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- **☐** INDICTA & scope of the intervention
- Why do we need Marine Renewable Energy (MRE) ?
- □ Key points in MRE & perspectives
- □ Focus on 2 major economic issues
- □ Some strategic & innovative levers to respond to these economic issues
 - Public finance
 - Crowdfunding
 - New mechanisms & breakthrough in economic models
- ANNEX A little more about INDICTA





INDICTA and MRE

A convergence of energy and maritime economies



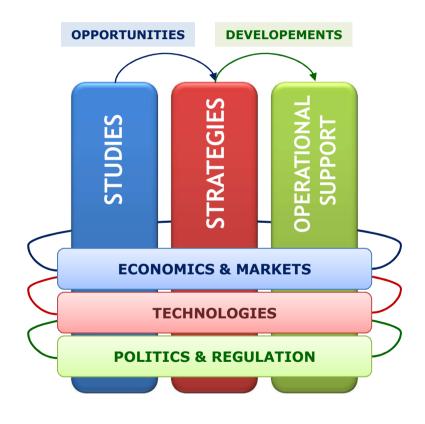
STRATEGY CONSULTING AND OPERATIONAL SUPPORT

Over 6 years of analysis on issues of MRE development in France, Europe and worldwide ...

... & more globally on {energy; climate} issues

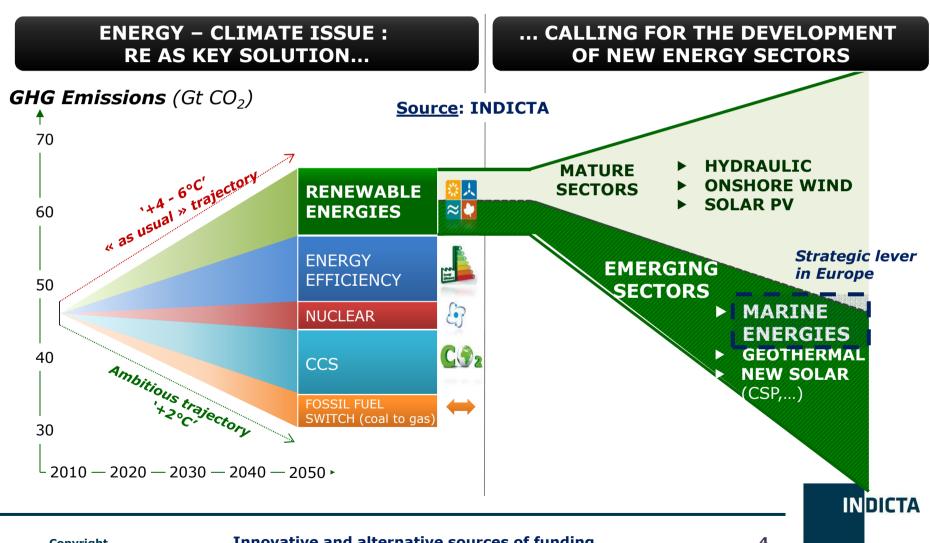
OUR CUSTOMERS:

- Industrials and major contractors
- Small/medium companies & start-ups
- Institutional players (clusters, public departments, regions, ...)





From energy and climate issues ... to the potential response of MRE





Some of key issues we've covered since 2007 in MRE's markets

INDUSTRIALI-SATION

Location of production facilities and industrial optimisation master plans

Geography of potentiels

Key market drivers -Prospectives Subcontracting & partnerships

PROJECTS ACCEPTABILITY

Environmental impacts, evaluation of local socioeconomic benefits & coactivites

Stakeholders & co-activites

Job creation potential

Promotion & valorisation of skills

RISKS MANAGEMENT

Visibility on Levelised Cost of Energy (LCoE) by mastering the marine environment throughout the project lifecycle

Engineering & design

Construction & installation

Operations & maintenance

FINANCIAL ENGINEERING

Innovative business models and support mechanisms for the emergence of commercial markets

Public support (Feed-In-Tariffs, testing sites,...) Private financing (Banks,...)

Crowdfunding & radical innovations





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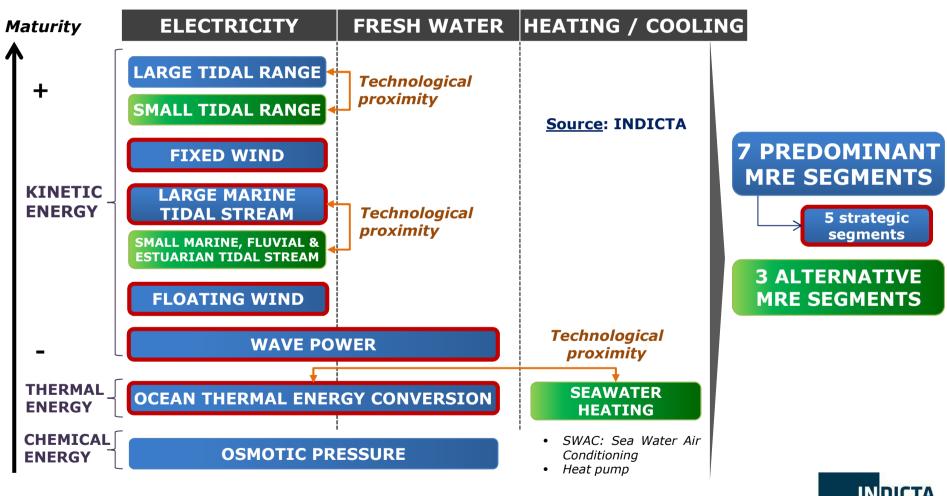


- ☐ Key points in MRE & perspectives
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A multitude of MRE segments with a large scope of energy applications

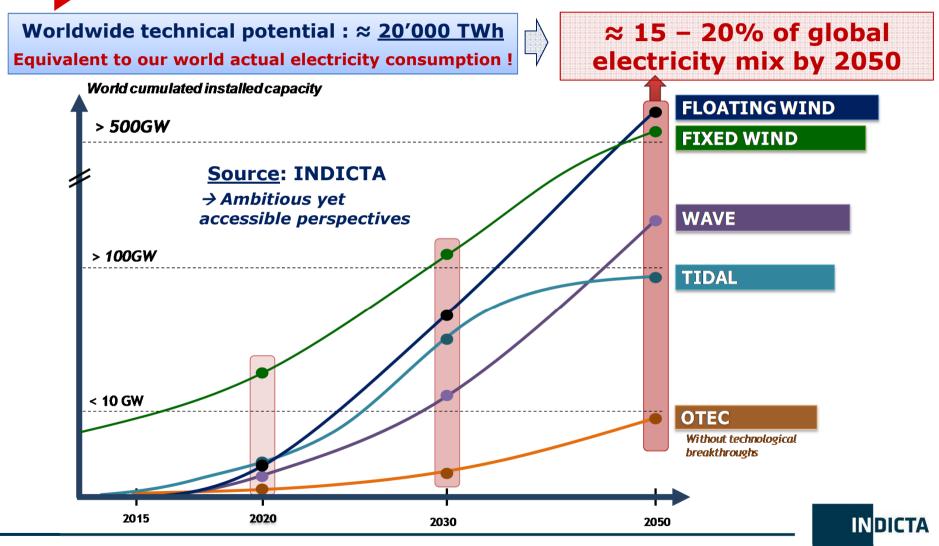
FIELD OF APPLICATION





INDICTA's voluntarist scenario for the 5 strategic MRE segments

A major contribution potential to address the {energy; climate} equation





First economic issue: securing the huge financial needs

Several dozen of G€ to achieve CAPEX before 2020 in Europe only

- □ Around 15 private banks finance ≈80% of project's CAPEX
- □ Tickets between 100 & 200 M€

2020 perspectives:

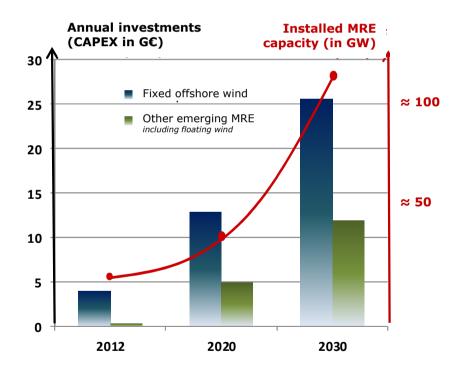
- → 1G€ / bank / year
- → From 5 to 10 tickets / year

2030 perspectives:

- → 2G€ / bank / year
- → From 10 to 20 tickets / year

Worldwide prospective

Source: INDICTA

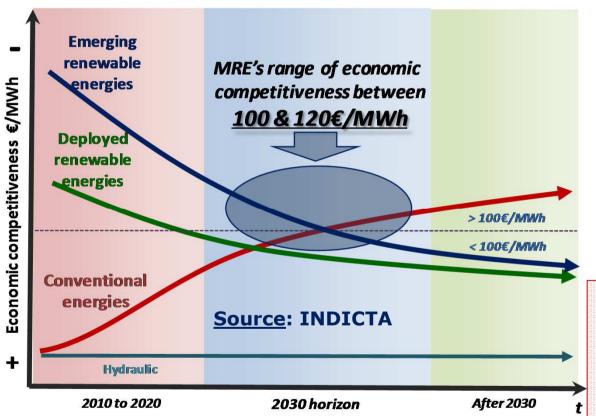






An other key issue: reinforcing economic competitiveness & social acceptabilty

From 170 to 350 €/MWh today, towards a target cost range between 100 to 120 €/MWh around 2030 (except OTEC)



CRITICAL NEEDS IN:

*Planification

- ▶ Visibility on local industrial load
- ► Economies of scale and export potential

❖New marine operations

- **▶** Service models
- ► Industrial logistics & ports

♦Public support

- ▶ **R&D** & technological innovation
- ► Smart grids, energy storage,...

Financial engineering & innovations

- ▶ Project **risks** management
- New economic models (public finance, crowdfunding,...) & breakthrough innovations with other markets (electric mobility,...)





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- **☐** Focus on 2 major economic issues





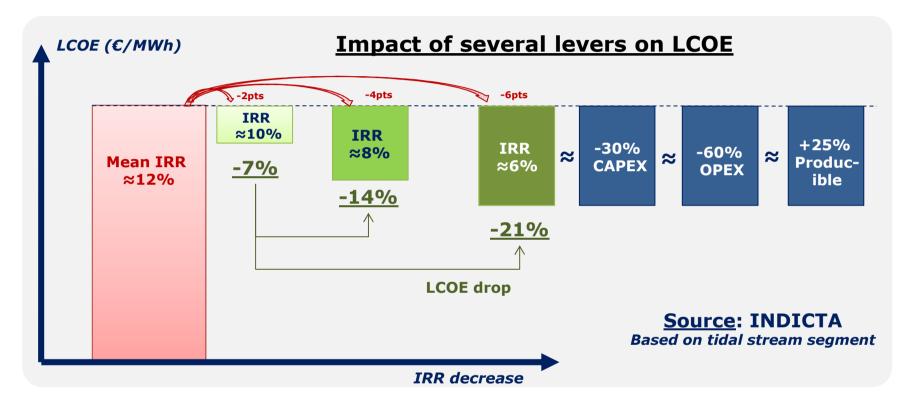
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Public finance & Internal Rate of Return (IRR)

An immediate and effective lever to drop LCOE

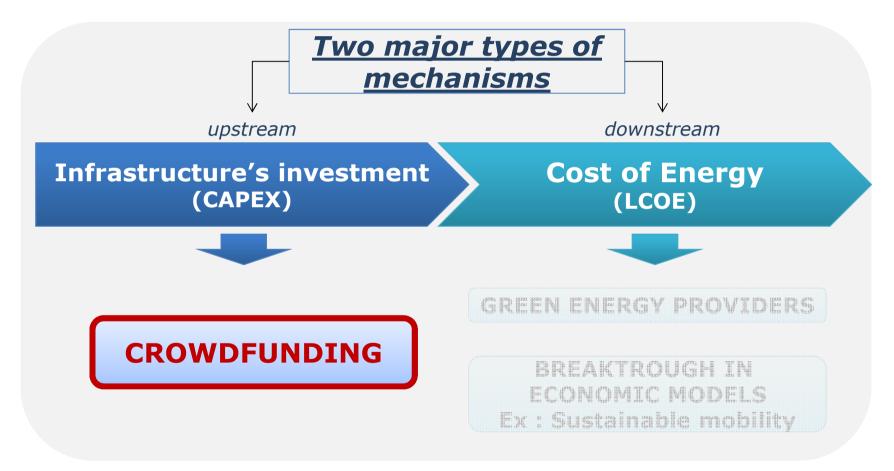


The use of public banks for CAPEX funding could help decrease rapidly and significantly usual IRR rate



Crowdfunding & new models

A wide range of innovations throughout the value chain to improve social acceptability & economic attractiveness of MRE







Crowdfunding, a multi-benefit tool



- A new source of project funding (vs. funds availability issues)
- A social acceptability improver (vs. NIMBY syndrome)
 - An interesting source of income for people (vs. "traditional" investments)

Starting point

- Several thousands of people
- Investing hundreds to thousands of € each



Able to collect up to tens of M€

Intermediate





Sources of payback and income

Direct financial income

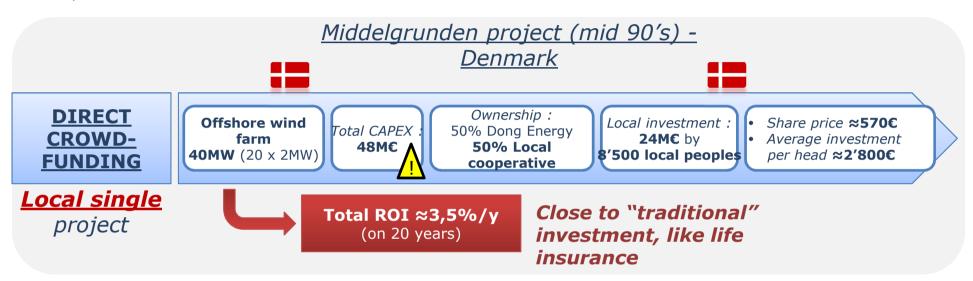
« free » kWh

Tax rebate





Key example on direct crowdfunding



PROS

Great improvement on social acceptability due to local structure

CONS

 Limited financing capacity due to a restrained number of funders



Favorable to MRE due to specific & large acceptability issues

Unfavorable to certain MRE due to **higher CAPEX** (>2G€ with share price > 100M€)





Key example on indirect crowdfunding



	PROS	CONS
•	High financing capacity due to a national scope of funders	 Limited improvement on social acceptability due to a national platform

Favorable to MRE with higher CAPEX

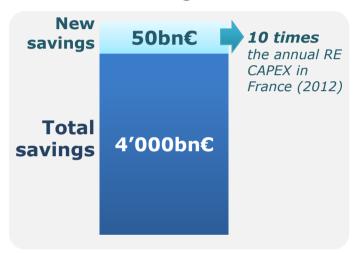
Less lever on MRE acceptability issues



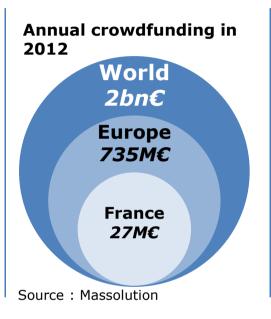


Crowdfunding, a big potential tool for financing MRE's CAPEX

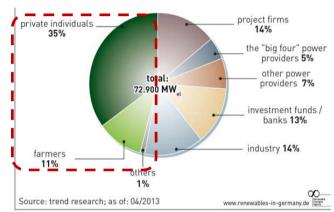
French savings in 2012



Source : Observatoire des marché de l'épargne et du crédit



Almost **half** of Germany's RE capacity currently owned by citizens and farmers (≈33,5GW)



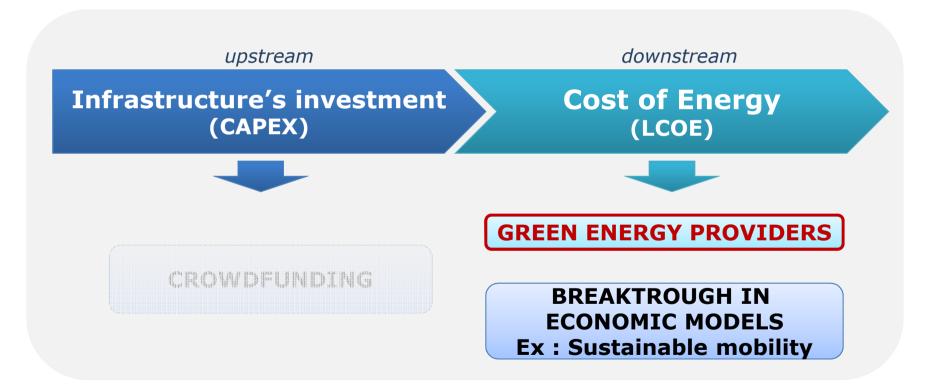
Objective: find the good balance between local/national scope mechanisms to satisfy levels of CAPEX of projects





Innovations on downstream mechanisms

Two more major types of downstream mechanisms







Green energy providers, from virtual to effective mechanisms





A consumers involvement and then a better awareness of costs of energy

Starting point

People:

- concerned about energy and climate issues
- willing to pay more to consume 100% guaranteed renewable energy

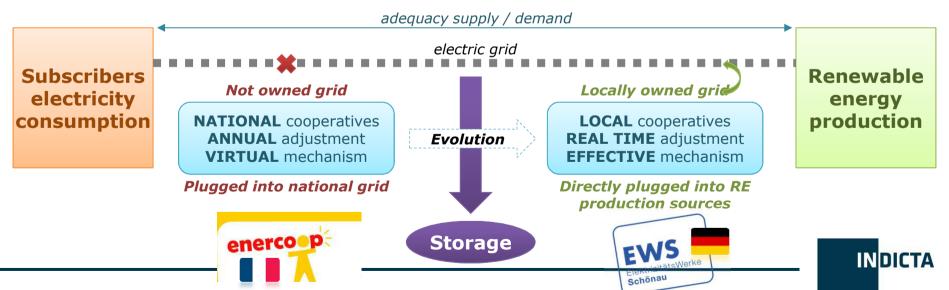
Intermediate



a) NATIONAL cooperatives

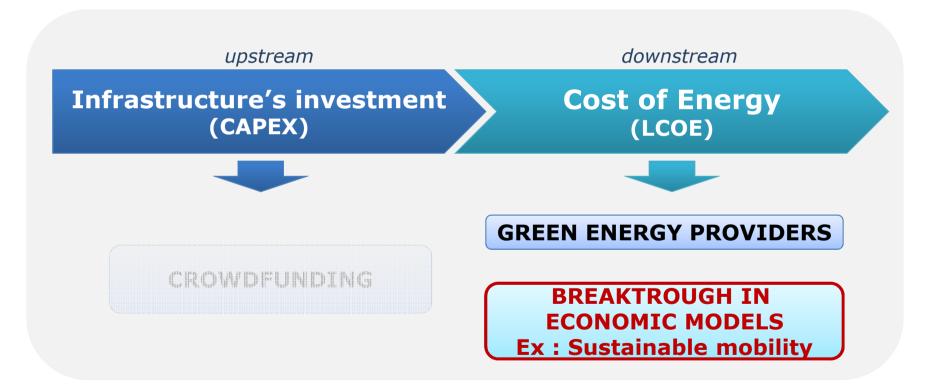


b) **LOCAL cooperatives**



Innovations on downstream mechanisms

Two more major types of downstream mechanisms

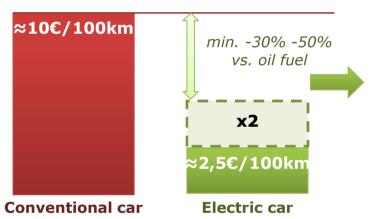




Sustainable mobility, a breakthrough model







Innovative offers, **still competitive with conventional car**, where « green drivers » can **pay more to fuel their electric cars** in order to develop and invest in :

- RE energy capacity
- Electric cars industry

Coupling local developments

INDICTA



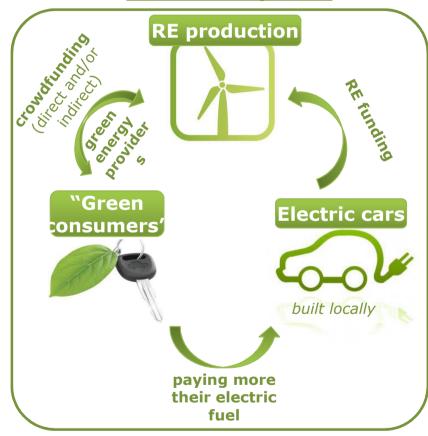
Coupling the development for RE energy and electric cars could support the financing challenge of MRE and maximize the lever on social acceptability



CONCLUSION

Green ecosystem: towards a virtuous circle?

Green ecosystem



Creation of a **green ecosystem** involving green consumers funding RE by:

- investing in RE production capacity with **crowdfunding** (direct and/or indirect mechanisms)
- green energy providers
- electric cars and more generally innovative offers
- → with local socioeconomic benefits
- → & economic attractiveness



THANK YOU FOR YOUR ATTENTION

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"A chaque fois que nous nous sommes tournés vers l'océan, notre région a connu de longues périodes de prospérité."

"Every time we turned towards the ocean, our region has experienced long periods of prosperity."

Alexis GOUVERNNEC (1936 – 2007) Brittany - FRANCE



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ANNEX – A little more about INDICTA





AN INDEPENDANT STRATEGIC CONSULTANCY AT THE CONVERGENCE OF 3 ISSUES: { ECONOMICS ; TECHNOLOGIES ; POLITICS }

de l'idée au marché

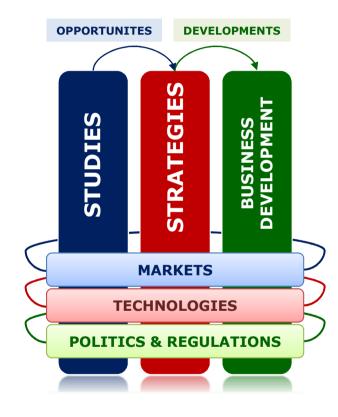
POSITIONING

- Consulting firm specialised in economic studies, strategic consulting & business development
- Specialised in transforming commercial markets and emerging markets, spécialisée dans les filières structurées en transformation et les marchés émergents with high technological and innovation dimensions
- In complex and international environments

ROLE

Support strategic growth & opportunity detection, implement development strategies & projetcs

- ▶ Understand & anticipate the issue in the business environment
- Define & document strategies to establish roadmaps
- Support the implementation of operational projects and business development actions







A RECOGNISED EXPERIENCE ON 3 CLOSELY RELATED SECTORS: ENERGY; RESOURCES; CLEANTECHS

FIELDS OF EXPERTISE



SECTOR



- **✓ MARINE ENERGIES**
- ✓ CONVENTIONAL ENERGIES
- **✓ ENERGY INFRASTRUCTURES**





- ✓ FOSSIL RESOURCES

 (INC. DEEPSHORE INNOVATIONS)
- ✓ MINING RESOURCES (WATER, ONSHORE & SEABED MINING)



- ✓ CLIMATE ECONOMICS
- ✓ CARBON ISSUES & CCS
- **✓ NEW BUSINESS MODELS**
- ✓ INNOVATIVE PROPULSION





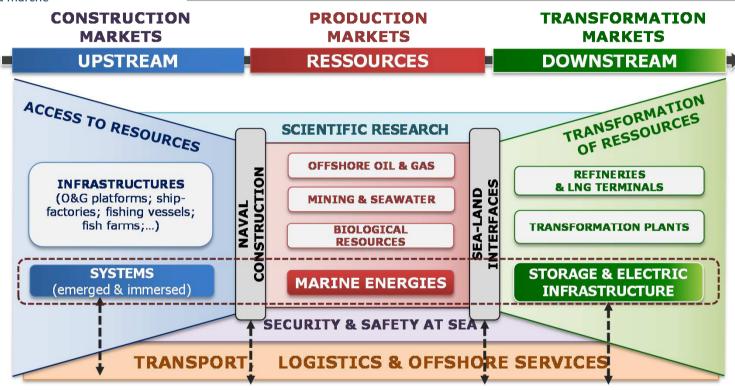
OUR CONSULTING SERVICES 3 OFFER LEVELS DEPENDING ON THE SITUATION OF YOUR NEEDS

TRANSFORM: ANTICIPATE: GROW: STUDIES & FORECASTS PROJECTS IMPLEMENTATION **STUDIES & ANALYSES** SITUATION ASSESSMENT **PREPARATION MARKETS** PROJECTS ACTORS FIELDS OF CAPACITIES **PRODUCTS & MARKETING SERVICES OFFERS STRATEGY INTEREST AUDITING FORECASTS & OPPORTUNITIES ACCOMPAGNEMENT ECONOMIC** STRATEGIES ELABORATION **PROSPECTIVE** MODELLING **OPERATIONNEL** STRATEGIC INTERNATIONAL **DECISION INDUSTRIAL TECHNOLOGICAL** WORKSHOPS **OPTIONS** MAKING **DEVELOPMENT** EXPERTISE **ISSUES OPPORTUNITIES STRATEGIES BUSINESS QUALIFICATION** & ROADMAPS **DEVELOPMENT**



IN DICTA

THE WORLD MARITIME ECONOMY GROWTH AND THE MRE AT THE HEART OF OUR EXPERTISE



- Emerging MRE markets with high growth potential
- MRE markets at the crossroads of marine issues:
 - Interactions with marine transport and logistics activities, offshore services, scientific research, oceanography,...
 - Synergies and mutualisations are possible with aquaculture, algae culture, desalinisation,...





ENABLING STRATEGIC DECISION-MAKING AND SUPPORTING BUSINESS DEVELOPMENT FOR LARGE CORPORATIONS, SME's, START-UPS & INSTITUTIONAL ACTORS IN MRE MARKETS



- More than 250 MRE technologies analyzed at their various stages of maturity, covering all MRE segments
- Evaluation of MRE's contribution potential to the future world energy mix
- Market forecasts to 2020 2030 2050 : key market drivers and growth dynamics
- Levelised Cost of Energy (LCoE) modelling for each technology segment (€/MWh)
- Market penetration and growth strategies (Business Plans, roadmaps, acquisitions,...)
- > **Socio-economic impacts** of projects : job creation potential in France and Europe,...
- Structuring of integrated industrial sectors with strong export potential





CONTACT US, SO WE CAN GO FURTHER TOGETHER ...

de l'idée au marché



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