

# Building Innovation Spaces in Science Centers & Innovation Levels of NAMES's countries



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«Innovation is implementing new ideas that create value.»

# The Global Innovation Index (GII) 2014 The Human Factor in Innovation

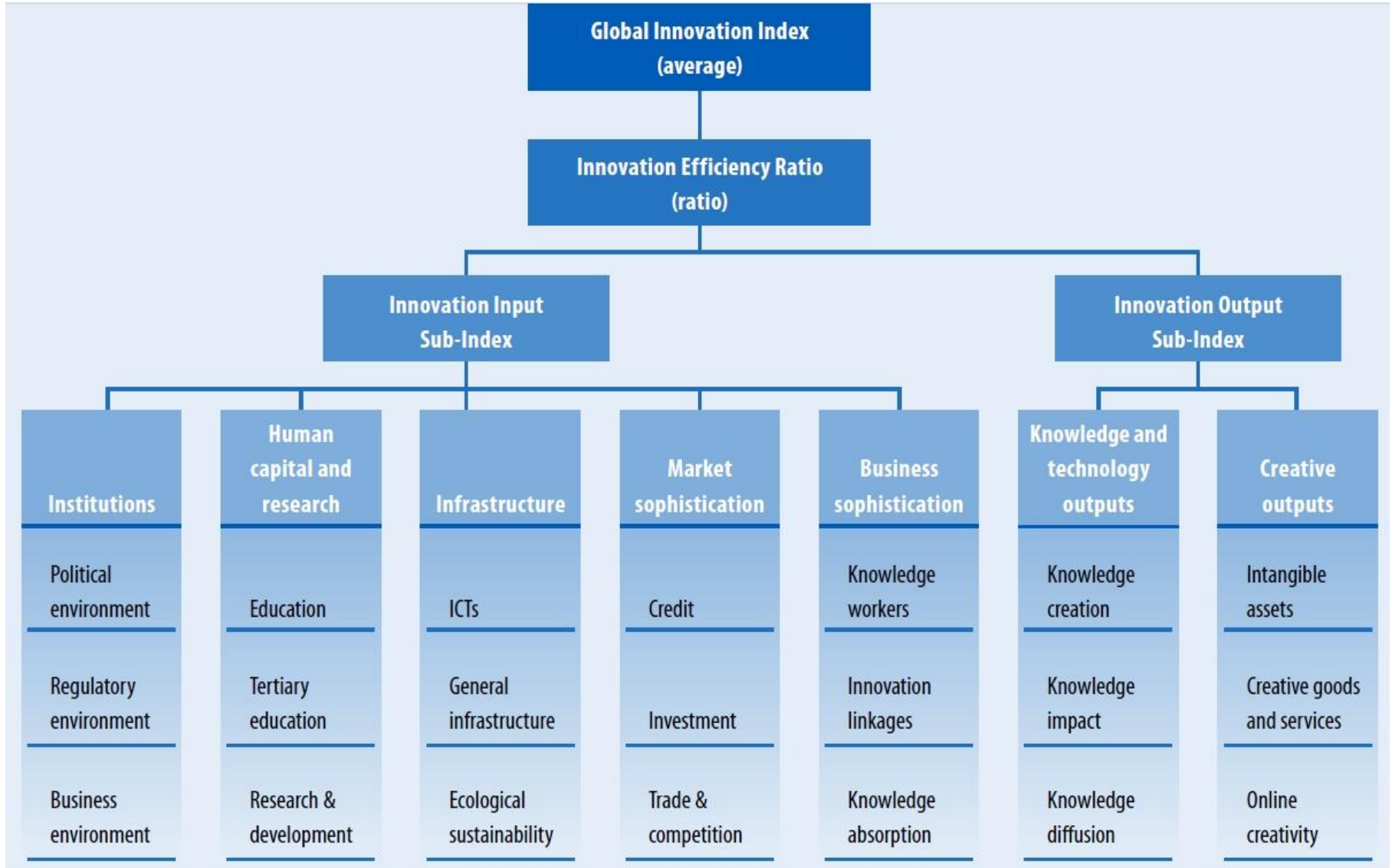
*The GII has established itself as a leading reference on innovation providing an accurate picture on the role of science, technology and innovation in sustainable development.*

The Global Innovation Index 2014: The Human Factor in Innovation is the result of a collaboration between Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO) as co-publishers, and their Knowledge Partners.

Soumitra Dutta, Bruno Lanvin, and Sacha Wunsch-Vincent, Editors

- The core of the Global Innovation Index, GII, Report consists of a ranking of world economies' innovation capabilities and results.
- The theme of 2014 edition of GII is *The Human Factor in Innovation*.
- This report illustrates how human capital influences innovation trends and how **develeoping countries sttruggle to innovate**.

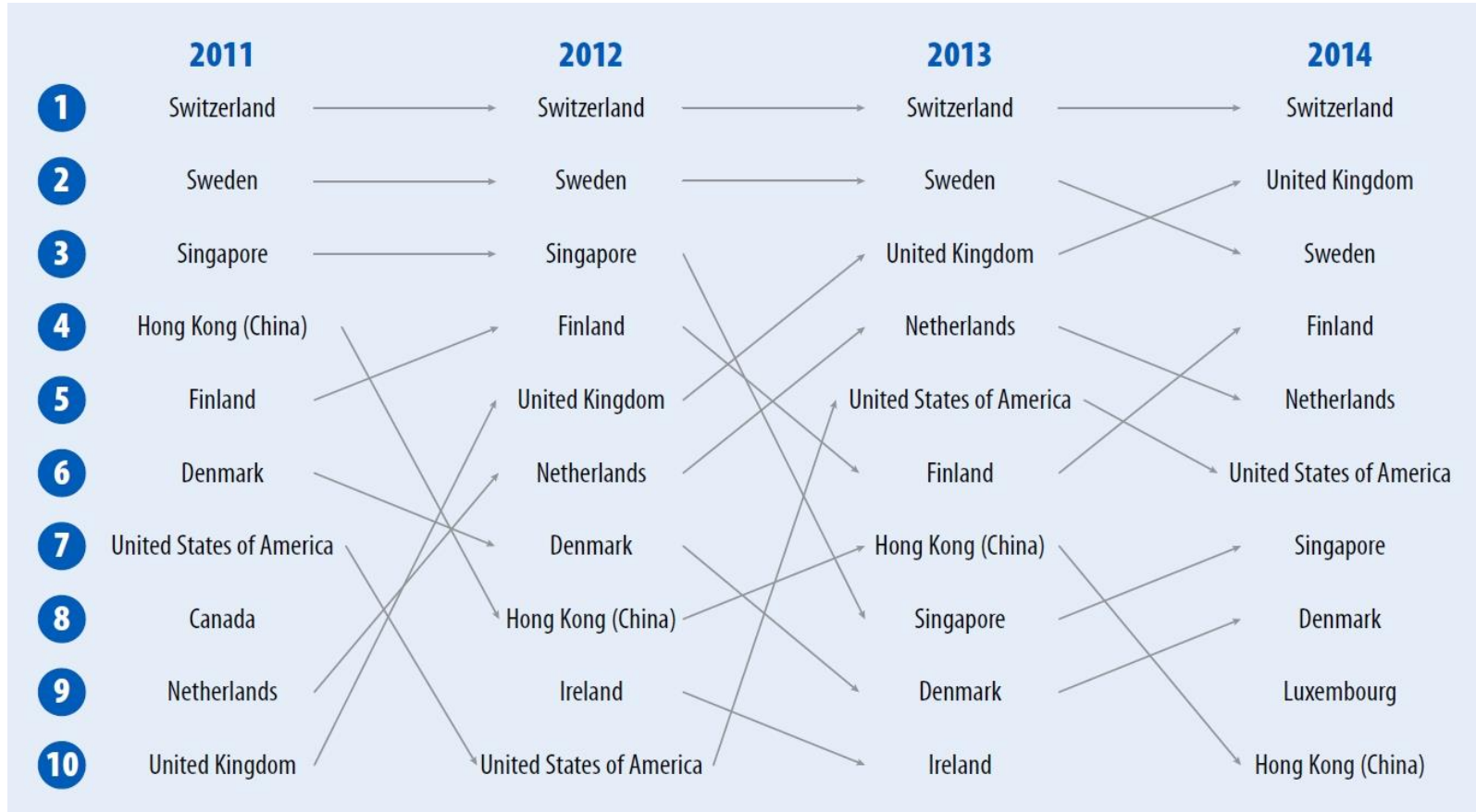
Global Innovation Index is the simple  
avarege of Input and Output Sub-Indices .



Country/Economy	Score	(0–100)	Income	Efficiency	Rank
Switzerland	64.78	1	HI	0.95	6
United Kingdom	62.37	2	HI	0.83	29
Sweden	62.29	3	HI	0.85	22
Finland	60.67	4	HI	0.80	41
Netherlands	60.59	5	HI	0.91	12
USA	60.09	6	HI	0.77	57
Singapore	59.24	7	HI	0.61	110
Denmark	57.52	8	HI	0.76	61
Luxembourg	56.86	9	HI	0.93	9
Hong Kong 8China)	56.82	10	HI	0.66	99

## Global Innovation Index (GII) Rankings 2014





## Movement in the top 10 of the Global Innovation Index (GII)



# Doing More with Less

**The Innovation Efficiency Ratio** is the ratio of the Output Sub-Index over the Input Sub-Index.

$$\text{Innovation Efficiency} = \frac{\text{Output}}{\text{Input}}$$

It shows how much innovation outputs a given country is getting for its inputs. Innovation efficiency is related to the concept of productivity.

## The Global Innovation Efficiency Index

#	Country	I.Efficiency Rank	I.Efficiency Ratio	G.I. Index	Rank	Income
1	Moldova	1	107%	40,74	43	LM
2	China	2	103%	46,57	29	UM
3	Malta	3	99%	25,50	25	HI
4	Indonesia	4	96%	31,81	87	LM
5	Viet Nam	5	95%	34,89	71	LM
6	Switzerland	6	95%	64,78	1	HI
7	Venezuela	7	95%	25,66	122	UM
8	Nigeria	8	94%	27,79	110	LM
9	Luxemurg	9	93%	56,86	9	HI
10	Cote d'Ivoire	10	93%	27,02	116	LM

Innovation Efficiency Median: 0,74

HI: High Income , UM: Upper-Middle Income, LM: Lower-Middle Income

*11	Turkey	11	93%	38,20	54	UM
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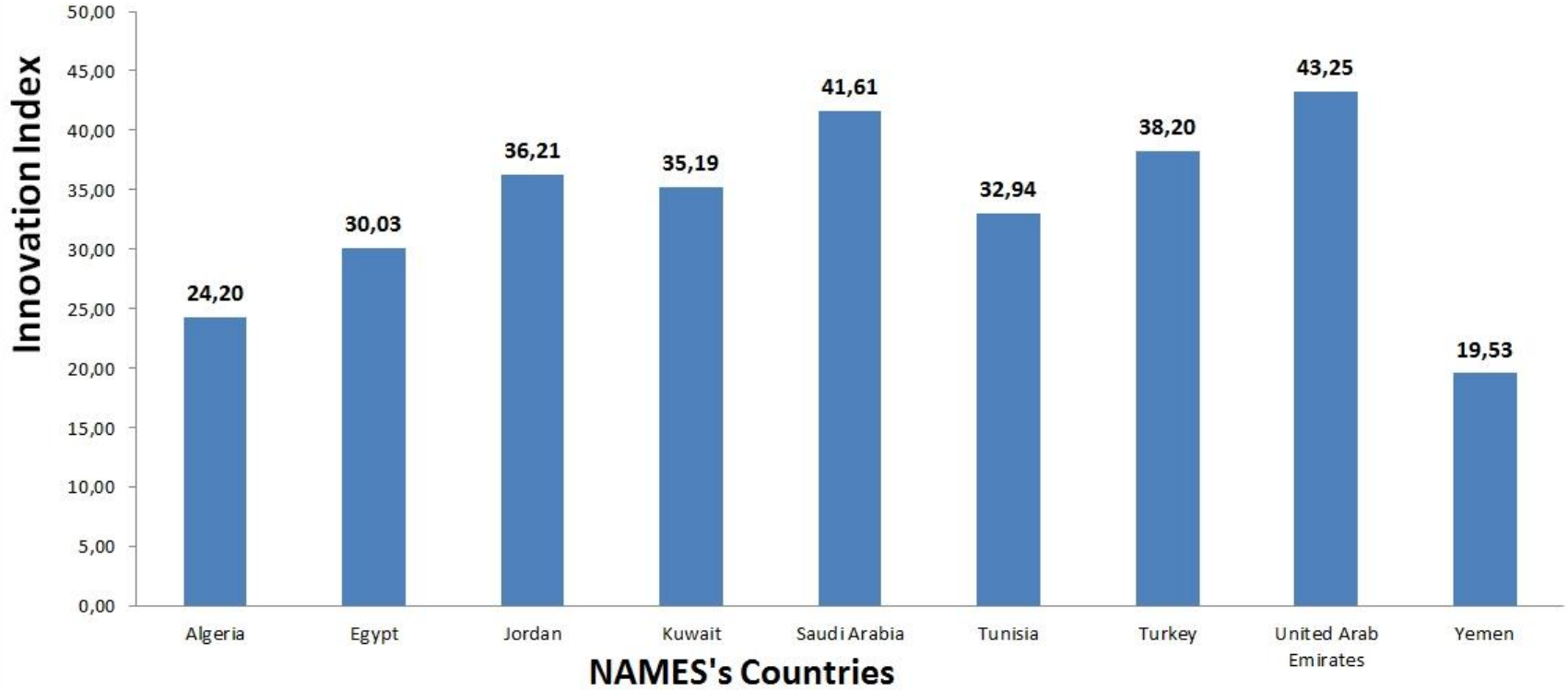
## NAMEs's Countries' The Global Innovation Index

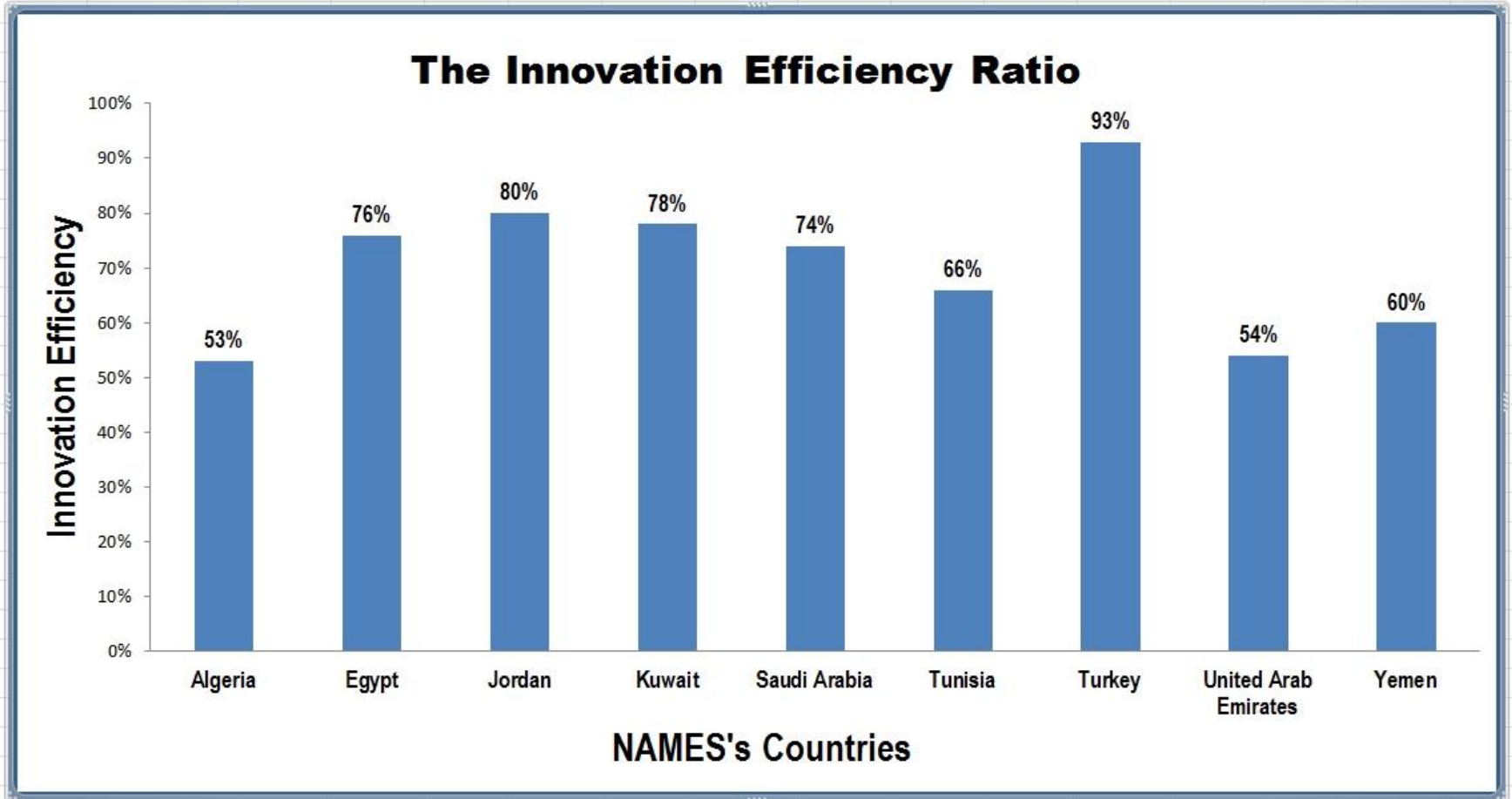
#	Country	Score (0-100)	Rank	Income	Rank2	Region	Reg.Rank	Efficiency Ratio %	Rank Eff.
1	Algeria	24,20	133	UM	37	NAWA	18	53%	130
2	Egypt	30,03	99	LM	17	NAWA	16	76%	59
3	Jordan	36,21	64	UM	17	NAWA	8	80%	40
4	Kuwait	35,19	69	HI	45	NAWA	10	78%	50
5	Saudi Arabia	41,61	38	HI	35	NAWA	4	74%	70
6	Tunisia	32,94	78	UM	24	NAWA	14	66%	98
7	Turkey	38,20	54	UM	10	NAWA	6	93%	11
8	United Arab Emirates	43,25	36	HI	33	NAWA	3	54%	127
9	Yemen	19,53	141	LM	32	NAWA	19	60%	111
10	Libya	N/A	N/A	N/A	N/A	NAWA	N/A	N/A	N/A
11	Palestine	N/A	N/A	N/A	N/A	NAWA	N/A	N/A	N/A

NAWA : Northern Africa-Western Asia, Innovation Efficiency Median:0,74

HI: High Income, UM: Upper-Middle Income, LM: Lower-Middle Income

## Global Innovation Index Rankings





Nurturing human capital can be crucial for developing the foundation of innovation.

The number projects to develop innovative skills of university students, companies and academicians have been increasing , especially by means of universities , research centers, innovation parks, clustering, study grants and so on.

How do innovative countries keep and raise their knowledge, technology and creative outputs in terms of children and teens?

For example:

- USA announced the big project « Educate to innovate» in 2010.
- Horizon 2020 is the biggest project EU research and Innovation programme over with nearly 80 billion Euros of funding available over 7 years. (2014-2020)
- The budget of Science with and for Society for 2014 and 2015 is almost Euros 110 millions.



“We look increasingly to science centers to be institutions of education and innovation as well as to serve as ‘wonder places’ where people can meet, share knowledge, and transform the way they look at the world.”

*Lidia Brito, Director of the Science Policy and Capacity Building Division, UNESCO*

Advancing Science and STEM Learning..., ASTC 2013

# What can we do in our science centers?

3C

Children between the ages 5-12 represent a significant percentage of people who visit the science centers even with school groups or families.

What about secondary and high school students?

How can the gap between the children and young adults (university students) be filled?

Do we especially neglect the ages 15-18?

- How can science centers play a role for creating innovative infrastructure (environment) ?
- It is possible to find many projects to develop skills of children to thinker, make and innovate.
- Almost all provides specifically equipped facilities, environments for developing critical thinking, creativity and collaborations, shortly 21st century's skills.

Them may be called as:

- Learning Labs,
- Junior Innovation Labs,
- Creative Learning Labs,
- Makerspaces,
- Thinkering Studios,
- Innovation Stations,
- SparkLabs, FabLabs,
- YouthSpark Hub,
- Teen Center or
- Innovation Hubs,

- Most of them are equipped with high band internet, powerful computers, 3D printers, Laser Cutters, CNC Milling machines and so on.
- They provide comfortable environments to discuss and socialize either.
- How they are called is not so important. But the functions and adaptability to our culture and sustainability of them should be considered



- The first example is Learning Labs projects in museums and libraries across the USA.
- They are powerful innovation hubs to transform youth from digital consumers to creators, by developing 21 st century skills like critical thinking, creativity and collaboration, with the support of mentors.
- They intended to engage middle and high school aged teens.
- \*More than half is member of ASTC.





- These Labs will help young people become makers and creators of content, rather than just consumers of it.
- They are spaces for experimentation for middle to high school age Youth to engage with digital and traditional media to promote creativity, critical thinking, and hands on, interest based learning.

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- The second one which is the project of India National Council of Science Museums (NCSM) and National Innovation Council (NIC) and the spaces are called as Innovation Hubs.
- Innovation Hubs project of from August 2013 to January 2014, 5 innovation hubs were opened in India and it has been planning to open at least 65 more.

## The sections of Indian Innovation Hubs:

- **Hall of Fame:** with Interactive MM Kiosks (The life of Innovators and Inventors and Innovation related content)
- **Innovative Resource Center:** Broadband internet, PCs, Books, Magazines and Videos.
- **Innovation Lab:** for carrying out innovative activities and applications

- **Tod Fod Jod :** Hands-on training on how to reassemble parts and create something new. (Disassemble, Investigate and reassemble of everyday objects. Such as: Mouse)
- **Tech Lab:** Robotics and Microprocessor Programming Facility

## Innovation Hubs are:

- approximately 200 m<sup>2</sup>
- costs approximately \$ 175.000
- target students' age is 12-18 (5-12th grade)

## The advantages of developing innovative spaces

- Reaching to a missing group (Teens)
- More impact for STEM career selection
- Integration possibility with available hands-on exhibits
- Innovative image of center
- More partnerships with innovation related institutions

# The advantages of developing innovative spaces

- Funders like to support innovative projects
- Politicians love innovative projects too
- Media loves innovation either
- Making staff feel more valuable
- Having regular groups/visitors



## The disadvantages / obstacles of developing innovative spaces

- Availability of an dedicated are
- Staff capacity
- Education of staff
- Cost of them

## The disadvantages / obstacles of developing innovative spaces

- Institutional resistance to change
- Materials management problem
- Relatively less number of people who benefit from innovative spaces
- Science Centers are for Science Communication not for innovation

# Finally

It is up to science center or museum's conditions and missions to build innovation spaces or not.

While some of us find them as a great opportunity, the others may consider that it is sufficient to have innovative exhibits to foster the innovation.

Finally, in any case, we have to **get in touch with innovation** since it is closely related to our future.

**Do not forget 3 C please!**

Thank You!