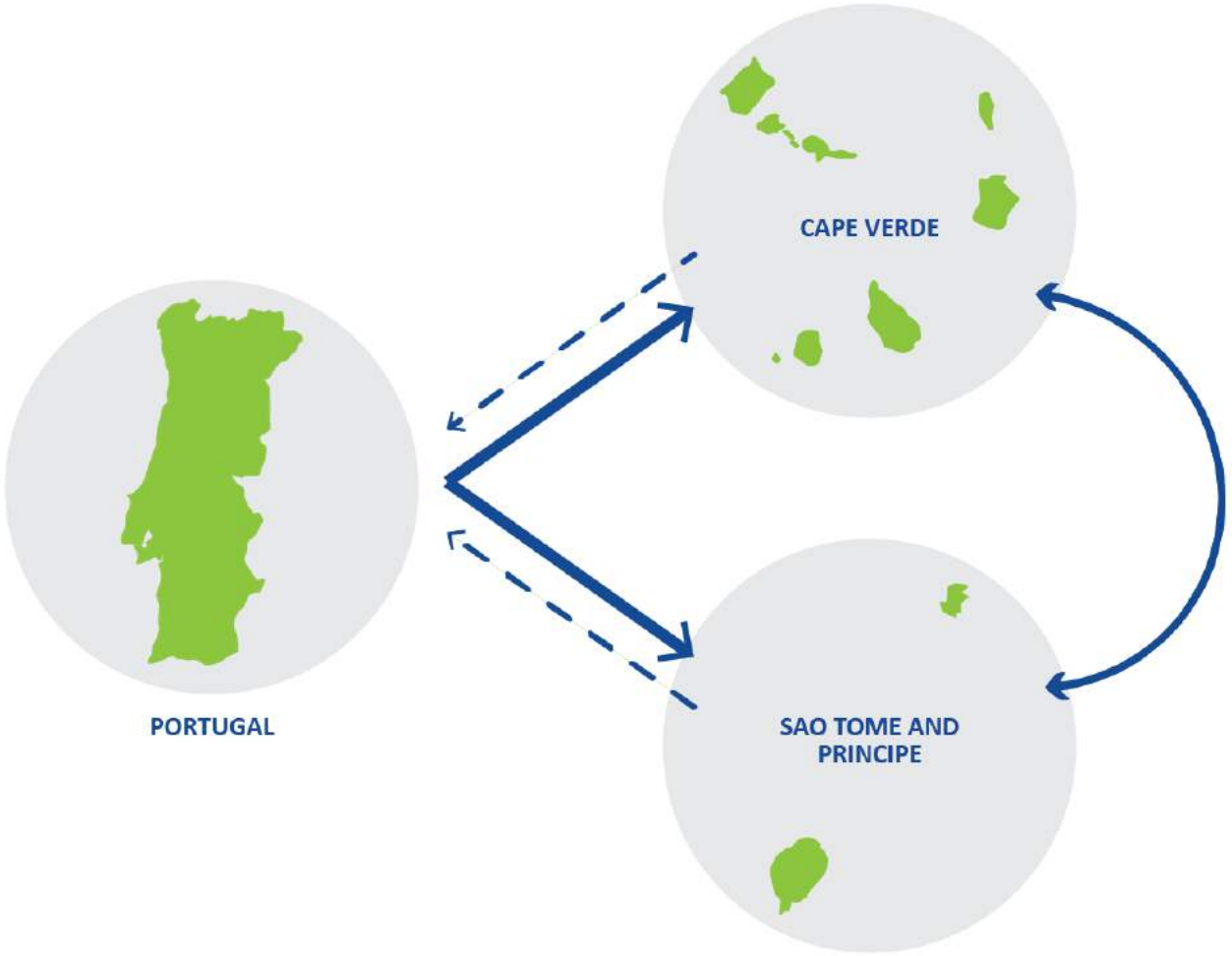

- *Waste Management*
- *Characterization of methods*
- *Regulation*
- *Treatment technologies*
- *Pricing model*
- *Technical support*
- *Best practice*
- *Mitigation of climate changes*

- *Waste management*
- *Technologies of anaerobic treatment*
- *The use of biogas*
- *Production of renewable energy*
- *Best practice*
- *Mitigation of climate changes*

Objectivos do Desenvolvimento Sustentável

Waste Roadmap in Cape Verde Project

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Objectivos do Desenvolvimento Sustentável

Waste Roadmap in Cape Verde Project

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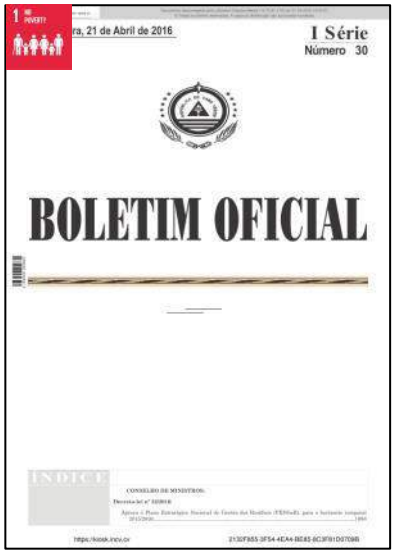

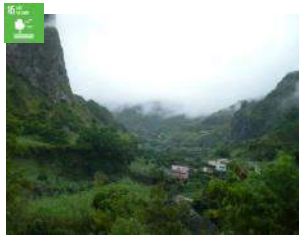

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Objectivos do Desenvolvimento Sustentável

Bioenergy Project

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DOS RESÍDUOS EM CABO VERDE

Objectivos do Desenvolvimento Sustentável

Bioenergy Project

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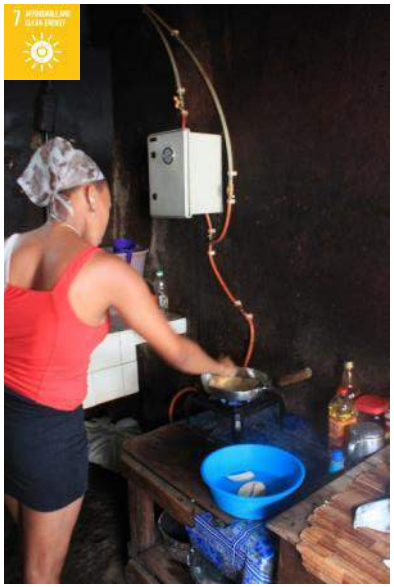
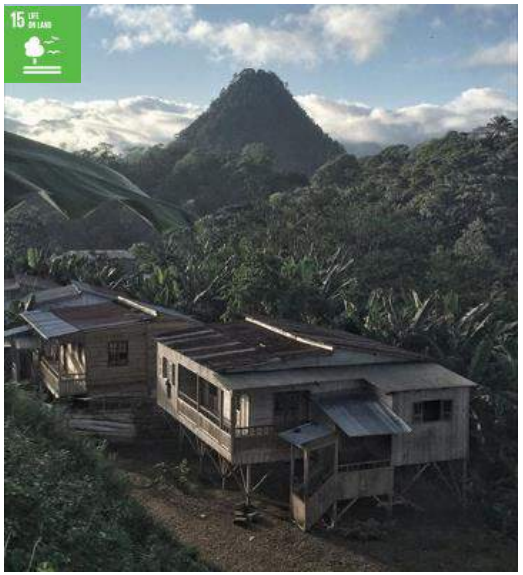
DOS RESÍDUOS EM CABO VERDE





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Next Steps

What happens next

BIO&ENERGY SAO TOME AND PRINCIPE PROJECT ROADMAP DOS RESÍDUOS EM CABO VERDE

Roadmap

Operational plans

Creation of infrastructures

Bio&Energy

Extend the project to the remaining families in Mendes da Silva, Novo Destino e Santa Jenny

Development of the Bio&Energy project to all other communities

Apply Bio&Energy to public facilities such as schools

Based on experience and knowledge, reach the goal of self-sustained communities

SUCCESS MEASURED IN SMILES

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THANK YOU ALL

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