MEGAVIND

Strategic recommendations for research, development and demonstration of wind energy

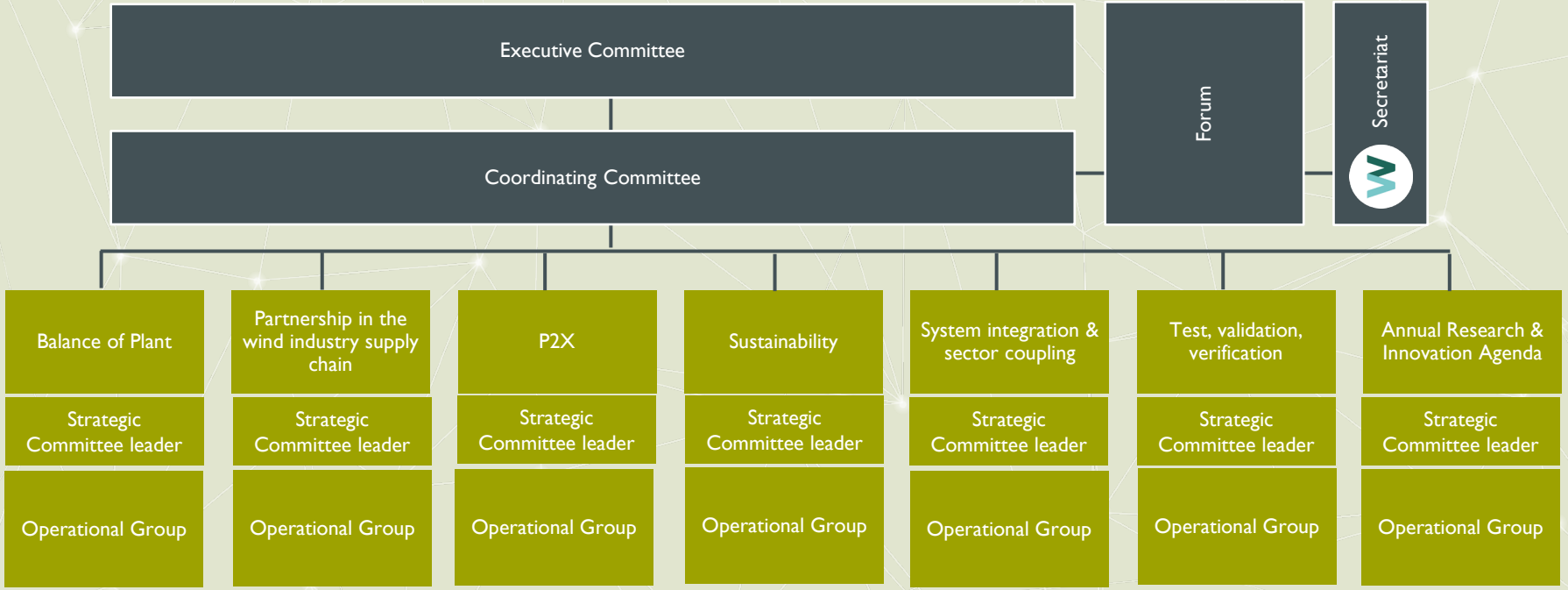
A NEW MEGAVIND

Annual Research and Innovation Agenda 2021

Partnership in the Danish wind industry Supply Chain

Test, verification and validation

A NEW MEGAVIND



EXECUTIVE COMMITTEE

Ørsted

LM WIND POWER
a GE Renewable Energy business

SIEMENS Gamesa

DFFV

ØGLÆND SYSTEM

Vestas

VATTENFALL

wind denmark

COORDINATING COMMITTEE

Ørsted

LM WIND POWER
a GE Renewable Energy business

SIEMENS Gamesa

ØGLÆND SYSTEM

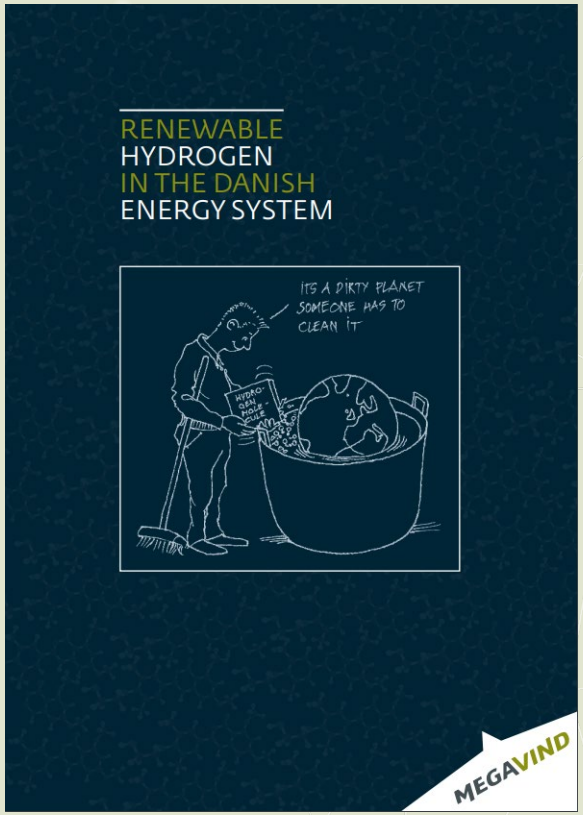
Vestas

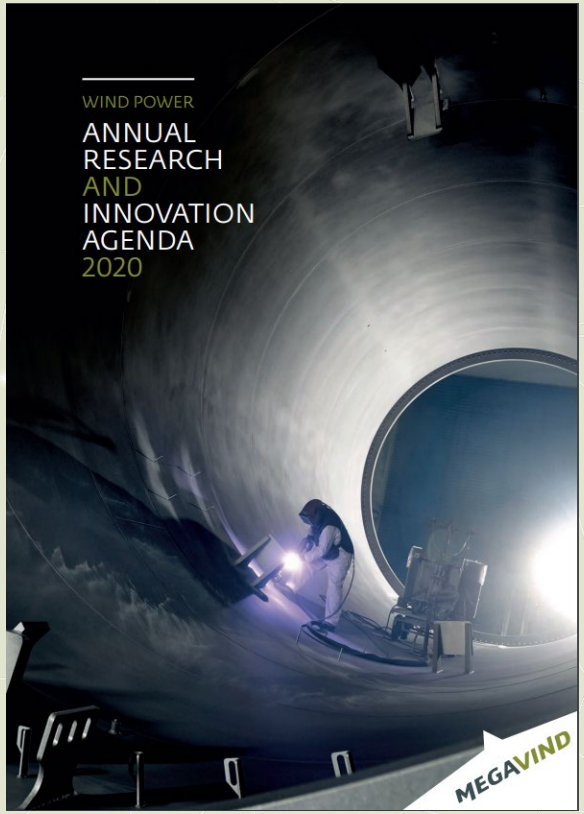
VATTENFALL

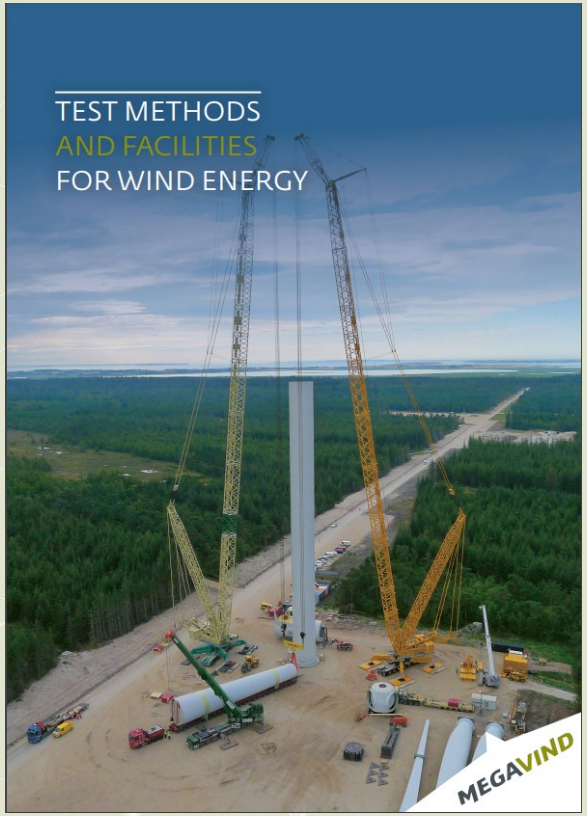
DFFV

FRITZ SCHUR ENERGY

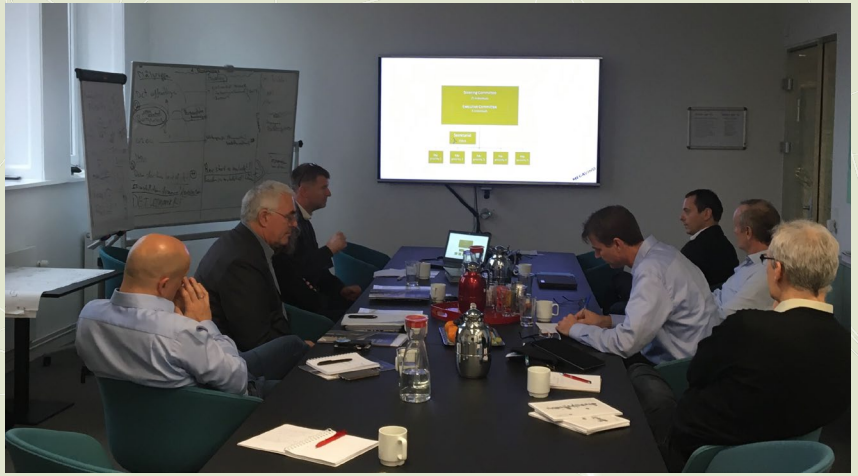
wind denmark







EXAMPLES OF MEGAVIND DELIVERABLES



DIALOGUE WITH STAKEHOLDERS WITHIN ENERGY

- Innovation Fund Denmark
- EUDP
- Energy Cluster Denmark
- Danish parliament
- WindEurope ETIPWind
- Green Lab Skive
- Etc.

ANNUAL RESEARCH AND INNOVATION AGENDA 2021

MEGATRENDS

Energy Systems Transformation towards zero carbon economy is influencing all aspects of society. From regulations to finance, consumer behavior to innovation investments, sector coupling and political frameworks.

Industrialisation 2030 through digitalisation, modularised manufacturing and innovations in the supply chain will drive competitiveness across the value chain from first design to decommissioning.

Globalisation of markets and companies. Companies, including subcontractors, must adapt business models to scale, to cater for a global supply chain and adapt to demands for local content.

Financially responsible markets. Financial markets are altering the risk profile of wind power, and the potential for new business models raises issues about market design and regulations to balance risk and benefits for both investors and consumers.

Social and environmental sustainability is a key megatrend for the wind energy and renewable technologies industries more generally. Recycling of turbine blades, sustainably circular wind farms and a new dialogue around the co-existence of renewable energy sources with ecosystems and communities are called for.

A PUBLIC-PRIVATE PARTNERSHIP FOR THE GREEN TRANSITION

MEGAVIND

R&D OPPORTUNITIES & CHALLENGES

Delivering gigawatts of wind power to the green transition
Competences and framework for the green transition

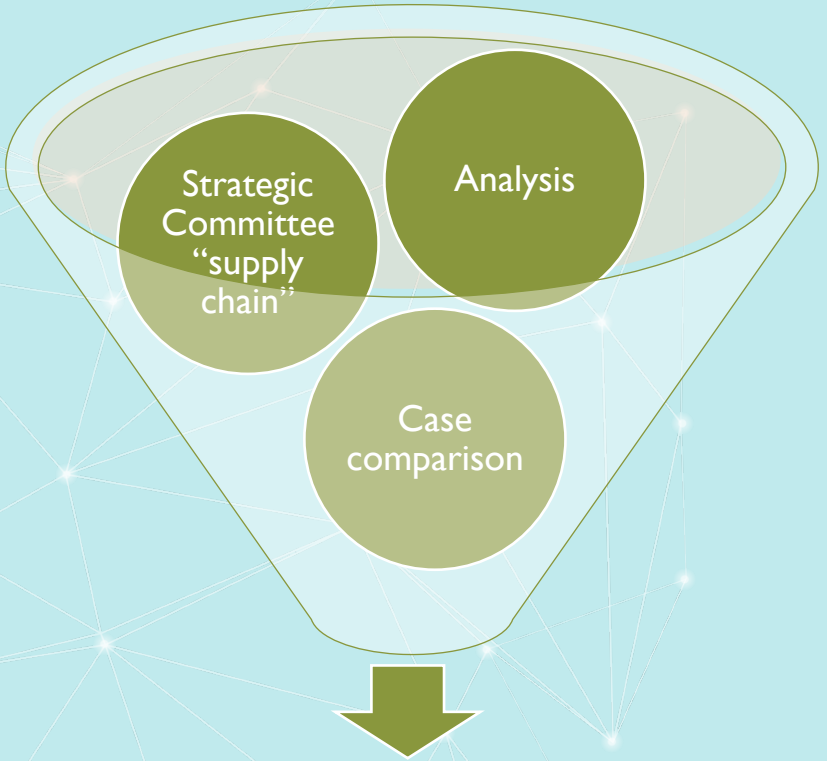
Upscaling
Upscaling and industrialisation to achieve cost reductions

System integration and sector coupling
Increased value of wind energy for companies and society through sector coupling

Sustainability
Technology's co-existence with people and nature

PARTNERSHIP IN THE DANISH WIND INDUSTRY SUPPLY CHAIN

Strategic Committee – Partnership in the wind industry supply chain		
Name	Place of employment	Note
Claus Vilhelmsen	Øglænd System	ExCo-sponsor
Torben Jørgensen	Fritz Schur Energy	Chairperson
Ole Teglgaard	Resolux	Operational Group
Lars Jensen	DAFA	Operational Group
Erik Gammelgaard	East Metal	Operational Group
Peter Møller	Weissenborn	Operational Group
Mogens Nyborg Pedersen	Siemens Gamesa Renewable Energy	Operational Group
Heidi Lindgaard-Brok	Vestas	Operational Group
Tom Weiling	Ymer	Operational Group



More knowledge on how to collaborate in the future

REPORT 2020 → ONGOING DIALOUGE IN 2021

21.04.15

21.05.10

21.05.25

21.06.14

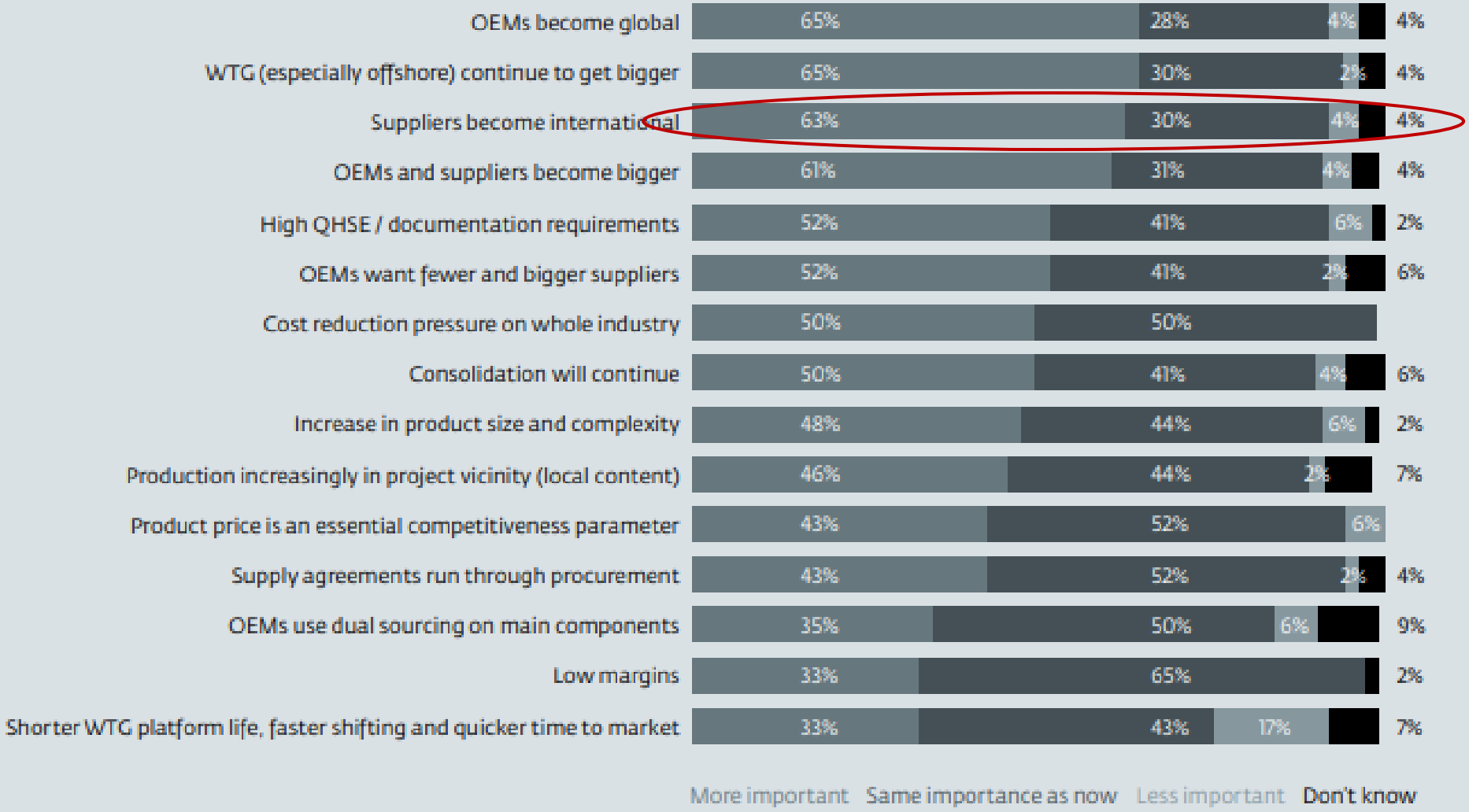
21.06.29

21.09.13

21.09.27

Market trends – Future outlook

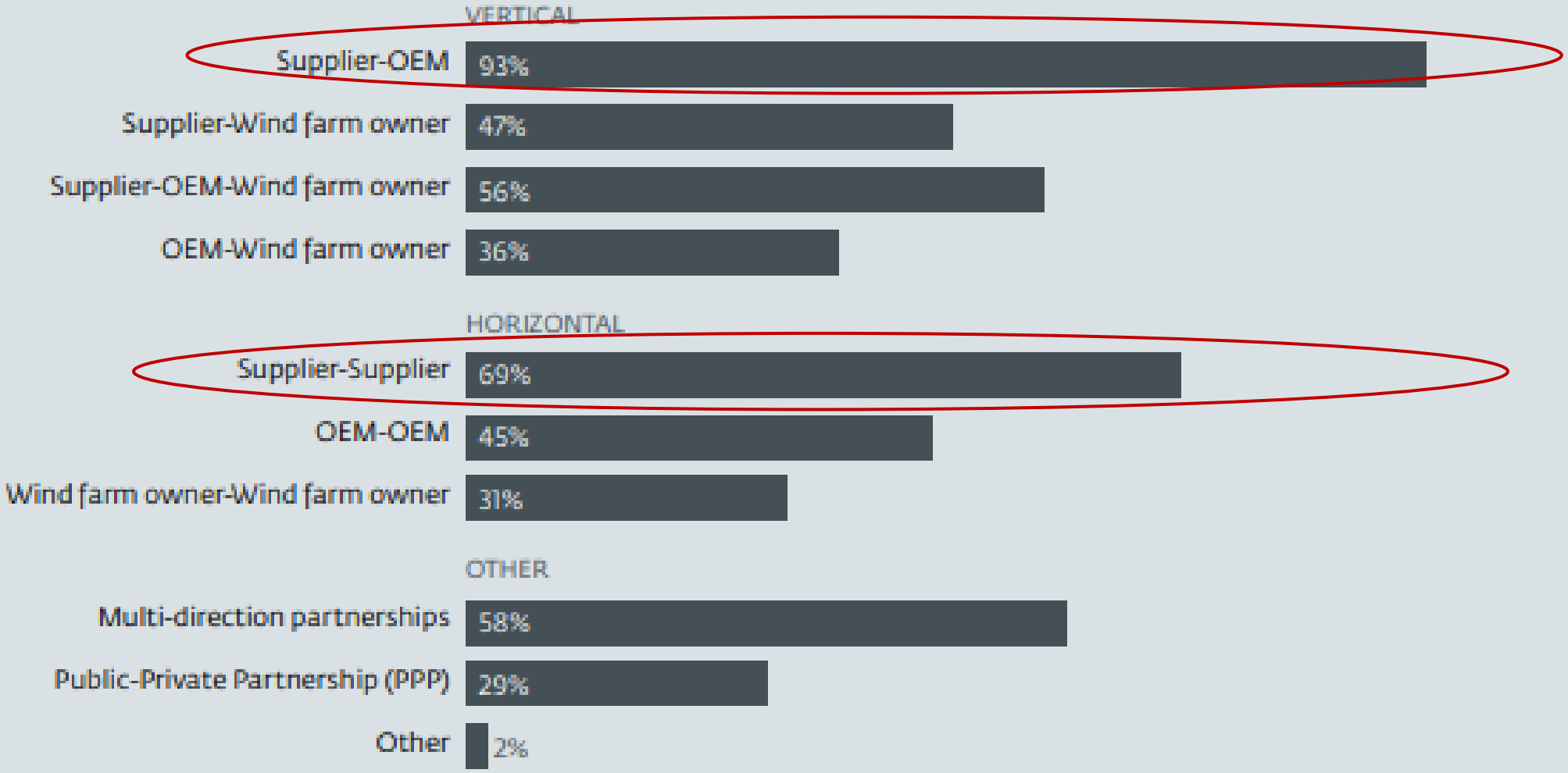
Q3.2 How significant do you think each of the listed market trends will be within 3 years?



Q3.3

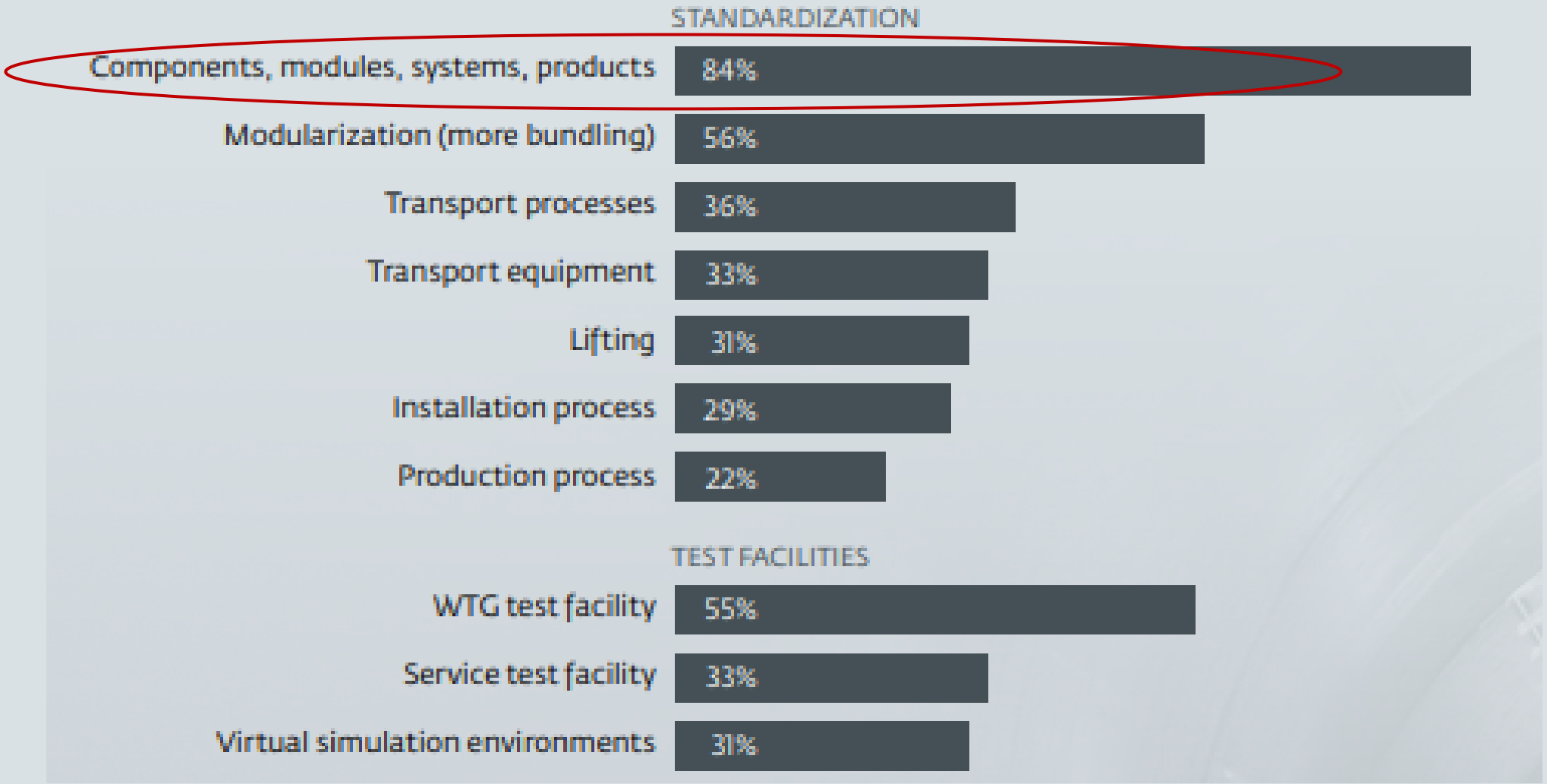
What do you think will be the 3 most significant market trends within the next 3 years (important for partnerships) from the list above?

Q2.6 Which of the following partnership counterparty combinations have potential for value creation for companies in the wind sector?



Q4.1

Which of the following opportunity areas do you believe are suitable to develop through partnerships?



Overview of recommendations

Recommendations for Wind Denmark	Recommendations for Megavind	Recommendations for OEMs and suppliers	Recommendations for Energy Cluster Denmark
R1 Execute communication plan		R10 OEMs and suppliers to jointly drive further standardization of components, interfaces, processes and equipment incl. modularization	
R2 Ensure continuous follow-up on key partnership KPIs from this survey e.g. annually	R5 Leverage this report to produce further operational strategies on selected partnership areas as well as defining related RD&D projects	R11 OEMs keep closer to more suppliers to assist in pro-active transition and product development to match WTG roadmaps	R16 Create better transparency about access to risk capital and / funding for development projects
R3 Initiate partnership success information campaign – to keep momentum – and integrate with current initiatives e.g. newsletter or "weekly guest"	R6 Initiate a structural effort to form new R&D / technical networks across the sector	R12 OEMs to further transition from transactional customer-supplier mindset to partnership mindset	R17 Create sector fund application task force to assist the supply chain in submitting high quality applications for development projects
R4 Strengthen current sales networks across the sector	R7 Initiate and facilitate technology implementation on digitalization and robotics: Hosting a series of inspirational events	R13 OEMs start engaging in more long-term strategic supplier partnerships and commit to larger volumes	
	R8 Initiate work to seek inspiration about how adjacent industries conduct partnerships and cooperate	R14 Suppliers offer their products as much as possible as a solution to become better partners to OEMs	
	Recommendations to public funding institutions e.g. EUDP and Innovationsfonden	R15 Suppliers cooperate around combining product portfolios and product aggregation	
	R9 Broaden scope of Danish test facilities to strengthen testing partnerships and thereby joint product development		

Extract of recommendations from the report

12

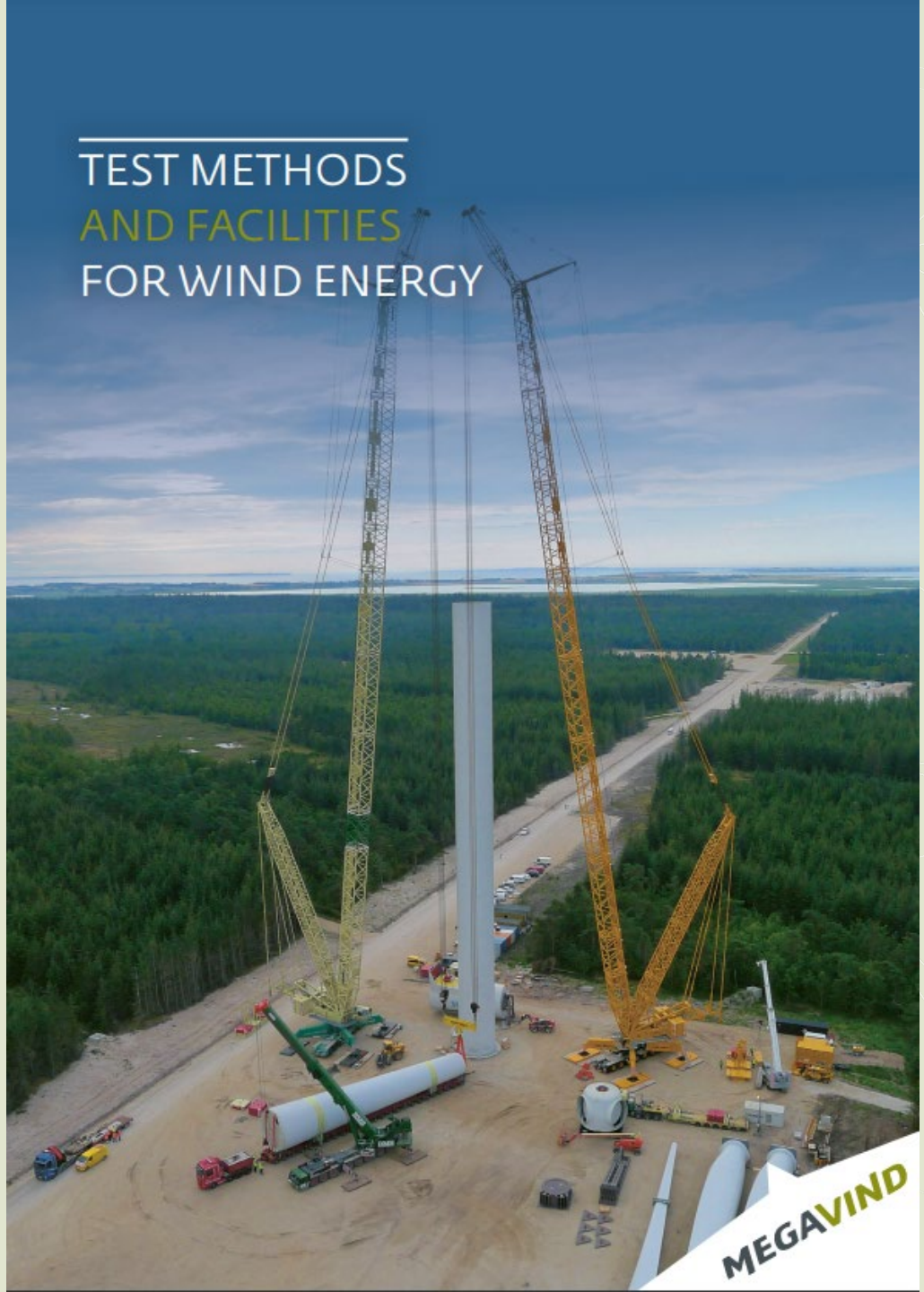
OEMs and suppliers to further transition from transactional customer-supplier mindset to partnership mindset

Extract of recommendations from the report

Suppliers engage in more horizontal cooperation around combining product portfolios and product aggregation

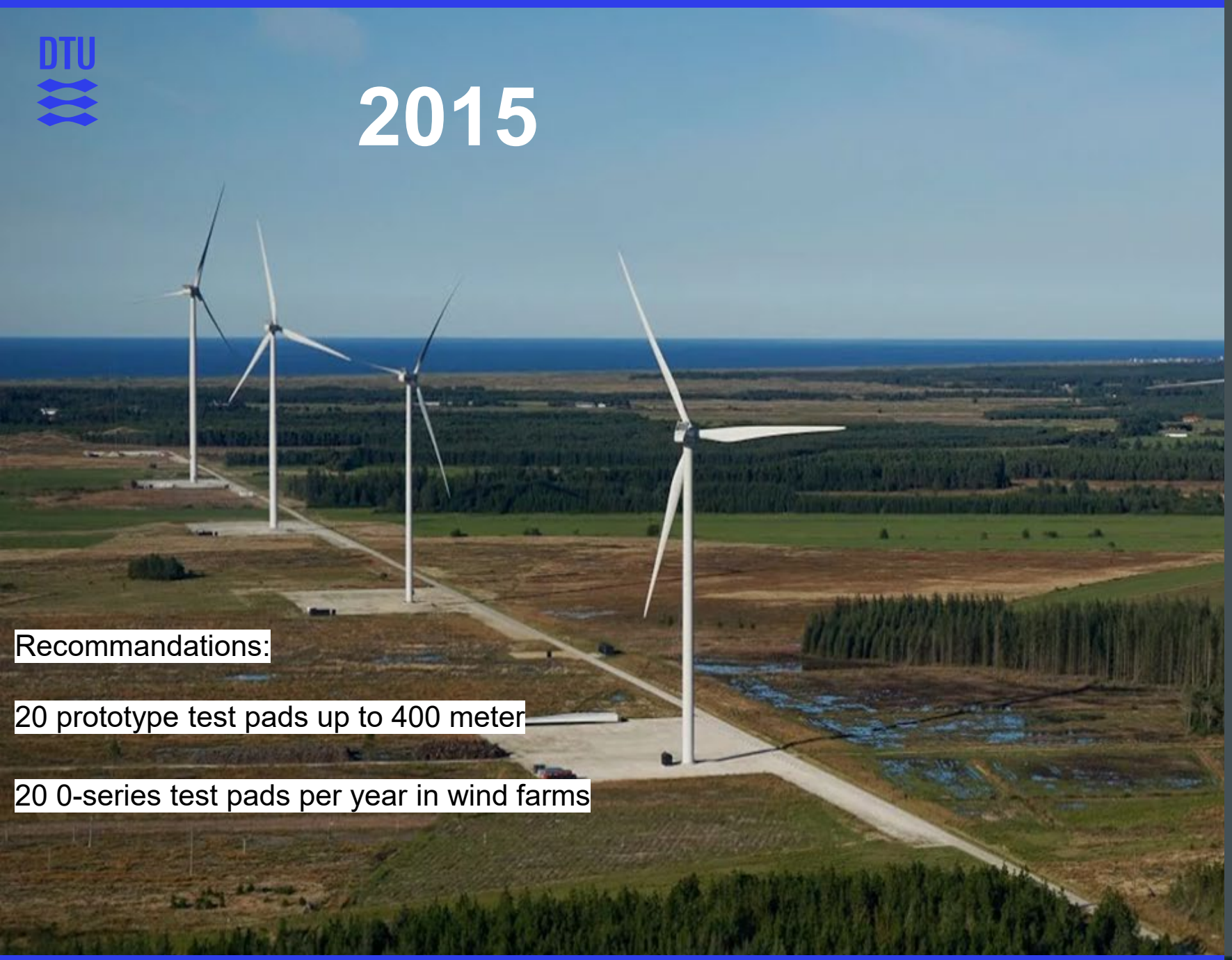
Learnings – so far:

- Long and ongoing dialog about the definitions of "Partnership"
- Case studies:
  1. Is there a common approach in the cases studied so far?
  2. We need more cases to analyze
- Join our group – be active



TEST METHODS AND FACILITIES FOR WIND ENERGY

2015



Recommandations:

20 prototype test pads up to 400 meter

20 0-series test pads per year in wind farms

Høvsøre

TEST PADS: 7

HEIGHT LIMITATION: 200 m

GRID INFRASTRUCTURE

- Plan to increase voltage levels from 10 kV to 33 kV.

Østerild

TEST PADS: 9

HEIGHT LIMITATION: 5 pads up to 330 m, 4 pads up to 250 m.

GRID INFRASTRUCTURE

- Plan to increase voltage levels from 33 kV to 66 kV.

The test centres are owned and operated by DTU except for 4 pads at Østerild where Vestas Wind Systems and Siemens Gamesa Renewable Energy own and operate 2 pads each.

Component test infrastructures

- Full scale blade test facilities
- Blade segment test facilities
- Segmented blade test facilities

- Nacelle test facilities 33/66KV

- More focus on test and verification competances

BLADE BEARING TEST FACILITY.
PHOTO: SIEMENS GAMESA RENEWABLE ENERGY

FILTER INSTALLATIONS AT THE GRID EMULATOR
PART OF LORC´S NACELLE TEST FACILITIES.
PHOTO: LORC

THANK YOU

MORE INFORMATION: HTTPS://MEGAVIND.WINDDENMARK.DK/

SECRETARIAT: wind denmark

MEGAVIND