



Leveraging Innovation for Sustainable Development in IsDB Member Countries

1. Introduction: What is innovation?

Since time immemorial, mankind has relied on innovation and creativity to both overcome challenges it had faced throughout its history, and to attain ever-higher levels of wellbeing and prosperity. Innovation continues to play a pivotal role in fostering economic and social development, and is perhaps the single most important determinant of a nations' competitiveness and its productive capacity in today's globalized and interconnected marketplace.

Innovation does not occur in vacuum. The ability of a country to innovate successfully depends critically on the quality of its *innovation climate*: a set of preconditions defined by the existing institutions, infrastructure, and the government's policies and strategic vision. The institutions that are critical to fostering innovation include the rule of law, protection of intellectual property rights, and an overall conducive business environment and culture. Meanwhile, the critical infrastructure consists the basic logistical setup, and the educational institutions, technology parks, R&D centers, and think-tanks aimed to deliver a steady, high-quality supply of human capital. Finally, the government, through its policies and leadership, has to provide both the right set of incentives and a strategic guidance for all the actors in the sphere of science, technology, and business in order for them to work together in order to engage in activities that bring about a life-transforming creative change and innovation.

Due to large variations in the quality of innovation climate across various countries, there is no one-size-fits-all strategy for fostering innovation and technological change. Each country's strategy has to be tailored to the country's specific developmental needs, challenges, and gaps. Critically, the countries that are currently at the lower rungs of the developmental ladder can derive the highest benefit from simply focusing on facilitating technological transfers from the nations that are more advanced along the innovation frontier.

Innovation is a complex and multifaceted phenomenon. Some define it as a transformation of ideas into new products and services, and as improvements in the organizational structure and the production process itself¹. Others define it more broadly as any new idea or process through which agents undertake changes in the various aspects of production, distribution, and consumption of economic goods and services². In general, innovation can include all of the above: invention of new products, invention of new and improved processes for existing goods, new ways of marketing products, and new ways of distributing economic output.

In today's world, innovation creates many opportunities, provides new jobs, and increases the nation's competitiveness. Innovation is also instrumental in addressing many key developmental problems by helping to find solutions to poverty, food insecurity, diseases, climate change, illiteracy, financial and economic instability, and long-term unemployment. Innovation has also enabled the global community to develop life-saving vaccines to fight pandemic diseases, begin a transition to cleaner energy technologies to dampen the effects of climate change, and to improve access to education and training in a way that creates a positive feedback mechanism through which the nations can advance along the technological frontier by strengthening the human capital base.

Most innovations are incremental, but some could be disruptive by displacing existing technologies, products, businesses, and labor. The latter process is commonly known as creative destruction. While creating new markets and value networks, and expanding the nation's overall level of prosperity and wellbeing, creative destruction can incur social and economic costs for certain segments of the population. This, in turn, raises some ethical and policy concerns and is especially relevant when it comes to introduction of labor-saving technologies such as automation and robotics. Furthermore, some types of innovation aimed at boosting economic output could end up augmenting business cycle fluctuations and increase the overall level of economic instability and uncertainty. This was the case with certain types of financial innovation, which share the responsibility for increased global economic and financial turbulence since the end of the last decade.

On balance, however, innovation has had an undeniably positive effect on the development landscape by advancing progress in various fields, including agriculture, healthcare, energy security, communications, information processing, as well as banking and finance. These advances, when harnessed and leveraged on an appropriate scale, hold a great potential to help the less developed countries leapfrog developmental stages in all of the three dimensions of the sustainable development agenda: social, economic,

¹ Clayton M Christensen and Michael Overdorf, "Meeting the Challenge of Disruptive Change" *Harvard Business Review*, March–April 2000.

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<https://www.openknowledge.worldbank.org/bitstream/handle/10986/6310/461280PUB0REPL101OFFICIAL0USE0ONLY1.txt?sequence=2>

and environmental. Innovation, as a crosscutting theme, is therefore critical for attaining the ambitious targets and goals set out by the UN's 2030 Agenda for Sustainable Development, which the IsDB Group fully supports and aims to advance through its various activities and programs.

2. Where do the IsDB member countries stand on innovation?

A number of indices have been developed over the past decade aiming to measure the quality of innovation climate and the overall innovation performance across a range of countries and industries. These indices vary in terms of their comprehensiveness, geographic coverage, and the frequency with which they are updated. Perhaps the most comprehensive and regularly updated one is the Global Innovation Index (GII) published annually by Cornell University, INSEAD and the World Intellectual Property Organization (WIPO). The GII measures the innovation capacity and innovation output across 141 countries and 79 underlying sub-indicators³. Furthermore – unlike some of the other indices, e.g. The Bloomberg Innovation Index or The International Innovation Index published by The Boston Consulting Group – the GII covers majority (i.e. 38) of the IsDB member countries.

The 2015 GII update offers a rather sobering look at the state of innovation across the IsDB member countries. The most striking observation is that there is not a single IsDB member country among the top-30 most innovative nations. Malaysia, the most innovative IsDB country according to the 2015 GII report, ranks 38 out of 141 countries globally. Among the group of the five, most innovative IsDB member countries are Saudi Arabia (with the global rank of 43), UAE (47), Qatar (50) and Turkey (58). However, most of the remaining IsDB countries are in the bottom half of the global innovation ranking, with 17 out of the 38 surveyed IsDB member countries ranking among the bottom 25%.

Figure 1 illustrates that, on average, there is a positive relationship between the level of innovation (as measured by the country's GII scores) and the level of economic development (as measured by the PPP-adjusted GDP per capita). In general, countries with higher GII scores tend to be at higher levels of economic development. But the causality is likely to run in both directions. While innovation helps advance countries along their developmental trajectory, the more advanced countries often have a much greater capacity to innovate, thereby creating a positive feedback loop. For this reason, it would be unfair to compare the IsDB average innovation score to the global average, as the latter would include many advanced economies which would be naturally expected to have a more conducive innovation climate. However, even if compared with other non-IsDB developing countries, the IsDB average scores are lower across the full range of factors that underlie innovation capacity and innovation output. This can be observed in Table 1.

³ <https://www.globalinnovationindex.org>

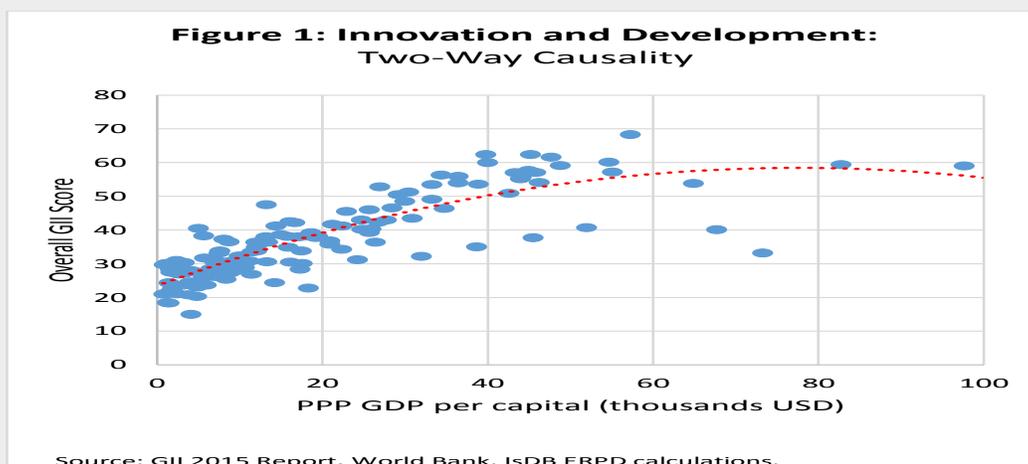


Table 1: Global Innovation Index (GI) Summary *

	Global Average	Global Maximum	Global Top 10% Average	IsDB Average	IsDB Top 5 Average	Non-IsDB Developing Countries Average
Overall GII Score	37	68	60	30	41	35
1 Institutions	62	96	89	52	69	60
1.1 Political Environment	54	99	88	37	64	52
1.2 Regulatory Environment	65	99	91	57	68	61
1.2.2 Rule of Law	49	100	92	34	61	44
1.3 Business Environment	68	94	87	62	75	66
2 Human Capital	31	65	56	24	41	28
2.1 Education	43	90	55	37	49	42
2.2 Tertiary Education	32	82	50	28	52	29
2.2.1 Tertiary Enrollment	34	100	61	21	38	33
2.2.2 Graduates in Sciences and Engineering	42	100	46	45	57	40
2.3 R&D	21	86	63	9	22	14
2.3.2 Gross Expenditure on R&D (% of GDP)	1.0	4.2	2.5	0.4	0.6	0.7
3 Infrastructure	39	70	60	33	50	37
4 Market Sophistication	49	82	66	43	50	47
4.1 Credit	33	79	57	21	29	32
5 Business Sophistication	36	63	55	28	37	35
5.2 Innovational Linkages	33	65	48	30	42	31
<i>Memo: Number of Countries</i>	141	1	14	38	5	78

* Unless noted otherwise, the figures in the table refer to scores.

On average, the IsDB member countries are lagging the global average as well as their developing country peers in most areas that are critical for innovation, including the strength of institutions, human capital capacity, infrastructure, and the level of market and business sophistication. For instance, the IsDB member countries on average spend only 0.4% of their GDP on research and development (R&D), compared to 0.7% spent by other developing nations, and 2.5% of GDP that is spent on R&D by the world's most innovative countries. The most innovative of the IsDB member countries, Malaysia, spends only 1.1% of GDP of R&D each year, which needs to be increased compared to some other leading innovators among the emerging economies such as South Korea (4.2% of GDP), China (2.1%), and Singapore (2.0%).

One of the few categories where the IsDB countries seem to do relatively well is the share of graduates in sciences and engineering. According to this metric, most IsDB member countries are in the top half of the global list. Unfortunately, this is paired with poor levels of tertiary enrollment, low levels of primary and secondary educational attainment, and low levels R&D, resulting into a below-average score in the human capital category.

3. What are the key impediments to innovation in the IsDB member countries?

Low rankings of the IsDB member countries in the GII provide an opportunity for the IsDB Group to support initiatives and programs that could help to close this gap. Furthermore, the striking differences between the IsDB average score and the scores of the top-5 IsDB innovators across all the factors that underpin innovation illustrates an ample scope for South-South cooperation by deploying Reverse Linkage initiative of the IsDB.

The key to successfully addressing weaknesses in the innovation climate consists in identifying the factors that prevent both adoption and creation of new technologies and ideas. Once the weak points are identified, the governments can work in cooperation with the international community, including the IsDB Group, to bring about structural transformation and to introduce incentives and policies that would push the country out along the innovation frontier.

As highlighted by the GII Report, some of the specific factors that stand in the way of innovation include:

- a) **Low human capital base:** Poor levels of educational attainment and a low skill base not only hamper innovation but they also prevent adoption of existing new technologies developed by other countries. The countries can boost their human capital base by ensuring that their primary and secondary educational institutions feed high quality human capital into the tertiary institutions, by encouraging and incentivizing enrollment into sciences and engineering programs, by supporting and funding research institutions and the institutions of higher education, and by facilitating linkages between the science and education centers and businesses.
- b) **Poor infrastructure:** Both hard and soft infrastructure are prerequisite for successful innovativeness. Adequate electricity supply, affordable internet access, well-equipped laboratories, access to modern information technology equipment, and telecommunication are among the key elements of infrastructure needed to support innovation.
- c) **Lack of investment in R&D:** R&D is the lifeblood of innovation. However, most countries struggle to prioritize their development needs in the face of limited

resources, and in many cases this struggle has been compounded by the fallout of the global financial crisis and the economic slowdown. As a result, investment in R&D has been on the backburner. The role of the private sector in R&D is critical, but due to unfriendly innovation climate and a poor institutional setup in some countries, it is not uncommon to find that the private sector is unwilling to invest more into funding new ideas and innovative products, leaving the onus on the cash-strapped government.

- d) **Inadequate intellectual property rights:** Protection of intellectual property rights is a necessary condition for encouraging innovation by ensuring that the innovators (individuals, institutions, and businesses) are able to capitalize on their initial investment. In many member countries, such protection is either weak or outright non-existent, discouraging inventors and innovators from developing their ideas and patents in order to benefit of their economies.

4. The Role of IsDB in promoting and leveraging innovation in member countries

The IsDB has a number of initiatives and programs that have been designed to promote and encourage innovation in its member countries. Over the years, it has invested substantially in various innovative projects in key economic sectors. In particular, the IsDB has been supporting scientific and technological development in three distinct ways: (i) by assisting in the building of physical facilities and infrastructure; (ii) by forging collaboration and exchange of knowledge through activities such as short-term exchanges of experts, on-the-job training, and scientific conferences; and (ii) by financing research and development projects at the designated centers of excellence.

Some of the channels through which the Bank has been supporting innovation include: (i) IsDB Prizes for Science and Technology (S&T), (ii) the S&T Expatriate Nationals Scheme, (iii) the Merit Scholarship Program for High Technology in Member Countries, (iv) the OIC Program for Achieving Self Reliance in Vaccine Production (SRVP) in the Islamic World, (v) sponsoring the Science Development Network for the promotion of technology-based socio-economic development in the Islamic countries, and (vi) the Annual Workshops Scheme to support Inter-Islamic S&T Networks.

In addition, the IsDB has been working to facilitate innovation exchanges through its (i) Annual Innovation Exhibition, and (ii) the recently-inaugurated Reverse Linkage program. The Annual Innovation Exhibition, which started in 2013, is organized in conjunction with the IDB Annual Meeting during which member countries exhibit their innovative products and solutions. Many of the solutions can then be replicated in other member countries using the Reverse Linkage initiative—a tripartite South-South approach which involves a transfer of innovative knowledge, solutions and experiences between two member countries with the Bank acting as the connector and a catalyst.

5. Some of the issues that the panelists may wish to consider?

The following questions could be raised by the moderator during the panel session:

- (a) What are some of the key drivers of innovation and what policies should the governments adopt to foster innovation?
- (b) How could the governments leverage innovation to achieve the new Sustainable Development Goals (SDGs)?
- (c) What are the main challenges facing innovation in your country and how can they be addressed?
- (d) What are some of the innovation success stories in the key economic sectors achieved by your country?
- (e) How can the IsDB member countries collaborate to share their innovative practices and solutions?
- (f) What can the governments do to encourage private sector investment in innovation in your country?
- (g) How could the IsDB leverage innovation to foster sustainable development in its member countries?