

Promoting a National Roadmap on Offshore Renewable Energies

Nuno Matos

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nuno@wave-energy-centre.org

Unique Conditions in Portugal for marine energy

- Large coastal area with diversified waves and wind regimes
- Electrical grid along the coast
- R&D university and scientific institutions with experience and international recognition
- Experience in ocean energy projects
- Dynamic RES project developers operating internationally
- A Pilot Zone for test, pre-commercial and commercial wave (and wind) farms
- Other infrastructure available for marine energy testing (Aguçadoura)
- New legislation in development (Simplex for the Sea)

Portugal - Resources

- **Portuguese Offshore: deep sea (more then 50 metres) prevailing in the nearshore (less than 10 km)**
- **Fixed wind energy on a great expansion in Noth Europe. Shall we promote this solution in Portugal?**
- **Diversified wave and wind technologies in Floating Plataforms have been tested and still need substantial devolopment until full commercialization**
- **Challenge to be defeated: matching a promising source of electric generation with all other marine activities, the life style of coastal population and the environment**

National Plans for 2020 presented by APREN and by the Portuguese Government to the EU (NREAP – National Renewable Energy Action Plan)

	REPAP 2020	PNAER 2020
Biomass	820 MW	952 MW
Geothermal	120 MW	75 MW
Hydro	9822 MW	9548 MW
Concentrated Solar Power	500 MW	1000 MW
Solar Photovoltaic	2000 MW	1475 MW
WAVE	300 MW	250 MW
Wind Onshore	7300 MW	6800 MW
WIND OFFSHORE	200 MW	75 MW

Threats and Opportunities

- **How can Portugal react effectively in case of fuel supply shortage?**
- **How to encourage economical growth in a context of environmental protection, particularly with the reduction of gas emissions?**
- **Portugal imports technology and components for energy production. Is it possible to reverse this situation and make Portugal a leader in technological innovation in the energy sector?**
- **Marine energies offer a golden opportunity for Portugal:**
 - **Due to low technological maturity at world wide level**
 - **A very large Exclusive Economic Zone (18 X main land, and possibly 40 X)**
 - **Adequate characteristics of the Portuguese coast for wave and floating wind energy (and maybe seaweed?)**

Why a Roadmap for marine energies?

- **Marine energies may add value and increase Portuguese exports if, on a very short term, we launch an initiative strongly supported by all stakeholders that allows:**
 - The development of a joint national vision
 - The definition of a nacional strategy for marine energies
- **The compatibility between all current national initiatives and visions is the baseline of the proposal presented for the set-up of a “Nacional Roadmap for Marine Energies”**

Process steps to set-up a Roadmap

Methodology of the International Energy Agency (IEA) for Energy Roadmaps:

- Based on four steps
- The methodology is supported on two complementary views:
 - A strategy set-up by specialists, or joint **Vision** based on their professional experience and perception;
 - The validation, monitoring and re-definition of the strategy, using modeling and analysis tools (a roadmap with finance support from FCT).

1st step of the Roadmap: Preparation and Planning

- **Preparation and Planning** (from 3 to 12 people and 6 months duration)
→ **Coordination with all entities and initiatives – a roadmap for everybody**

July 2010 – June 2011: Project “Public Policies, Promotion and Dissemination of Marine Energy in Portugal”

-Training of Public Administration

October 2010, half-day, 43 public staff members and 24 Navy officers

February 2011, full-day, 58 staff members

- October 2010, Seminar “Who is Who in Renewable Marine Energies” (65 presentations from public and private entities plus 13 other stakeholders - 78 entities, 47 private and 31 public). 137 participants

2nd step: Preliminary Vision for marine energies (10 to 40 people, 2 to 4 months)

• Roadmap goal

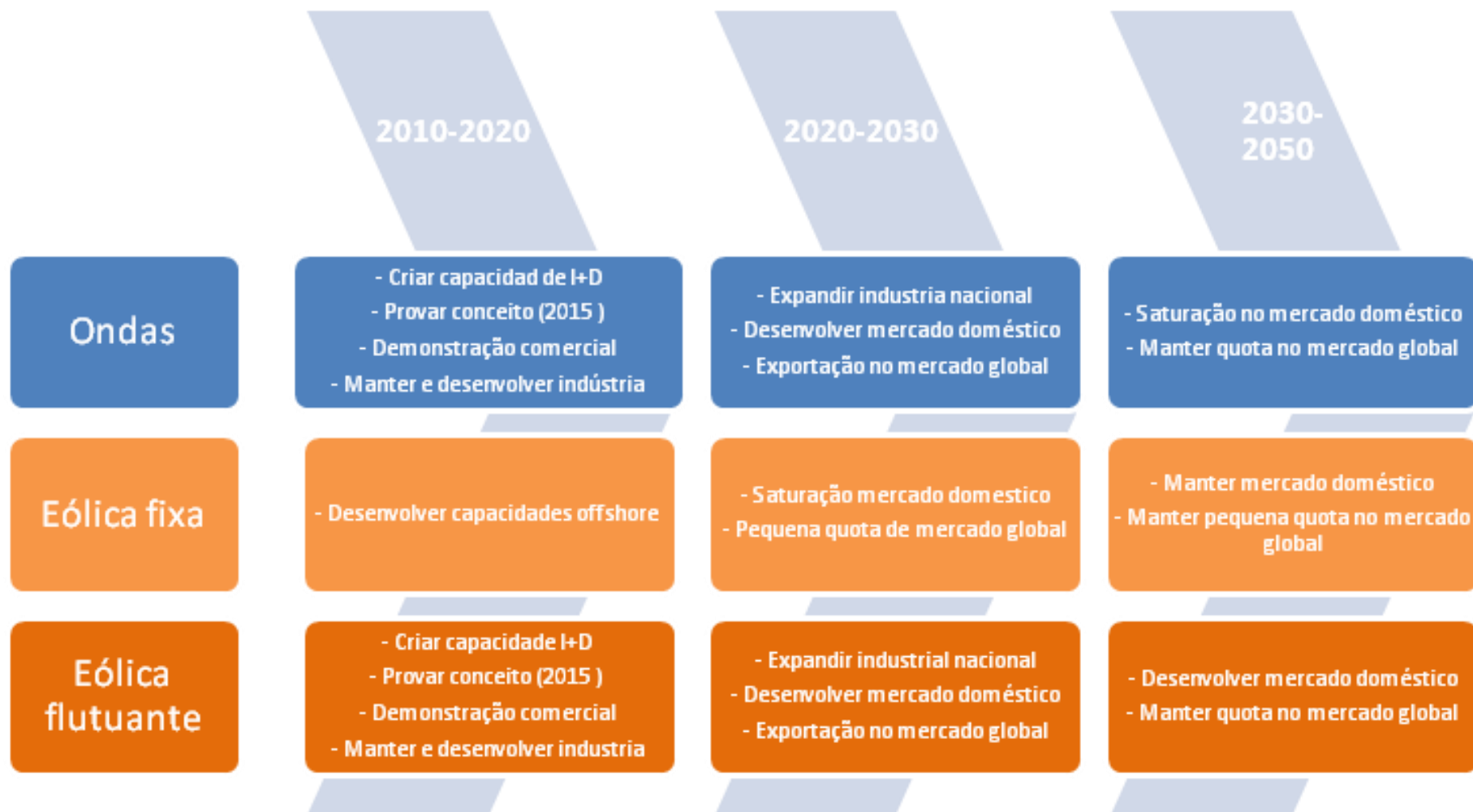
To define the main action paths for the development of a on marine renewable energies national cluster with a focus on the export. Final objectives of the roadmap are:

- To accelerate the introduction of marine renewable energies in Portugal**
- To maximize the value added by this sector and to contribute to the growth of the Portuguese economy**

• One conclusion of the FCT project, “Roadmapping Offshore Renewables in Portugal”, was:

- The Roadmap should be implemented with specific action paths for each marine technology - waves, wind and seaweed - with different milestones: short, medium and long term**

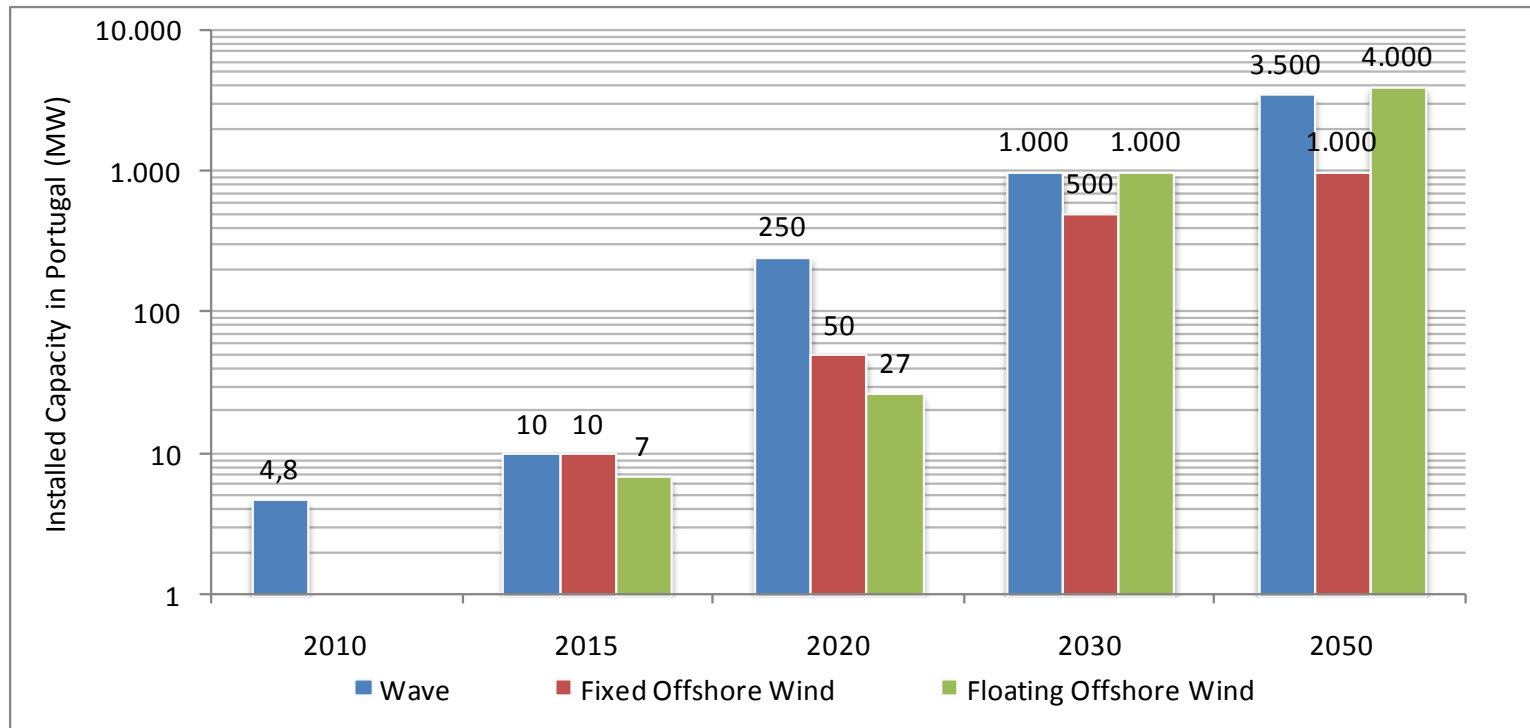
Vision: specific objectives for each technology and period



Vision: Preliminary definition of the objectives to reach

Need for defining a vision on national objectives for installed capacity to:

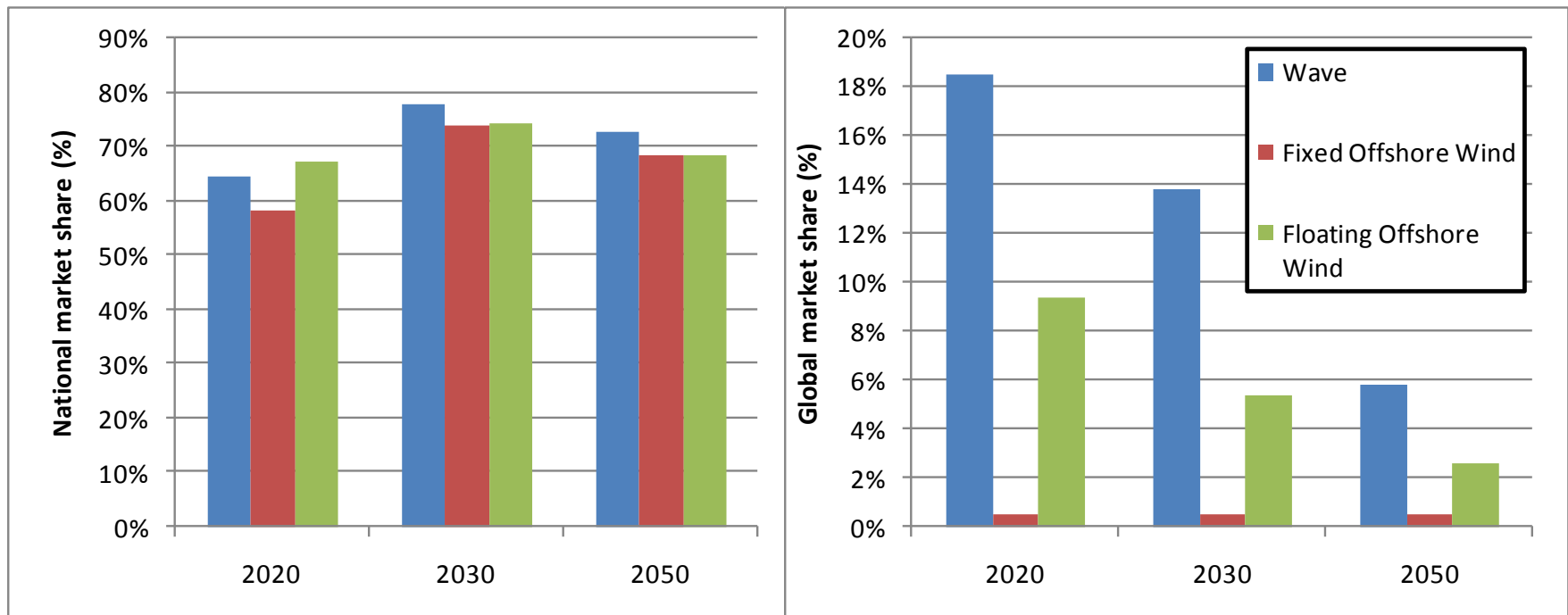
- Create an internal market to leverage the development of industry capacities
- Take advantage of the endogenous resources to reach the energetic and environmental goals



Vision: Preliminary definition of the objectives to reach

Need to define national objectives in terms of market share to:

- Assure the industry development on the different supply chain levels
- Export goods and services and to reduce our dependency on foreign technology
- Add-value and to create jobs at national level



3rd step: Roadmap Development

- **Roadmap Development** (25 to 150 people, 4 to 6 months)

- **Workshops with national specialists to identify most significant barriers to achieve the objectives and goals set on the **Vision** phase**

- **Definition of several actions (with a timetable) to mitigate the identified barriers**

These actions shall be grouped in larger areas: Technology and R&D, Resource & Geographic Characterization, Licensing, Planning, Finance and Market, Infrastructures and Supply Chain, Dissemination and Public Outreach

3rd step: Roadmap Development - the start

- **Workshop on March 2011 to simplify the Licensing Process of Marine Renewable Energies, with 56 entities, 26 from the public sector and 30 from the private**
- **Workshop on June 2011 to start the Marine Renewable Energies Roadmap 114 people from 75 entities (45 private and 30 public)**

Brainstorming on the following areas:

Licensing

Planning

Finance and Market

Information, Dissemination and Public Outreach

Infrastructures and Supply Chain

Resource, Technology and R&D

3rd step: Roadmap Development – next phases

- **Looking for funding**
- **FCT Roadmap**
- **New project: Technological Observatory**
Brainstorming on Infrastructures and Supply Chain
Industry sectors where Portugal shall compete globally

We expect your support

4th step: Roadmap Implementation and Revision

- **Roadmap Implementation and Revision (20 to 100 people, recurrently)**
 - **Implementation: to achieve the defined actions. The execution by the stakeholders that had participated on the roadmap set-up is a must.**
 - **Regular revisions of the roadmap and adaptation of its objectives and priorities shall be carried out by specialists on workshops**

**Obrigado
Thank you**

nuno@wave-energy-centre.org