



THE ENVIRONMENT
in the Principality of Monaco

2013



Gouvernement Princier
PRINCIPAUTÉ DE MONACO

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Preface

The year 2013, declared International Year of Water Cooperation by the United Nations, was the occasion for HSH Prince Albert II to honour of His presence multiple initiatives across the world.

As Head of State and President of the Prince Albert II of Monaco Foundation, the Sovereign continued throughout the year His steadfast commitment to the environment and sustainable development.

Whether in Marseille for the 40th edition of the CIESM Congress, at the University of Louvain in Belgium, or in Tangier at the 5th Meeting of the Parties at ACCOBAMS, HSH Prince Albert II continued to spread the “message of Monaco”, initiated in 2012, in favour of a sustainable management of the oceans and the seas.

In 2013, the Sovereign was keen to travel to the Republic of Palau, with HSH Princess Charlene, and meet the highest state officials to discuss important issues such as the preservation of biodiversity, the protection awareness of endangered animal species, or the conservation of protected areas such as marine areas and coral reefs.

The Sovereign also addressed topics related to environmental protection during His trips to Israel and Brazil.

Finally, during the official visit of the French President in the Principality, agreements on environmental issues have been signed between these two countries, in presence of François Hollande and HSH Prince Albert II.



Acceptance of the second commitment period of the Kyoto protocol

The Principality of Monaco has deposited its acceptance instruments for the second commitment period of the Kyoto Protocol on December 27, 2013, through its diplomatic representation in New York. The Principality is thus the first European country to complete this process. 144 countries must do the same for the treaty to come into effect.

Energy and Climate Change

The 5th report of the Intergovernmental Group of Experts on Climate Change (IPCC), the first elements of which were published in September 2013, confirms the observation of global warming:

"Climate change is unequivocal, as is now evident from observations of increases in average global temperatures of the atmosphere and the ocean, the widespread melting of snow and ice, and the rise in the mean global sea level."

In addition, this warming is the result of an increase in the level of greenhouse gases in the atmosphere due to human activities:

"The global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased sharply as

a result of human activities since 1750, and now largely exceed the pre-industrial levels."

"The global increase in the concentration of carbon dioxide is mainly due to the use of fossil fuels and land use changes, while the increased concentration of methane and nitrous oxide is primarily due to agriculture."

Aware of these challenges, Monaco became a signatory to the United Nations Framework Convention on Climate Change in 1992. In 1997, at the Conference of the Parties which took place in Kyoto, the Principality was officially added to the number of countries listed in Appendix I of the Convention. Monaco ratified the Kyoto Protocol, which set targets for reduction of greenhouse gas emissions, in 2006.

Thus, in accordance with the Annex B of the Kyoto Protocol, the Principality of Monaco committed to reduce its overall emissions of greenhouse gases by 8%, compared with its emissions in 1990, during the first commitment period 2008 - 2012

By 2012, the Principality had reduced its emissions by 13.5%, thus exceeding this initial objective.

During the Climate Conference in Doha in 2012, the Principality confirmed its commitment to reduce its GHG emissions by 22% on average over the second period of the Kyoto Protocol: 2013 - 2020. This is an ambitious goal, which exceeds the joint commitment of the countries in the European Union. This goal is associated with a reduction target of 30% by 2020 and 80% in 2050, in addition to achieving carbon neutrality within this time frame.

On 27 December 2013, Monaco became the first country listed in Annex 1 of the Kyoto Protocol, to have submitted acceptance instruments for the second period of the Kyoto Protocol.

To address climate issues and meet the objectives to reduce GHG emissions, the Monaco Government is implementing a specific and innovative policy through an Energy & Climate Plan. It addresses two issues:

- Tackling climate change by reducing the impact of activities that emit greenhouse gases.
- Securing the energy supply, by reducing the energy consumption and by encouraging local production of renewable energies.

This comes with quantified targets, and uses three main levers: regulations, incentives and the exemplary action of the State.

In 2012, the Government embarked on a process of consolidating its Energy & Climate Plan through the European Energy Award (EEA). This process led to a review of the Energy & Climate Plan in order to produce an action plan for the next four years.

Energy security

Since Monaco imports about 95% of the electricity it consumes, supply is a strategic issue for the Principality's activities.

This supply depends almost exclusively on a double high-voltage line (400,000 volts), serving the far East of the French Mediterranean coast. This single transmission route represents a serious structural constraint. During peak loads in winter (heating) and summer (air conditioning), high energy demand may cause power outages. The French power grid operator, Réseau et Transport d'Electricité (RTE), is currently increasing the network of "high voltage" lines in the region. These improvements are expected to be fully operational at the end of 2015.

At the same time, the Government took the decision to begin work on a third substation in early 2013, to maintain the reliability of the electricity distribution network in Monaco. This infrastructure will support the two existing substations and will be installed underground in the bedrock in the Vallon de Sainte Devote. This new infrastructure should come on-line for summer 2017.

Target contract for energy security

In January 2011, the Principality of Monaco signed the Target contract for securing the power supply to Eastern Region of Provence-Alpes-Cote d'Azur

(PACA), alongside the French State, the PACA Conseil Régional, the Conseils Généraux for Alpes-Maritimes and the Var, RTE, the Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME) and the Etablissement Public d'Aménagement de la Plaine du Var. The Principality committed to support and participate in the objectives of the contract, namely:

- Initiate an ambitious action programme to manage electricity demand, reduce peak demand and develop local renewable energy generation;
- Generate renewable energy to cover 15% of energy demand by 31st December 2012, this share should reach 25% by 2020 ;
- Reduce power demand by 15 %, compared to 2008, in the departments of Alpes-Maritimes and Var, before 31 December 2013;

Reducing the peak load capacity

To avoid disruptions in supply, the Monaco Government has set an objective to limit the peak load capacity, by keeping it at a lower level than in 2006, (set at 97,500 kW) by 2020.

The Principality is a partner of the EcoWatt programme (www.ecowatt-paca.fr), initiated by RTE, which aims to warn users of the risks of saturating the power network, and provides advice on how to moderate energy use.

Increasing energy independence

The development of renewable energies should help increase the country's energy security, with the objective, in 2020, of producing 20% of demand from renewable energy sources.

In Monaco, the local renewable energy sources are mainly in the following forms:

- **Waste to energy, at the incineration plant for urban and industrial residues (UIRUI)**, the waste is used as fuel to generate electricity and steam. The thermofrigorific plant converts the steam and distributes heat and cooling to the Fontvieille district, the new buildings built on the grounds of the old railway, the technical high school and all the housing in the Jardins d'Apolline et Helios.
- **The development of heat pumps using sea water which use the calories in sea water to produce thermal energy**, heating and air conditioning. The process consumes 4 times less energy than a boiler fired by conventional fuel while generating the same amount of energy. Since the installation of the first heat pump in 1963, all these facilities now represent approximately 17% of the Principality's total energy demand.
- **By developing solar thermal and photovoltaic installations:** the Government is installing solar thermal and photovoltaic systems in its construction and renovation projects for public buildings and infrastructure. Since 2008, a subsidy, aimed at developing solar energy in the Principality, is available to property owners to replace a thermal fossil fuel system by a solar thermal installation. The subsidy covers 30% of the installation cost and is capped at €30,000.

In 2014, to encourage the take up of photovoltaic energy, the Government introduced a feed-in tariff for power generated by solar PV. This system is intended to support the installation of production units, by encouraging the owners of roofs with appropriate spaces to invest along these lines.

GHG reduction figures

This is the percentage of reduction of greenhouse gas emissions of the Principality of Monaco in 2012 compared to the reference year 1990, as stated in the annual inventory report prepared by the Department of the Environment.

-13,2%

The feed-in tariff was set at €0.36 exc.VAT for flat roofs, and €0.53 exc. VAT for other cases. This incentive is guaranteed for 15 years, and may be granted to any owner of a planned or existing installation, whose installed capacity is greater than or equal to 3 kWp, which corresponds to approximately 25 to 30 square metres of arrays.

The implementation of this measure is financed through the sale of energy. In effect, the concession for distributing electricity and gas, signed in 2009 between the Government and the Société Monégasque de l'Electricité et du Gaz, provides that the sale of electricity contributes to a dedicated fund for achieving sustainable development objectives in the Principality by implementing a policy to manage energy demand and develop renewable energy.

At the same time, with its E+ label which combines all its sustainable development services, SMEG offers all users an "Egeo" service which guarantees the renewable source of electricity. Since its launch, individuals, companies and institutions who have already signed up to this service, have helped to increase the share of electricity from renewable source imported into Monaco from 7% in 2007 to 14% in 2012.

Increasing energy efficiency in buildings

In the Principality, buildings account for the highest concentration of energy use. A reduction target of 20% of unit energy demand in buildings by 2020, compared to 2007 has been set.

Since 2007, the Government has applied the High Environmental Quality (HQE) standard in all new State construction projects, and the THPE (Very High Energy Performance) or BBC (Low Energy Building) certification to its most recent projects.

The building "Les Jardins d'Apolline", completed in 2013, was awarded the label THPE (Very High Energy Performance). The buildings are connected to the district heating and cooling plant of Fontvieille and are equipped with 380 square metres of solar thermal arrays producing 55% of domestic hot water needs for

237 homes within the development and 200 square metres of solar photovoltaic arrays that generates enough electricity annually to power 6 homes.

Moreover the district heating and cooling plant in Fontvieille provides heating and cooling for the new technical, hotel and catering High School as well as the buildings of the adjacent Canton block.

This programme, carried out by the Public Works Office, aims to improve the design of buildings by limiting their environmental impact as much as possible. This is achieved not only by selecting the right construction materials and factoring in the building's maintenance, but also through energy savings.

For existing governmental buildings, the Public Buildings Maintenance Office is responsible for implementing the energy retrofit measures. These measures were initiated in 2006 with the energy audit of the Charles III secondary school, which resulted in energy savings of 45% in gas, and 14% in power (in 2008 compared to 2006), for a medium investment level.

On the strength of these results, demand management measures have since been carried out on other buildings, such as the Saint Charles primary school, etc.

At the same time, the Public Buildings Maintenance Office has developed a remote management system, to centralise, via a computer network, the energy demand data for some buildings and perform corrective actions remotely. On average, over the 42 buildings, a 32% decrease in energy demand was recorded, representing €530,000 savings on the energy bill in 2013.

All the energy demand management measures carried on State buildings have resulted in a 17% reduction in demand between 2006 and 2011.

Energy performance contracting market

In 2012, in partnership with the Energy Agency in Berlin, the Government set up an Energy Performance Contracting Market (EPCM) to renovate the energy installations in public buildings.

Conference in Warsaw Toward a new universal agreement on climate

Mrs Marie Pierre Gramaglia, Government advisor for Infrastructure, Environment and Urban Planning led the delegation from Monaco at the climate talks which were held in Warsaw in December 2013. This session was a new stage in the UN process of creating a universal agreement, by the Parties, intended to follow on from the Kyoto Protocol.



For the owner of a building or building stock, an EPCM involves subcontracting the improvement of the building's energy performance and its financing to an energy service provider. The company reimburses its investment from the savings generated by reducing the energy bill. These energy savings are guaranteed by the company which assumes the financial consequences of failing to meet the objectives.

The first EPCM is Monaco concerned a group of five public buildings (Lycée Albert 1^{er}, the Caserne des Carabiniers, the Centre de Rencontres Internationales, the Rainier III Auditorium and the Sûreté Publique) whose total energy bill is more than €650 000 per year. The energy performance guarantee is 27% over a contractual term of 12 years, with planned savings of around €170,000 exc. VAT per year.

This project will also contribute to achieving the Principality's objectives to reduce GHG emissions, since a 35% reduction of GHG emissions from the buildings concerned is expected.

Lastly, the project will give the State a stock of increasingly energy efficient buildings, while respecting the budgetary constraints of public expenditure.

Labelling the Principality's Energy Climate Plan

In 2012, the Government committed to a programme of environmental labelling through the European Energy Award (EEA), programme adopted by approximately 1,000 municipalities in Europe.

This label rewards municipalities that have committed to a process of quality management, as applied to the implementation of their energy climate policy.

The European Energy Award is a interdisciplinary management and control tool, which helps identify strengths and weaknesses, as well as the potential for improvement in the areas of energy and climate. It also includes other environmental issues such as the management of water, waste, mobility, etc ...

The assessment required to obtain the label is structured into 6 areas: urban development, heritage, energy-water-sanitation, mobility, internal organisation, communication-cooperation. An inventory of the buildings was carried out in 2012, and was followed in 2013 by preparing an action plan.

The labelling phase, conducted by an external and independent audit, took place at the end of 2013. The interim evaluation conducted by the EEA advisor supporting the Principality in its approach, suggests that the threshold of 50% required for the first label level, would be reached during the course of 2014.

The validated four-year action plan (2014-2018) must, as part of a continuous improvement programme, consolidate and enhance existing achievements to reach the objectives set for the Energy and Climate Plan and more generally sustainable development.

Tackling climate change

This second part of the Energy Climate Plan concerns the Principality's international commitments with respect to the United Nations Framework Convention on Climate Change.

As part of the Kyoto Protocol, the Principality committed to reduce GHG emissions by 8%, compared to 1990 over the period 2008-2012, and by 30% in 2020, which represents an average decrease of 22% from 2013 to 2020.

Climate Energy Action Plan

Throughout 2013 steps were taken to implement a climate energy action plan across the entire government. This plan resulted in producing a compendium of 55 action sheets approved by Government Council and signed by HSH the Sovereign Prince. This programme of actions will be implemented over the next four years.



Reducing direct GHG emissions

Direct GHG emissions identified in Monaco primarily concern the burning of fossil fuels (oil and gas), the incineration of urban and industrial waste and petrol consumption sold in Monaco.

Thus, since 2003 the Government of Monaco has implemented regulatory measures banning oil heating in new buildings. By abandoning this type of heating, urban renewal projects will play a significant role in reducing GHG emissions.

In addition, the selective recycling of waste, which began in Monaco in 1992 and has intensified since 2008, has led to the materials recovery of approximately 11.5 % of the waste in recycling centres. This system mainly concerns paper, glass and recyclable household packaging. The effectiveness of this recycling programme has been enhanced

by increasing voluntary collection stations and by introducing recycling bins in buildings. In addition, developing the collection and recycling of cardboard boxes from shops and businesses in Monaco, has also contributed to reducing the tonnage of incinerated waste.

On top of these actions, a State incentive policy which created subsidies for facilities using renewable energies, energy tariffs that incentivise energy savings, regulations for transporting goods in the city, grants for electric or hybrid vehicles, a policy of pricing incentives to encourage the use public transport, etc. all help limit sources of GHG emissions in the Principality.



European Energy Award Audit

On December 16, 2013 the final meeting of the European Energy Award audit was held. This audit was preceded by a review of the Principality's Energy Climate Policy. The conclusions of the audit must go before the review boards which should shortly confirm Monaco's eligibility for European Energy Award Label that will attest to the quality and results of the Principality of Monaco's Energy Climate Policy.





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