



SOUSS-MASSA

POPULATION: 2,700,000

2030 OBJECTIVE: -75% GHG E (BASELINE: 2013)

SCOPE 1

Satisfying new renewable energy demands

Climate policy governance and integration

The Local Plan to Combat Climate Change ("PTRC") of the Souss-Massa region (October 2018), is the first local climate plan of all Morocco that has operationalised at a regional level the National Strategy for Sustainable Development (SNDD). The document outlines how the achievement of regional objectives will contribute to Morocco's Nationally Determined Contributions (NDCs).

In consultation with local actors (interviews, themed workshops, etc.) and coordinated by a steering committee, the PTRC outlines climate vulnerabilities and formulates the region's first greenhouse gas (GHG) inventory. The climate committee is in charge of its implementation and the monitoring-evaluation (Measure, Reporting & Verification (MRV)) of the results. It will be supported by the Regional Information System for the Environment and Sustainable Development (SIREDD).

The PTRC provides a 'bank' of mitigation and adaptation projects representing a total investment €2.98 billion (PTRC, p.41).

Climate policy tracking

Energy emissions (44% of total) mostly originate from transport (45%), from building (27%), agriculture (15%), and industry (10%). As for non-energy emissions linked to agriculture and land use (33% in total), emissions are mostly from enteric fermentation (58%) that could increase by +500% by 2030 in a run-of-river scenario. They are followed by direct and indirect NO₂ emissions from cultivated land (32%) and manure (10%).

The PTRC plans a 75% drop in GHG emissions by 2030 according to forecasts. The electricity demand is currently climbing at a rate of 7% per year. Total energy consumption in Souss-Massa that totalled at 1,476 Ktep in 2013 (including 720 Ktep from oil products and 86 Ktep from coal).

Energy – Enhancing renewables in Souss-Massa

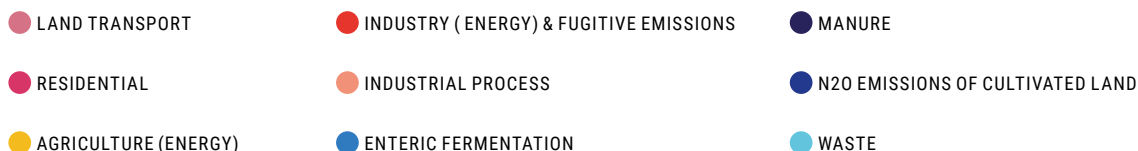
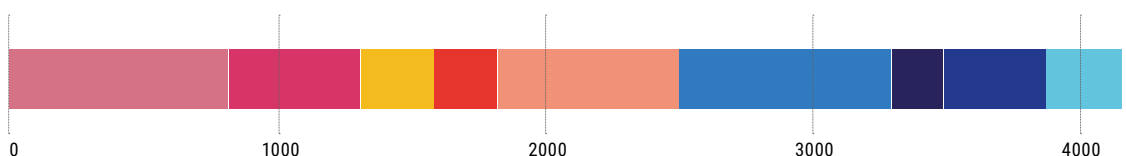
To reach its goals, the Souss-Massa region focuses mainly on the decarbonation of its energy mix and its sunlight rate which is one of the highest of the Kingdom with over 8kWh/m²/day. The solar potential is added onto wind potential on the seafront. The rapid exploitation of this renewable energy potential, with an energy efficiency strategy, should contribute to the region's and country's energy autonomy with a target of 1120 MW of solar energy production by 2030.

Currently the region mainly has pilot projects. The Ibn Zohr University and the Institute for Research in Solar Energy and New Energies (IRESEN) are working with the region to develop photovoltaic potential maps, which should help investors and individuals assess the profitability of projects. UIZ is also developing solar ovens to reduce the use of wood for cooking in rural households. The Abdelmoumen Dam Pumping Energy Transfer Station is expected to have a hydroelectric generating capacity of 350 MW. There is also the 500 MW planned with the solar power plant project. The Noor Tata, which is part of the Moroccan Solar Plan, should reduce emissions by 9 MtCO₂eq.

In 2018, the Regional Council approved a partnership agreement with the Moroccan Energy Efficiency Agency, of which 1.2 million is dedicated to wind energy. This partnership will enable the construction of two wind speed measurement units in the rural municipalities of Ait Wafka (Tiznit Province) and Tamri (Agadir Ida outanane) ([Femise 2018](#)).

As for energy efficiency and demand management, the regional strategy remains at the diagnostic stage. Agriculture has a high potential for energy savings, estimated at 30% in conventional water pumping systems, and 20% in conditioning units. Lastly, the projects led both by the Region, such as the adoption of 70,000 LED photovoltaic streetlights in 10 municipalities in the Region, and by local stakeholders, such as the Atlas Kasbah ecolodge, which avoids 17,900 kgCO₂eq each year, should be noted.

SOUSS MASSA - GHG EMISSIONS IN 2013 (KTCO₂EQ)



Waste – Turning organic waste into a source of energy and employment

Waste represents only 6% of emissions but remains an important issue to reduce plastic on the one hand, and an energy source on the other hand, since most of the waste is organic and from agriculture and horticulture. The 950,000 tonnes of waste from market gardening and citrus fruit production estimated in 2011 ([l'INRA-CRRA d'Agadir](#)), could also solve the problem of soil exhaustion (via biogas or composting).

The PCRT focuses on recovering waste through biomethanisation. This strategy is already used in Greater Agadir, where the rehabilitation of the Bikarran landfill since 2009 has made it possible to generate biogas through waste fermentation. This degassing system (47 wells installed) would have reduced GHG emissions by 68 MtCO₂eq via a flaring system between 2009 and 2015 ([L'économiste](#), 2017). The PCRT is continuing along this path at the regional level with the establishment of a network of regional platforms for the recovery of agricultural waste (200 million dirhams, Mdhs), a biomethanisation project for animal manure (200 Mdhs), and a solid waste 'methaniser' is planned in the Plaine area, south of the coast (100 Mdhs).

Another attempt to rehabilitate know-how is the [agdals](#), systems for preserving common forest and pastoral environments, or tanast systems that enable the Amazigh community to manage and time water distribution and adapt to water scarcity ([Portail Sud Maroc](#) 2016). The Japan International Cooperation Agency (JICA) has introduced a Japanese technique called "Porous Alpha" into market gardening in Souss-Massa, the results of which have shown water savings as well as better yields.

ADAPTATION

WATER RESOURCES, THE REGION'S MAIN VULNERABILITY

Souss-Massa is under increasing water stress due to an ongoing fall in groundwater levels, in parallel with increased flooding risks (260 identified zones). A decrease in rainfall by 10 to 20% is already visible in Anti-Atlas and Tata ([Vulnerability studies](#), 2016), and threatens to speed up the decrease in yields and usable land, mostly rainfed crops, and in oasis systems. 43% of the PCRT's adaptation budget has been allocated to support projects for water resource management ([LesEco](#), 2018).

Several answers have already been provided with stakeholders in the area on both the water demand and supply side. A public-private partnership (PPP) was implemented to improve access to and sustainable management of the Souss-Massa water-table by the 700 farmers in the [EL Guerdane](#) area. Similarly, the seawater desalination station of Chtouka where construction work began in 2018, will be used to irrigate and to fill the artificial water-table of the entire region ([Afrik21](#), 2018). In 2017, according to the regional agriculture Office of Souss-Massa (ORMVASM), 71,000 hectares of the region were equipped with drip irrigation systems in the framework of the Green Morocco Plan ([MAP](#), 2017).