ENERGY & NATURE | *Champions of Change*

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PORTUGAL

How compatible land use and IVM around power lines are benefitting resilience, nature and communities

Integrated Vegetation Management (IVM) in Portugal is reducing vegetation management costs, increasing infrastructure resilience to fire and adverse weather, building shared value for communities, and supporting native flora and fauna.

Grid operators in Portugal recognise the value of IVM in responding to overlapping challenges of conflicting wildfire and nature conservationlegislation, as well as bringing down maintenance costs. In 2010, TSO, REN developed a strategic plan on IVM and land conversion from fast-growing species such as eucalyptus, to grid-compatible species, which is now enforced across the country by the Portuguese Environment Agency in the construction of new transmission powerlines.

Collaboration with NGOs, authorities, scientists and communities continuously improved the strategy. Meanwhile, DSO, E-REDES worked with ecology and technology experts to determine the species that are suitable with the network's technical specifications, which should be resilient to fire hazard, promote biodiversity and add economic value, on a national scale.

In years of high wildfire intensity, REN infrastructure remains unaffected and serves as a 'fire break' in the landscape.

By end of 2024, REN had converted 4,553ha of land from invasive eucalyptus. The 2030 target is 6,000ha, or 50% of forests in rights of way.

REN's cost-benefit-analyses show that despite high initial costs, IVM can reduce maintenance costs by 10-20% and bring return on investment in 18-24 years.

ENGAGEMENT

- Extensive coordination with regulators, municipalities, and authorities (incl. forestry, environment, civil protection) has been crucial for IVM to be accepted amid conflicting legal frameworks.
- One-on-one negotiation is crucial – but complex, as >90% of forests are small, privately owned parcels. REN contacts around 25,000 landowners per year.

MONITORING

- For REN, IVM is becoming business as usual, but still requires a case-by-case analysis.
- DSO, E-REDES, developed a baseline to monitor biodiversity impacts and assess impacts of pilot projects, and select highly valuable ecological areas for replication at scale.
- REN & E-REDES have set up internal departments for vegetation management.

LAW & POLICY

- TSO REN's 2010 strategic plan on IVM prescribed land conversion from fast-growing species to compatible native plants for all new power lines and where possible for existing lines. This was later adopted and enforced by the Portuguese Environment Agency.

FINANCIAL

- Portugal's regulatory scheme is based on TOTEX. See 'Did you know?' for more info.
- REN classifies trimming & regular management as OPEX, while CAPEX is allocated to full land conversion for new power lines and the planned 3-year interventions.
- E-REDES classifies conventional VM on a 3-yearly cycle as CAPEX, and tree proximity correction as OPEX.

KEYS TO SUCCESS

DATA & MONITORING

— Monitoring is integral: REN colleagues accompany each intervention and register it in a GIS system. This evaluation is obligatory and must be done for management to be considered complete.

— Protocols with NGOs and local associations delegate the management of IVM actions in the medium-term.

— E-REDES uses LiDAR, drones, satellite imagery, combined with AI within a specialised tool to map and analyse vegetation, predict growth, assess risk, and thus enable targeted measures for biodiversity.

LAW & POLICY

— Two main legal frameworks mandate strict grid vegetation clearance rules. To comply with law and enhance biodiversity, in 2022 DSO, E-REDES launched studies to identify 107 'compatible species' which reduce flammability, support biodiversity, and bring socio-economic benefits.

FINANCIAL

— IVM has been found to reduce REN's maintenance costs by 10-20%, thanks to the 3-year intervention cycle that conversion enables.

— Theoretical cost-benefit-analysis showed actions like grassland restoration and pastures to have lower costs after 10 years and bring return on investment within 18-24 years.

ENGAGEMENT

— Conversion to productive species (e.g. orchards) boosts property value and economic activities for communities.

— Local value creation is very good for public image and support for infrastructure.

— Land absenteeism is a challenge. To delegate management and ensure long-term sustainability, markets must be identified for regional products grown under power lines.

Fun facts

Heritage Oranges: REN works closely with a local community to preserve historically significant Ermelo orange trees through 3ha of groves under power lines, and has increased population from 500 to over 1,800 trees.

Firefighting Horses: REN has established long-term partnerships to protect endangered Garrano horses through shared management of 100ha of grid area, reducing fuel loads through grazing.

Did you know?

Portugal's regulatory scheme is based on TOTEX, whereby the regulator assigns a single budget and then activities are classified as CAPEX and OPEX by the grid operators themselves.

This implies high levels of responsibility, but also greater flexibility in deciding how to budgets are managed, i.e. what is classified as an investment and what is an operational cost.

Learn more about IVM

Renewables Grid Initiative

Co-funded by the European Union