The EU-Thai cooperation in high-tech for health: how to make it possible
Content

• Introduction: LASER-GO
• Global hotspots for trade
• The EU and Thailand:
  • Comparing high-tech exports
  • Economic Complexity Index rankings
  • Product Complexity Index rankings
• LASER-GO approach to value creation:
  • Value mapping: optical instruments for health
  • Value chain re-engineering in targeted markets
  • Value creation through value chain networking
LASER-GO brings together six clusters (having over 1600 cluster company members, of which some 1000 are SMEs) from two main sectors: 1) the photonics sector covering optics, laser technologies, precision engineering and 2) healthcare and health tech sector. The photonics sector clusters (OpticsValley, Optence and LITEK) have access to 342 SMEs and 25 RTOs, the health and health tech clusters (Medicen, Biocat, HTS) have access to some 650 SMEs and 75 RTOs across Europe.
Global hotspots for trade: exports globally

Source: http://globe.cid.harvard.edu
Global hotspots for trade: exports regionally

Source: http://globe.cid.harvard.edu
Global hotspots for trade: export linkages

Blue stacks indicate exports in machinery and equipment

Source: http://globe.cid.harvard.edu
High-tech exports (% manufactured exports)

How to connect high-tech export regions globally?

Source: http://databank.worldbank.org
High-tech exports (% manufactured exports)

How to grow high-tech export in the regions of top export countries?

Source: http://databank.worldbank.org
The Economic Complexity Index (ECI)

- ECI ranks how diversified and complex a country’s export is. ECI is a scale that uses the theory of and calculations for economic complexity to rank countries according to their level of complexity.

- When a country produces **complex goods** in addition to a **high number of products**, it is typically more economically developed or can be expected to experience fast economic growth in the near future.

Source: http://atlas.media.mit.edu
Product Complexity Index (PCI)

1. **Miscellaneous Metalworking Machine-Tools** (PCI: 2.61514)
2. **Printing Presses** (PCI: 2.2329)
3. **Internal Combustion Engines for Boats** (PCI: 2.22836)
4. **Analog Instruments for Physical Analysis** (PCI: 2.17478)
5. **X-Ray Equipment** (PCI: 2.11712)
6. **Machinery for Specialized Industries** (PCI: 2.0881)
7. **Reciprocating Pumps** (PCI: 1.99898)
8. **Epoxide Resins** (PCI: 1.96141)
9. **Cellulose Acetates** (PCI: 1.89695)
10. **Pulley System Parts** (PCI: 1.87064)
11. **Optical Instruments** (PCI: 1.86159) - LASER-GO target
12. **Interchangeable Tool Parts** (PCI: 1.84799)
13. **Metal Cutting Machines** (PCI: 1.82053)
14. **Metal Forming Machine Tool** (PCI: 1.80729)
15. **Electrical Medical Equipment** (PCI: 1.80639)

- The **Product Complexity Index** ranks products according to their product complexity. Product Complexity is determined by calculating the average diversity of countries that make a specific product, and the average ubiquity of the other products that these countries make.
- The PCI is calculated using the data from:
  - Countries with population greater or equal to 1.25 million
  - Countries whose traded value is greater or equal than 1 billion
  - Products whose traded value is greater or equal than 10 million

Source: [http://atlas.media.mit.edu](http://atlas.media.mit.edu)
Value mapping: optical instruments for health

**In-Vitro**
- Imaging (surface, subsurface, inside, see-through, optical microscopy)

**In-Vivo**
- Analytics, sensing (oximetry, sequencing, cytometry, molecular spectroscopy, biosensors)

**Light Therapy**
- Processing, curing (medical lasers, decontamination, other applications)

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**Total available market**

**Estimated segment value**

**New offering**

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**Geographical market segments**

**Submarkets by technology**

**Submarkets by product type/end-use**

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**High value market segments**

**High value technologies**

**High value product types**

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**Photonics-driven functions**

**Solution - Market Fit**

**Market potential assessment**
Value chain re-engineering in targeted markets

Based on the principles:

• Each product can provide different value for multiple different uses: being an input into a technology, a subsystem or a final end-product

• Companies could compliment each other’s offerings with new business cases/solutions, re-engineering value

• Intermediaries (clusters, agencies) can support the multiplication of value offerings by companies
Value creation through value chain networking

A theoretical, conceptual framework*

A real-case example from LASER-GO

* - Global Value Networks, New Zealand Institute of Economic Research, 2015
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