



## MANUFACTURING OF LASER LIGHT SOURCES

### PROJECT

There is provided a project on launching **production of laser light sources**.

This is a high-opportunity project due to the following reasons:

- Annual average growth rate of global laser light sources output over 1970-2010 was **18%**, sales in 2012 totaled **USD 8,8 bn.**
- **World-class scientific provision** of optical industry in Belarus (top 20 according to aggregate citation index in the photonics field, 2<sup>nd</sup> place – according to average one), **considerable groundwork** in optical equipment manufacturing.
- **Human resources** with the lowest labor cost among Customs Union members, development of laser and optical equipment manufacturing is **supported at the state level**.
- Potential markets – Customs Union (annual average growth rate of laser light sources in Russia is **48%**, in Belarus – **39%**) and East Asia countries, inc. China and Japan, consuming almost a half of global laser light sources volume.
- Capital expenditures for launching production of laser light sources vary within **USD 5-70 mn**, IRR is **20-30%**.

### MARKETS

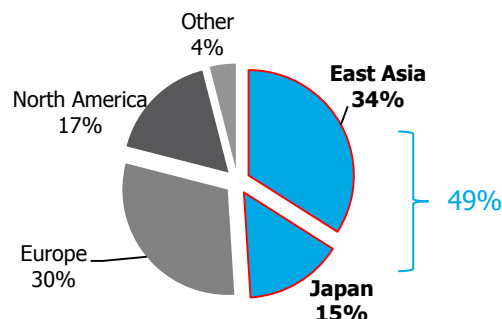
#### East Asia market:

- In 2012 **49%** of world laser equipment sales was accounted for by East Asia countries, inc. Japan, which are the major consumers of solid, excimer and other types of laser, applied in information and communication systems.
- **China** is the main consumer of laser markers and laser equipment for sheet metal processing in the region.

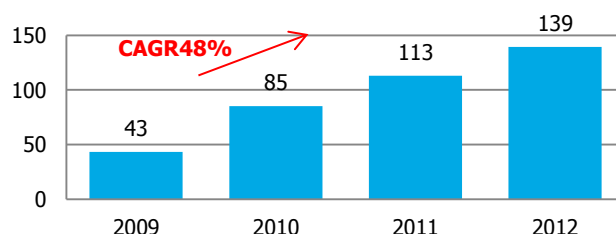
#### Customs Union market:

- Annual average growth rate of laser light sources imports in Russia over 2009-2012 was **48%**.
- Annual average growth rate of laser light sources in Belarus over 2009-2012 was **39%**.

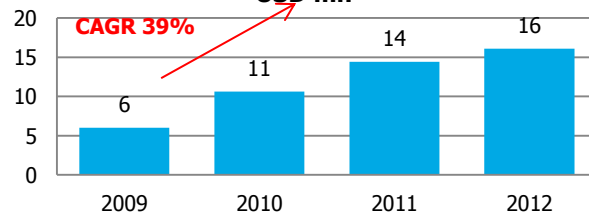
#### Structure of world laser light sources market



#### Imports of laser light sources in Russia, USD mn



#### Imports of laser light sources in Belarus, USD mn



## MARKET OPPORTUNITIES

### Global opportunities:

- Laser industry is one of the fastest growing in the world. Annual average growth rate of global laser light sources output over 1970-2010 was **18%**.
- In 2010 laser light sources growth rates reached **30%** to slow down later due to the ongoing recession in the economy. World laser light sources sales totaled **USD 8,8 bn** in 2012

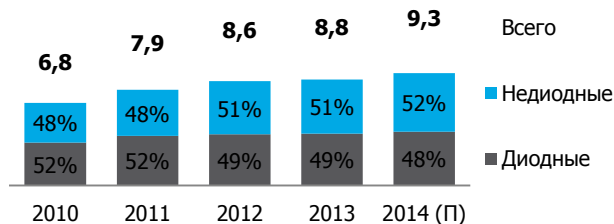
### Local opportunities:

- The volume of competitive laser and optical equipment on the Russian market is small (share in the global market is about **1%**).
- Saturation of laser light sources market in Russia is up to **10-20%**, and its size is estimated at **USD 0,5-1 bn**.

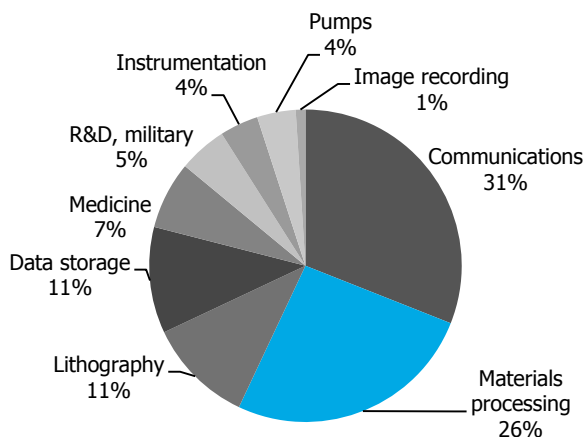
### Attractive segments:

- Major market segments are communications and materials processing, the fastest growing – instrumentation and sensors (CAGR **31%**) and entertainment and displays (CAGR **29%**).
- In 2012 scale of application of excimer and, particularly, diode lasers has broadened – in the first place in semiconductor industry and microprocessing. As well as there was expansion in application of powerful diode lasers in automobile industry.
- The highest growth rates are typical of demand for **fiber lasers**: their share in total sales over 2010-2013 increased from 24,9% to **28,3%**, rate of increas totaled **25%**.
- In the segment of laser sheet metal cutting share of carbon dioxide lasers fell to 61% in 2013 due to increase in sales of other lasers, **fiber lasers** in particular – by **7%** as compared to 2012.
- Further growth is expected in sales of lasers for semiconductor industry and microprocessing, where the leading positions are held by solid and fiber lasers. **Ultrafast impulse lasers** are considered extremely attractive, in 2012 their sales exceeded by **60%** the level of 2011.
- In the sector of medical laser market the growing popularity is being gained by **femtosecond solid lasers**.

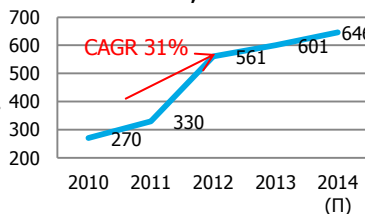
Global laser light sources market, USD bn



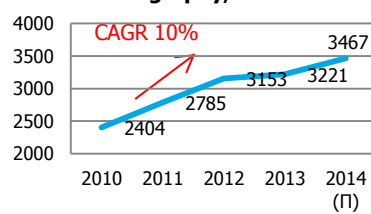
Global laser market by application



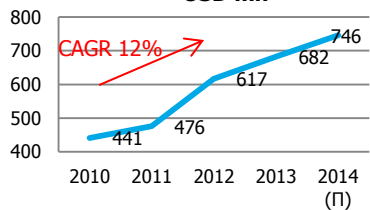
Instrumentation and sensors, USD mn



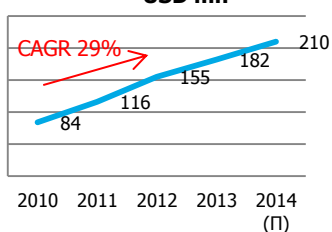
Material processing and lithography, USD mn



Medicine and aesthetics, USD mn



Entertainment and displays, USD mn



## POTENCIAL INVESTORS

Special-purpose venture funds.

Branded manufacturers of laser equipment (Russia, USA, Europe, Japan, Taiwan).

## INVESTMENT OPPORTUNITIES

- Capex for building laser equipment manufacturing plant on average totals **USD 5-70 mn**.
- Production profitability depends on the purpose of the equipment and on average amounts to **25-30%**, reaching more than **50%**.
- IRR of the project varies within **20-30%**.

World sales of laser light sources, USD bn

