

NKT PHOTONICS

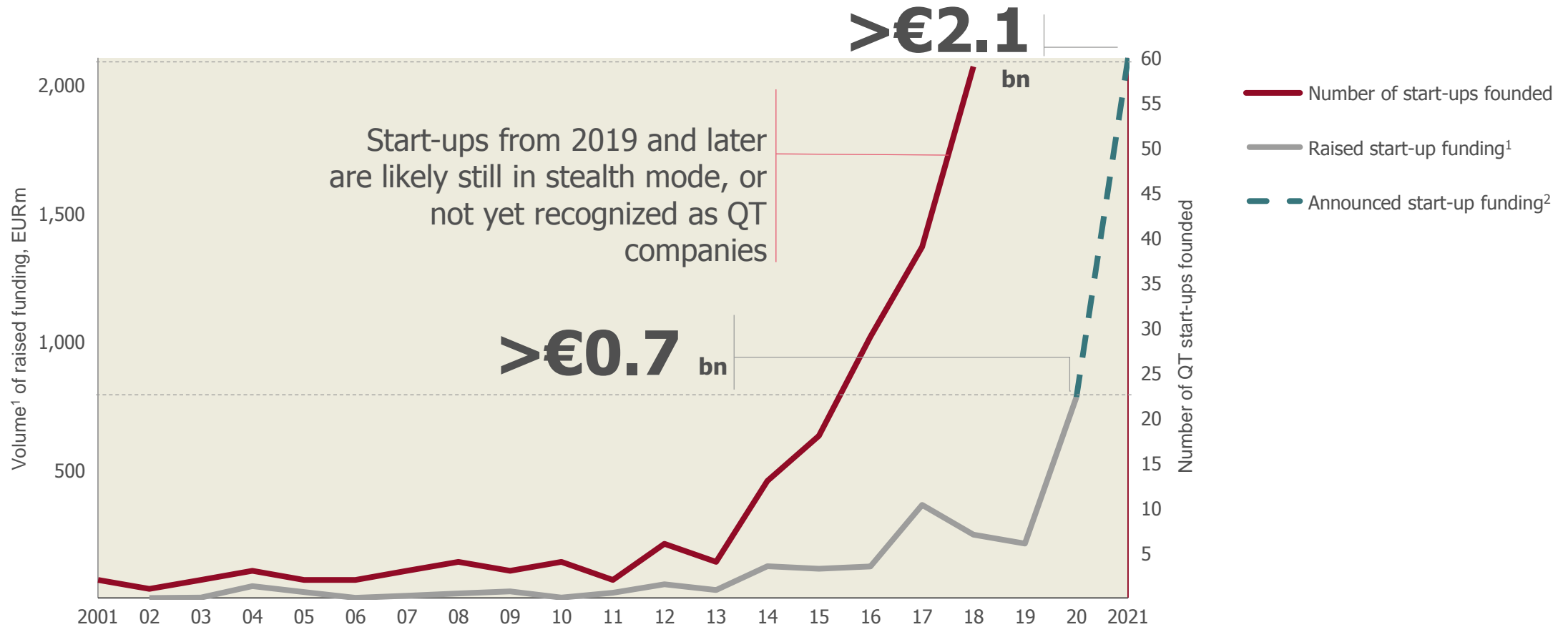
Lasers for the commercial quantum market



Quantum goes commercial

- “ ” We will see exponential growth of capital going into commercializing quantum computers the coming 2-5 years
 - **Former Quantum project leader, Global high-tech company**
- “ ” Despite low transparency in the area, we expect governments, venture capital funds and tech companies to have funded quantum computing start-ups for +3 EURb in 2021
 - **Quantum ambassador, European country**

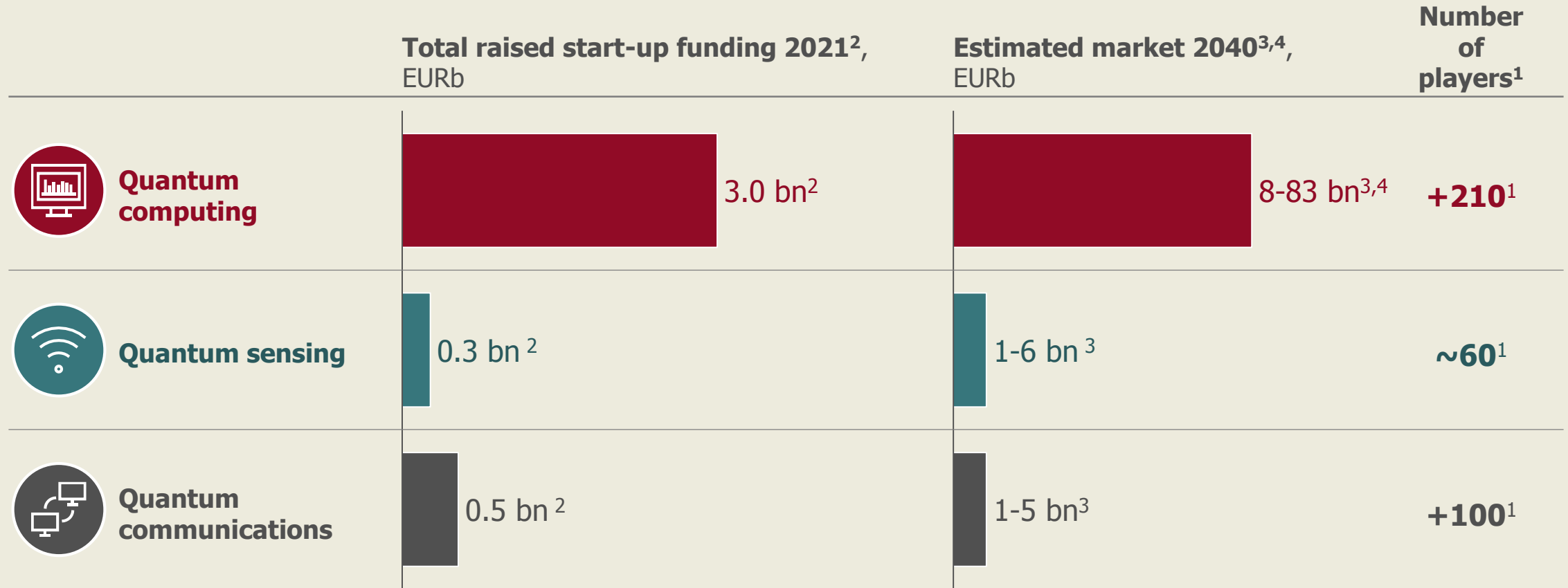
Start-up funding increasing rapidly



1. Based on public investment data recorded in Pitchbook; actual investment is likely higher

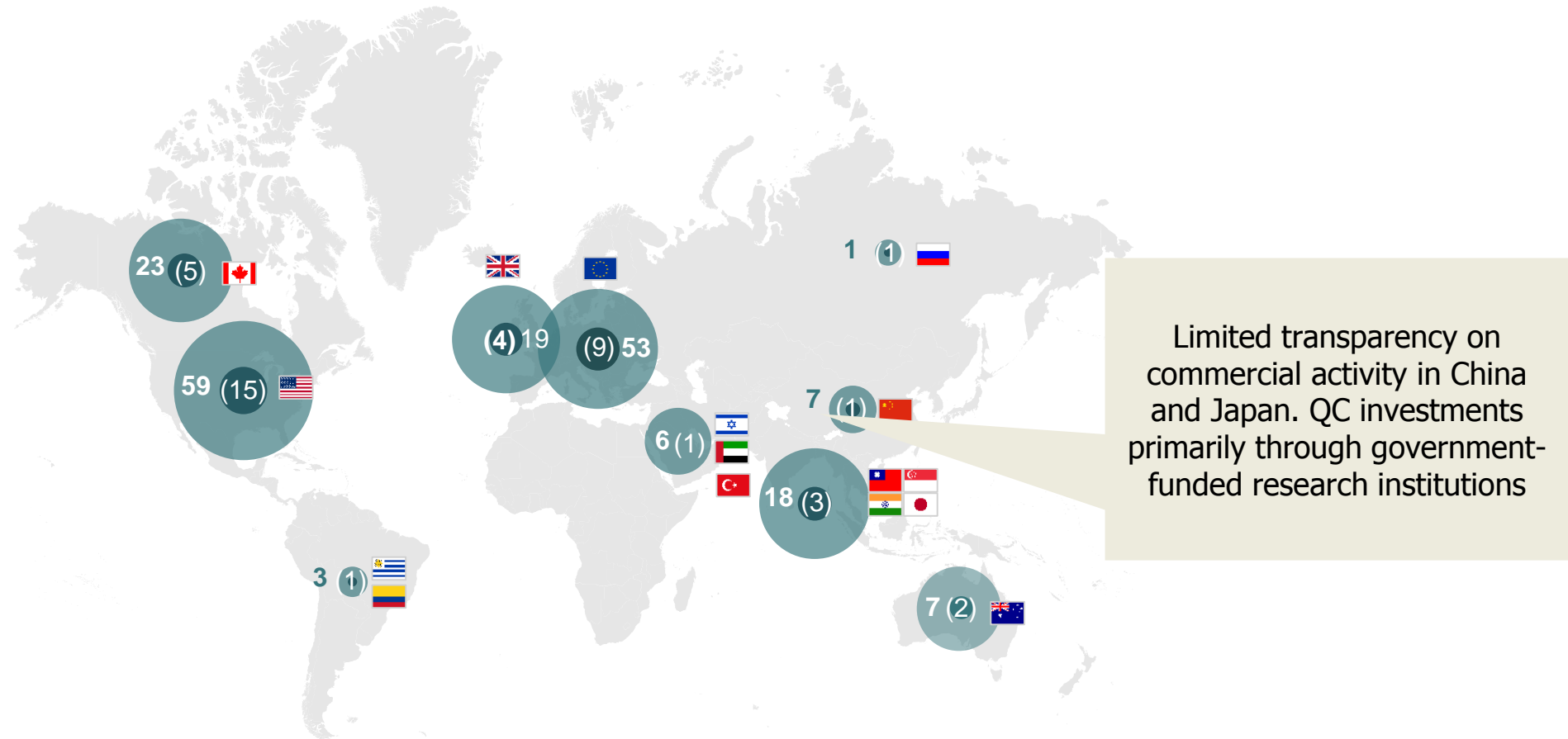
2. Public announcements of major deals; actual investment is likely higher

Quantum computing drives market



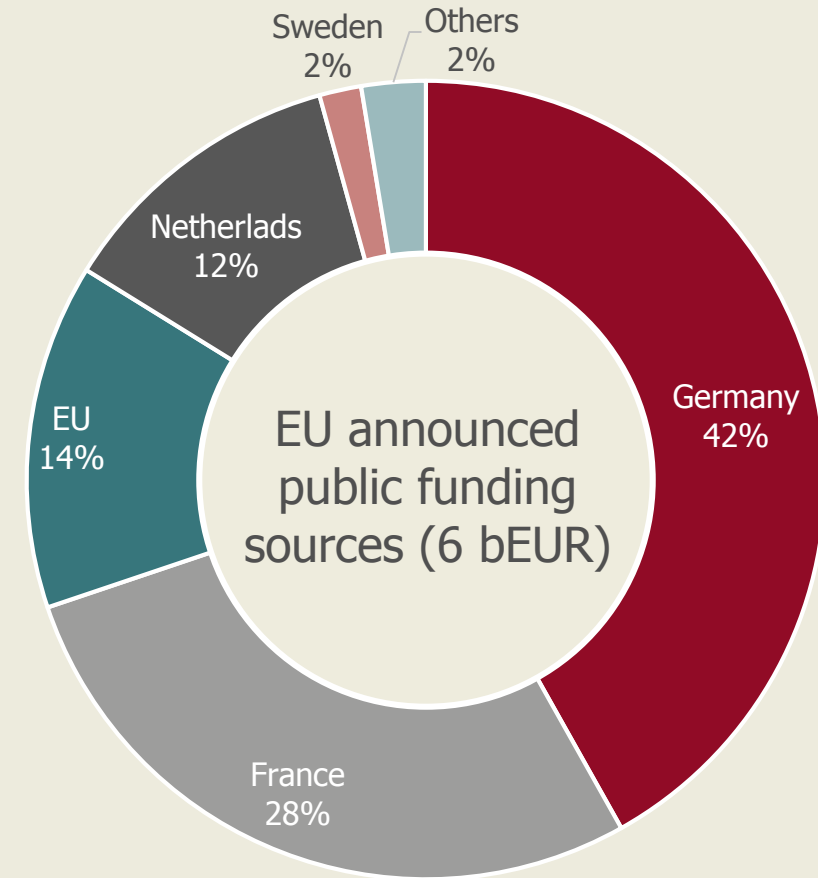
Rapid global expansion since 2015

● 2021 ● 2015



European public funding

- National public funding exceeds EU funding
- In western economies, 6 out of 10 bEUR comes from the EU countries
- Significant funding from defence programs not shown



Consequences for laser manufactures

Quantum research market

Focus on laser specifications

Linewidth

Noise

Beam quality



Commercial quantum market

Focus switching to power scaling, reliability, form factor, and the supplier's ability to support and deliver in volume

Linewidth

Noise

Beam quality

Power

Reliability

Scalability

Fiber lasers are a solution

Linewidth	Market leading Hz-range linewidth	<input checked="" type="checkbox"/>
Noise	Ultra low noise even at high power	<input checked="" type="checkbox"/>
Beam quality	Single-mode fiber delivered output – PM or non-PM	<input checked="" type="checkbox"/>
Power	Scale to high power without sacrificing noise or linewidth	<input checked="" type="checkbox"/>
Reliability	Proven reliability over tens of thousands of hours	<input checked="" type="checkbox"/>
Scalability	Scalable and deployed in high volume in other markets	<input checked="" type="checkbox"/>

Fiber lasers as a scalable platform

DFB fiber lasers



Pristine spectral purity
and ultra low noise

Fiber amplifiers



Power scaling

Frequency conversion



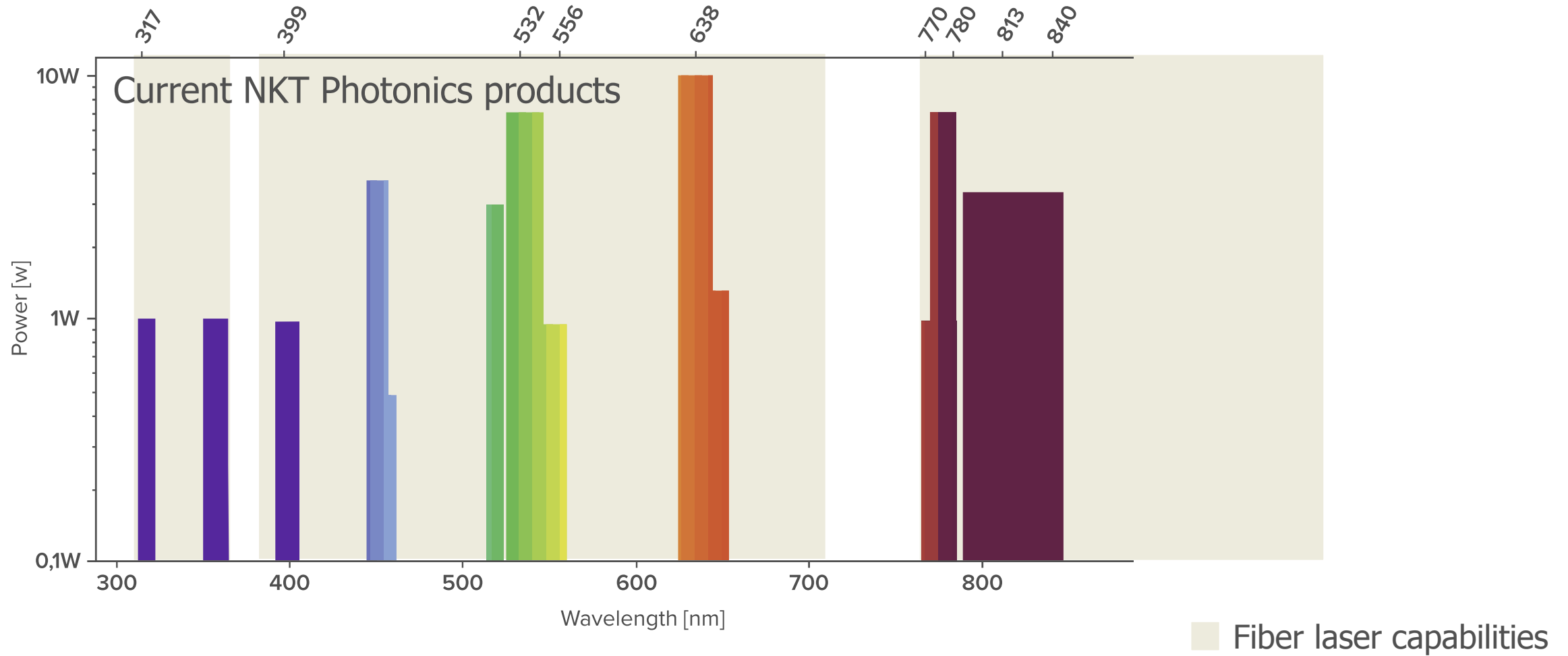
Converts to right
wavelengths
Reduces ASE
Efficiency scales with
power

Fiber delivery



Enables rack-architecture
and flexible routing

Frequency conversion is the key enabler



The fiber future of quantum technology



- Rapid expanding quantum market with heavy start-up funding
- National funding currently exceeds EU funding in Europe
- Focus switching to higher power, reliability, and scalability
- Fiber lasers expected to play major role in commercial quantum market