



European Policy and
market initiatives
for Ocean Energy
development



OceanEnergy
Europe

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Ocean Energy – A growing sector in Europe



- Over 700m € private sector investment in the last 7 years
- 90m€ EU public support
- 13 MW EU capacity in 2013
- 1.5 GW of projects in planning pipelines
- 100 GW EU capacity potential by 2050
- 66 Million EU homes could be powered

OEE Vision for the Sector

2020

INNOVATION & FIRST ARRAYS

Financial Close on up to 10 Arrays of 3+ Devices

2025

COST CONFIDENCE

Economies of Scale – Arrays scaling up

2030

MARKET-ROLLOUT BEGINS

Commercially Available farms – tariffs reducing

2050

MAINSTREAM – up to 100GW
Renewable Energy Supplier

EU legislative support

Ocean Market Push and Pull:



Member State	Market pull	Technology push
U.K.	<ul style="list-style-type: none"> 20yr ROCs replaced by 15 yr CfD in 2017 CfD = €375/MWh until 2019 	<ul style="list-style-type: none"> MEAD, ETI, TSB, Crown Estate Scottish Government Grants and Equity investment (total c.€120m)
FRANCE	<ul style="list-style-type: none"> Approx. € 173/MWh 	<ul style="list-style-type: none"> Estb. FEM (€133m for 10yrs) De-risk technology upfront to ensure successful projects ADEME (€40m Investing for the Future)
	<ul style="list-style-type: none"> €200m Capital support for pilot projects 	
IRELAND	<ul style="list-style-type: none"> €260/MWh up to 30MW from 2016 	<ul style="list-style-type: none"> SEAI Prototype Dev. Fund (€10m) RE RD&D prgm (€3.5m) Ocean Energy Development Budget (€26.3m)
SPAIN	<ul style="list-style-type: none"> Moratorium suspending FIT for all renewables 	<ul style="list-style-type: none"> BIMEP (€20m invested 2007-2014) PLOCAN (€20m for construction 2007-2014; €16m for O&M between 2015 and 2021) Ocean Lider (€15m for R&D support, 2009-2013) EVE (€3m Demonstration support, 2014-2015)
DENMARK	<ul style="list-style-type: none"> Approx. € 80/MWh 	<ul style="list-style-type: none"> Energinet.dk manages funds Energy Agreement (£2.9m)
PORTUGAL	<ul style="list-style-type: none"> Scheme halted Previously €260/MWh decreasing with capacity 	<ul style="list-style-type: none"> FAI, QREN (not specific for W&T)

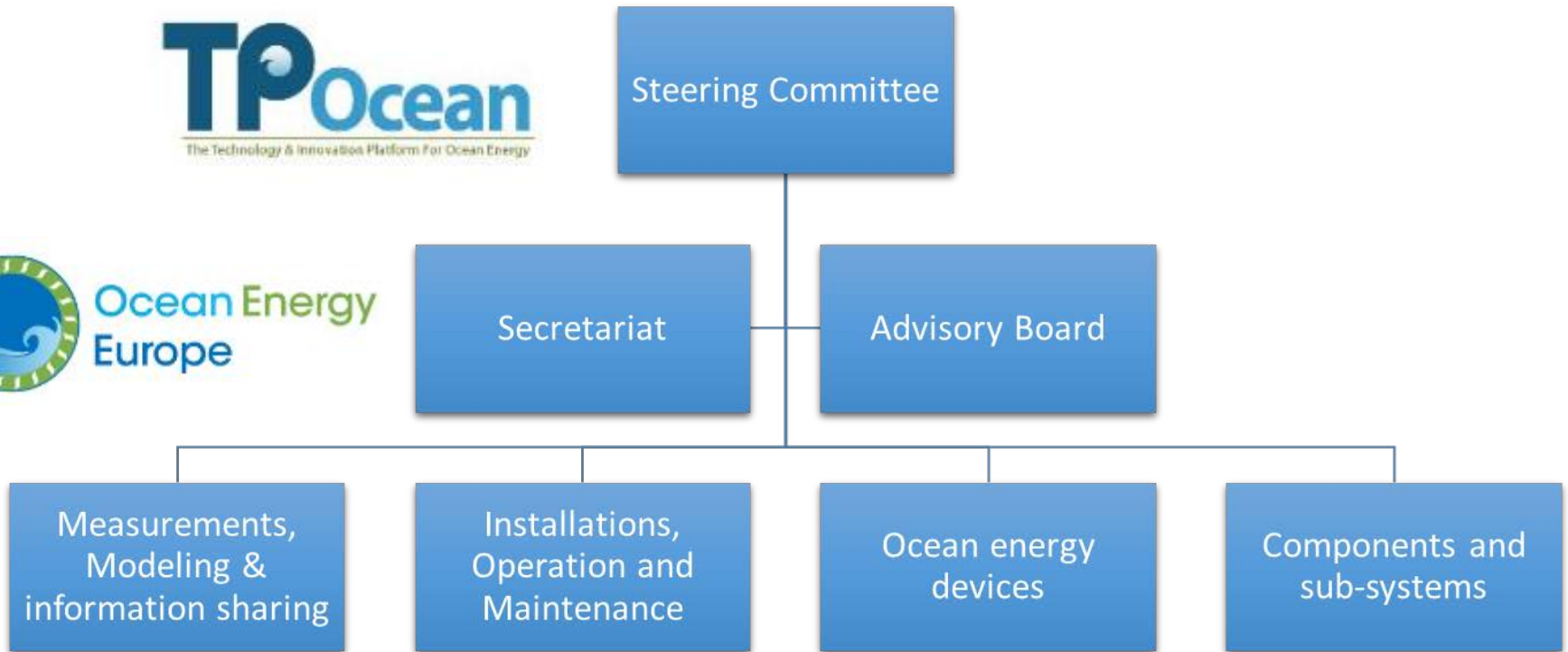
Source: SI Ocean Project

TP Ocean

Identifying research priorities to access research funding



4 Working Groups for TP Ocean



TP Ocean Mission & Objectives



- Develop a Strategic Research & Innovation Agenda
 - Consensus among ocean industry players
 - Define research priorities for the next 5-10 years
 - Develop a roadmap to commercialisation
- Regular stocktaking meetings for TP members, institutions and stakeholders
- Ad hoc reports (e.g. cost of energy)
- Can make use of existing research guiding initiatives
 - SI Ocean
 - SET-Plan Integrated Roadmap

Work in Progress – Prioritisation approach

WG Topics WG3 - Devices	Sector critical	CAPEX Cost reduction potential	Impact on reliability, technical risk and survi	Level of adaptation required	OPEX Cost reduction potential	Performance improvement	Array development and assessment	Accessibility, installability, and maintainabi	Trans-Sector Application
Ocean Energy Arrays Deployment	3	3	2	3	3	2	3	2	1
materials	2	3	3	2	1	2	1	3	2
Avoiding biofouling	1	1	2	1	2	1	1	1	2
blades including blade design & materials	1	2	3	3	2	3	1	2	1
manufacturing techniques	1	3	2	2	1	1	2	1	2
Testing infrastructure/facilities for testing at different TRL	2	2	3	3	2	3	1	3	1
Demonstration and validation of full scale or near full scal	3	2	3	3	3	2	2	3	1

TP Ocean – Past & Future Timeline



- Nov 2013 Political launch at OEE conference
- Mar 2014 Member recruitment – Over 130
- Jun 2014 First meeting as part of Ocean Energy Forum
- Jun 2014 Get formal recognition by the EC
- End 2014 Complete work on prioritisation of topics

- Jan 2015 Next Steering Committee Meeting

- Summer 2016 Strategic Research Agenda publication

Ocean Energy Forum

A political push for solutions to ocean energy challenges

'Ocean Energy Forum'

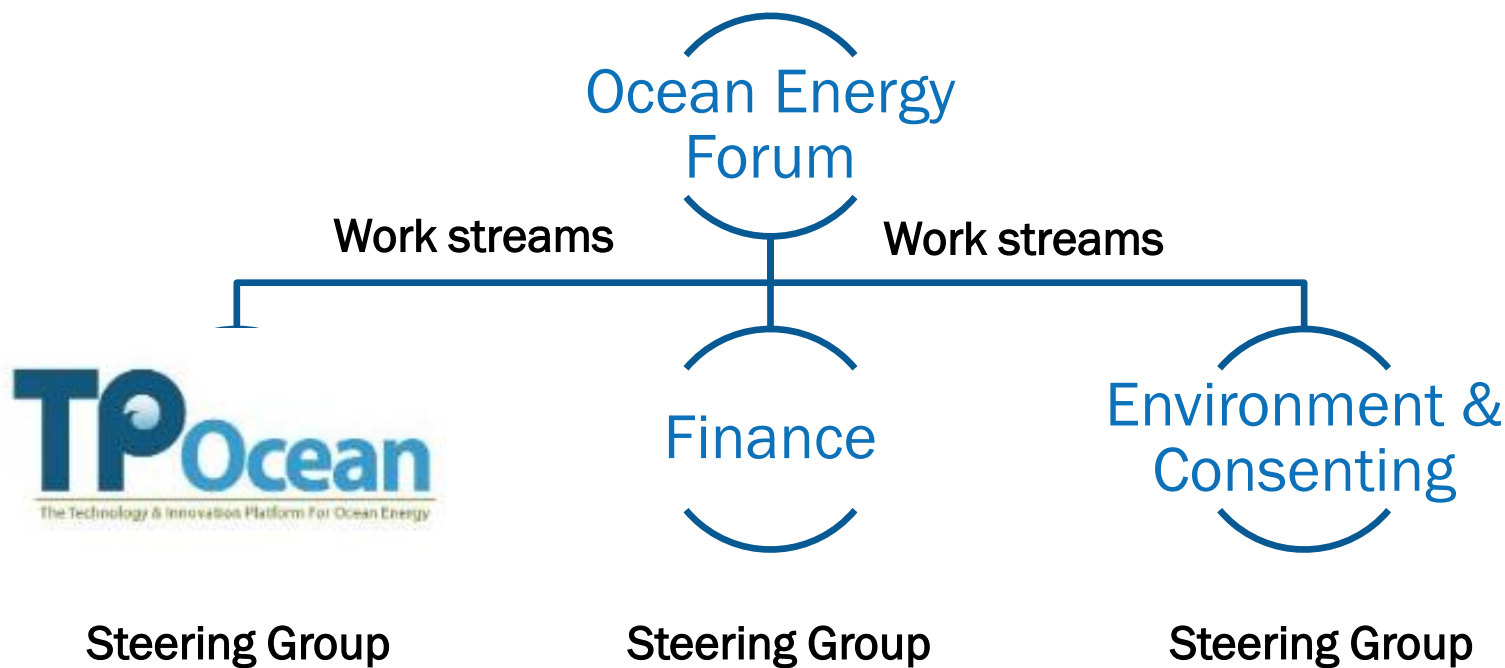
A roadmap for ocean energy



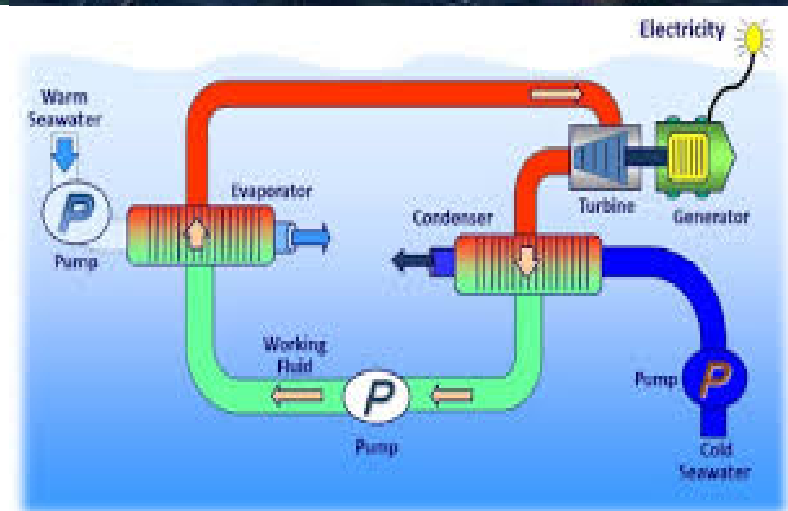
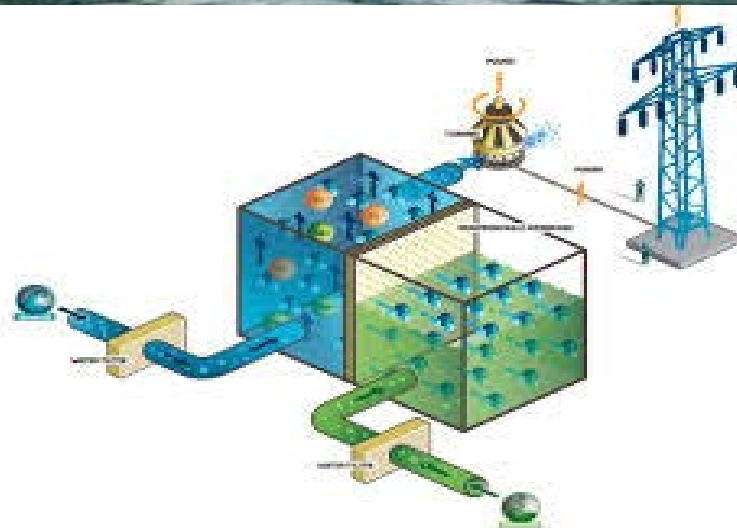
- Ocean Energy Forum - Understanding issues and find solutions for Ocean energy deployment
 - Launched by EC Communication on Ocean Energy
 - Stakeholders-led
 - Strong interactions with EC, EU Member States/Regions
 - Must be a decision organ, not a talking shop !
- 2014 actions
 - 3 work streams with each a Steering Committees
 - 3 meetings per work stream
 - 3 recommendations to Ministers on 1st October 2014
 - And a lot of ideas for removing barriers to development

The Ocean Energy Forum

Identifying issues & solutions



FORUM ROADMAP



NER 300 – Funding the demonstration stage

- First ever support system for demonstration projects
- 6 ocean energy projects awarded, for a total budget of 163M €
- EU Council just voted in favour of a continuation:
 - “NER 400”
 - RES, CCS, heavy industry
- 3rd call before 2020 is possible
 - Political push needed



Conclusions – Designing the next generation support systems

- The support system must fit the technology
 - Acknowledge the pilot farm stage
- A stable feed-in/ROC with long-term visibility
 - Immune to political changes
- Penetration targets on same timeframe
- A mix of accompanying policies
 - Grids/infrastructure support
 - A stable & high price of CO₂
 - Full market liberalisation
 - Fast track administrative permitting



SI Ocean Market Deployment Strategy



- Financial analysis:
 - Market Push and Pull: Capital and Revenue Support
 - De-risking Technology: Stimulating Investment in Innovation and Development
 1. Horizon 2020, National Schemes
 2. R&D Investments in Wave & Tidal = 10% offshore wind

