

Key Findings of the White Paper

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India is Set to Leapfrog into an Innovation Economy

“The advent of the Fourth Industrial Revolution can help India leapfrog traditional phases of development and accelerate its transition to a developed nation. Deploying these technologies optimally and strategically can create a potent mix of resources and infrastructure that can yield better quality, more sustainable growth. With more than 50% of its population under the age of 27, India’s role is also going to be pivotal in shaping the global ‘Fourth Industrial Revolution’ agenda in a responsible, scalable and inclusive manner.”

Brende (2018)

Advantage India

- One of the fastest growing economies in the world – growth rate in 2018 is estimated to be 7.4% and is expected to increase to 7.8% in 2019
- Third largest group of scientists and technicians in the world present in India. By 2020, it will be the largest supplier of university graduates
- In 2016, ranked 8th among WTO members in export of commercial services, including IT and ITeS services
- Third most favourable destination for foreign investment after the US and China (UNCTAD, 2017)
- An increase in filing of patents by 5% in 2017-18 *vis-à-vis* 2016-17
- Third largest startup ecosystem
- Over 100 MoUs with trade partners in the areas of R&D, innovation, and startup ecosystem
- Liberal FDI policy

Supporting government policies - Digital India, Atal Innovation Mission, Make in India, Skill India, and Startup India

Objective and Approach of the White Paper

- **Objective**

- Role of Information and Communications Technology (ICT) and Intellectual Property (IP) for India to become an **Innovation Economy**
- India's position *vis-à-vis* other developed and developing countries in key innovation indices – Global Innovation Index and Networked Readiness Index
- Identify barriers and highlight scope for collaborations between India and the EU, its Member States and European Institutes
- Make policy recommendations on how India can leapfrog into an **Innovation Economy**

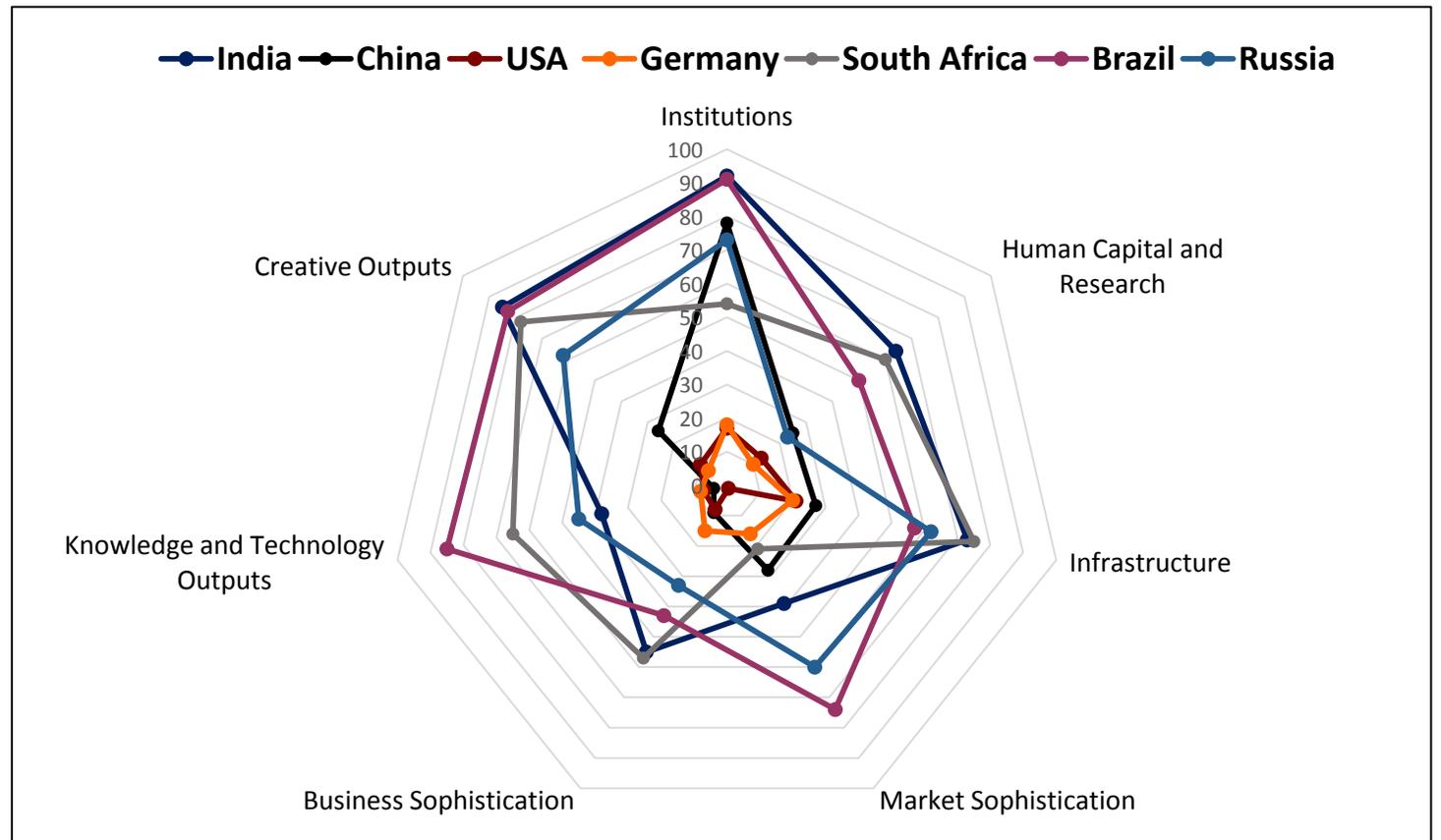
Approach : Secondary information analysis and focused group discussions

India's Global Positioning: Global Innovation Index

India's Overall Global Innovation Index Rankings (2013-2017) among 127 Countries

Year	Rank on the Global Innovation Index
2017	60
2016	66
2015	81
2014	76
2013	66

India's Global Innovation Index Ranking *vis-à-vis* Select Countries across Sub-Indicators (2017)



India's Global Positioning: Global Innovation Index...cont.

Strengths

- India has been ranked above developing countries such as Brazil (69th) and Indonesia (87th) overall
- India ranked above South Africa in three sub-indicators, namely, infrastructure, business sophistication, and knowledge and technology outputs
- India performed better than Brazil and Russia in terms of market sophistication, and knowledge and technology outputs

Weaknesses

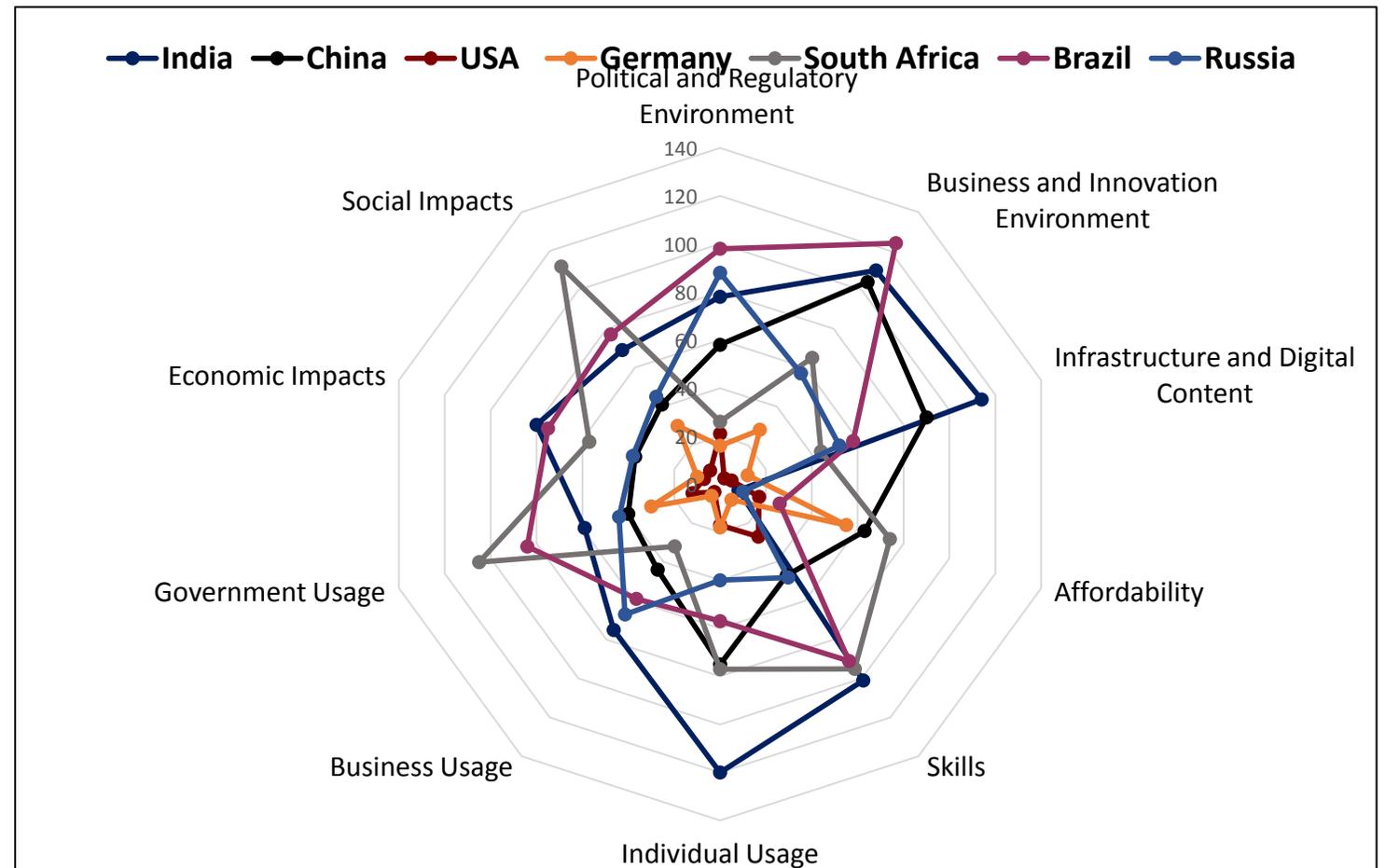
- All EU Member States have been ranked above India in the Global Innovation Index
- India has a low rank in the institutions and infrastructure

India's Global Positioning: Networked Readiness Index

India's Overall Networked Readiness Index Ranking (2012-2016) among over 130 countries

Year	Rank on the Networked Readiness Index
2016	91
2015	89
2014	83
2013	68
2012	69

India's Networked Readiness Index Ranking *vis-à-vis* Select Countries across Sub-Indicators (2016)



India's Global Positioning: Networked Readiness Index...cont.

Strengths

- In terms of the affordability sub-indicator, India has performed better than all selected countries and is ranked 8th .
- India has also been ranked above South Africa in the government usage sub-indicator, above Brazil in political and regulatory environment, business and innovation environment, government usage and social impacts, and above Russia in the political and regulatory environment sub-indicator

Weaknesses

- All EU Member States have been ranked above India
- India is ranked lowest among selected countries in individual usage (despite ranking high in affordability), skills, infrastructure and digital content, and economic impacts sub-indicators

ICT and India

ICT in India's Global Positioning

- India is on its way to become a trillion-dollar digital economy
- Second largest telecommunication market in the world, after China
- ICT revenue is expected to be US\$225 billion in 2020
- The smartphone market in India witnessed a 14% annual growth between 2016 and 2017, and with the increase in production, more than 292 million people in India are now connected, lowering the digital divide
- In 2017, India had the world's second largest number of app downloads (more than 11 billion)
- According to International Telecommunications Union, in the year 2015, the monthly cost of using a mobile phone in India was only US\$ 2.8 (2014 US Dollars), compared to US\$ 35.62 in the US, US\$ 4.07 in China, US\$ 6.09 in Russia and US\$ 8.63 in Singapore

Contribution to the GDP

Top 10 Economies by Value Added of ICT Services, 2015

Rank	Economy	Value Added (US\$ Billion)	Share in Top 10 (in percentage)	Share in GDP (in percentage)
1	US	1,106	42	6.2
2	EU	697	26	4.3
3	China	284	11	2.6
4	Japan	223	8	5.4
5	India	92	3	4.5
6	Canada	65	2	4.2
7	Brazil	54	2	3.0
8	Republic of Korea	48	2	3.5
9	Australia	32	1	2.4
10	Indonesia	30	1	3.5
Total for Top 10		2,657	100	4.5

Source: UNCTAD (2017)

Contribution to the Indian Economy...cont.

- Key sector for job creation: Between 2013 and 2016, the IT sector added 600,000 jobs and had a total employee base of 3.9 million by the end of 2016
- The ICT is the largest sector to attract FDI
- Major exporter of IT/ITeS services - positive trade balance in services
- Digital technologies are increasingly being adopted by Indian industries
- ICT has enabled improvement in e-governance, and increased transparency
- ICT as a socio-economic driver
 - Help support government policies
 - Smart Cities
 - Smart transport – Clean technology
 - Fintech - Blockchain, DevOps
 - Agriculture – Better price realisation, reduce wastages, and post-harvest losses, agronomical and market information, etc.
 - Social sector - E-learning, Healthcare (record maintenance, better communication among healthcare providers, etc.), Big data to analyse air pollution

What can help in Enhancing the Contribution?

- IP plays an important role in incentivising industry to create new technology, commercialise their inventions, and increase investment and collaboration
- IP also helps facilitate the process of taking innovative technology to the marketplace and reduces risk for the players involved
- **Patents:** Patents are the most preferred IP rights in relation to technological innovation

Challenges: Scope for India-Europe Collaborations

Low Penetration of Technology

- Given their own saturated market, the European Companies can invest in this unsaturated market and try out technologies

Quality of Services

- Scope for collaboration especially with startups to improve quality

Gaps in Government Policies (Make in India *versus* Startup India)

- Learning from the Best Practices - Startup policies of European Countries. Startup visas

Skill Shortages/Future of Work

- Collaborations to develop skills for the future

Data Protection Regulations

- India may look at the EU General Data Protection Regulations as it develops its own

Trade Deficit and Low Manufacturing of ICT Goods

- Collaborative research, learning from the EU to give WTO Smart subsidies

The Way Forward in ICT...

- **Set up a Task Force on Innovation Economy** constituting of policymakers, investment agencies, NGOs, academicians, experts , Indian and foreign joint R&D bodies and startups
 - Draw short-term (5 years) and long-term strategy plans
 - Layout plans to address issues such as Future of Work , capacity building and skill development
- **Address Infrastructure and Policy Gaps**
 - Identify the infrastructure (accelerator, incubators, etc.) gaps
 - Funds have to be utilised, projects have to be monitored, policies have to be synergised
 - More government and industry interactions
 - Support growth of both Indian and foreign **startups** – participation in government projects will help innovative companies to scale up, invest in technology and create jobs
- **Government incentives should be aligned to commitments in trade agreements**

The Way Forward in ICT...cont.

- **Promote Interdisciplinary Research**

- Fund research studies on ICT and its usage across sectors to improve productivity and efficiency of manufacturing, services and agriculture sectors
- The government and private sector (through CSR) may fund Chairs in research institutes working closely with policymakers, businesses, academics, international organisations and foreign governments
- Fund cross-country research collaborations

- **To build capacity and leverage on our knowledge base** it is important to do a study on mapping of skill gaps with industry requirements and availability at institutes offering relevant courses

- This will enable to design the skill development policy to meet the needs of the technology driven ICT sector

- **As companies adopt digital transformation, workforce has to be trained** to align to such requirements.

- Training modules in areas such as blockchains, case studies on use of AI and machine learning will be useful

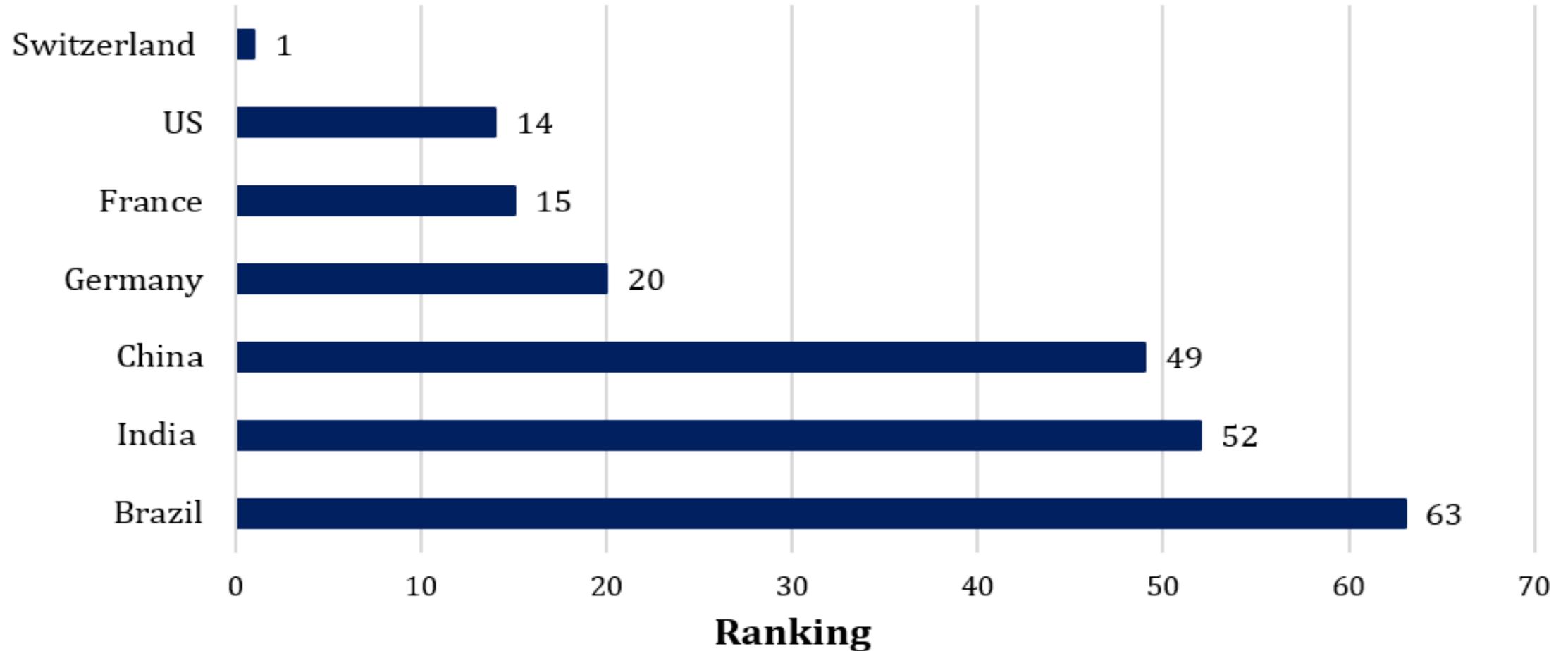
The Second Pillar-IP

Role of Intellectual Property Rights (IPRs) in an Innovation Economy

- IP constitutes a key pillar of the Innovation Economy
- IPRs have been acknowledged to be an essential tool to leverage the economic potential that patents hold
- Focus of this Paper: Patents
- Patents are a metric for “knowledge creation” (Global Innovation Index)
- Effectiveness of the legal system and the protection of innovation, i.e. IP, determine the actual flow of FDI into an economy
- Thus number of patents granted, amongst other factors, can lead to greater FDI inflows and trade
- Industry-specific differences: ‘easy-to-imitate technologies’ (e.g. in the ICT sector) are more affected by IPRs than traditional industries like metal and mechanical engineering

Enforcement of IPRs: Impact on FDI

India vis-à-vis Select Countries Ranked in the “Intellectual Property Protection” Sub-Indicator

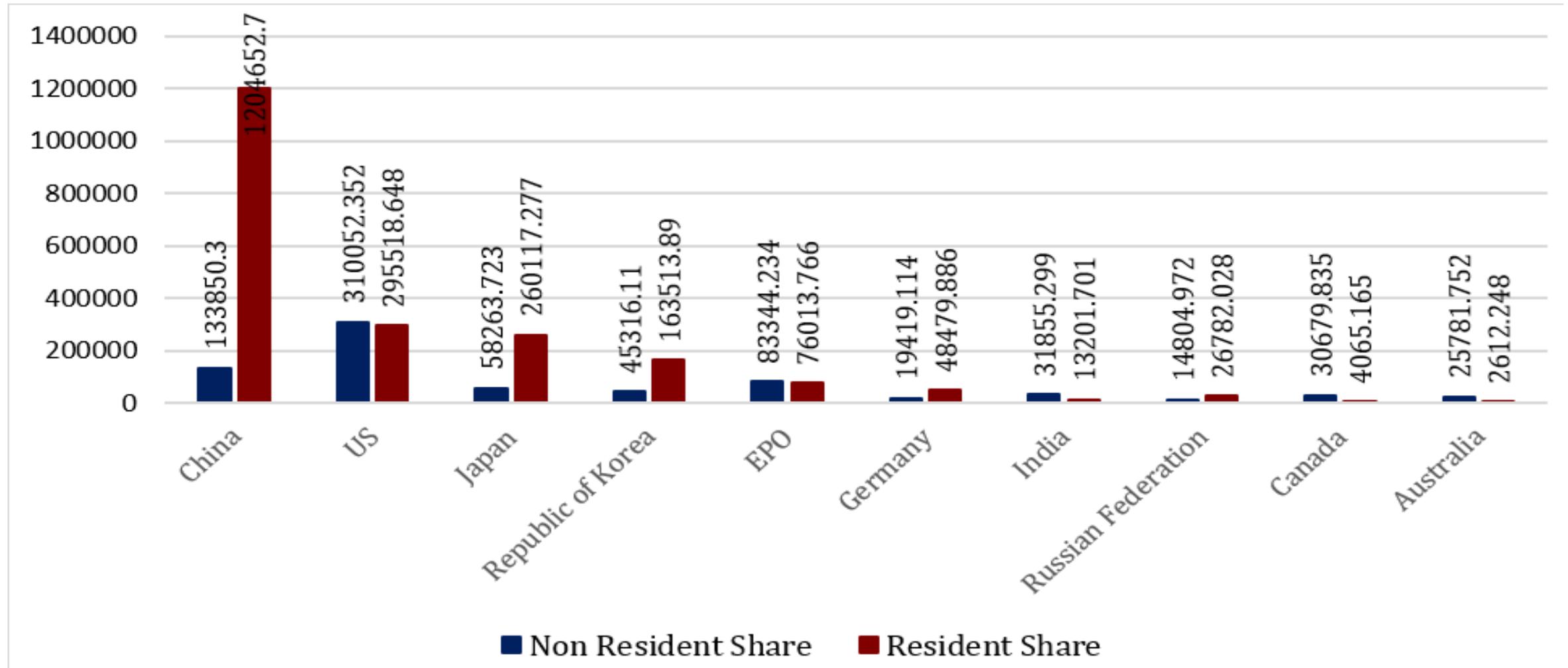


Increased Patent Filings Worldwide

- Global IP filing activity is increasing as the number of patents filed worldwide has augmented by 8.3 per cent from 2015 to 2016. In India **according to DIPP (2018) patent filing increased by 5.1 per cent from 2016-17 to 2017-18**
- **In India 45,057 patents were filed in 2017 (WIPO, 2018) out of which only 29% per cent were filed by residents** The figures indicate a low level of domestic filing and thus low innovation
- China is leading the rank of patent filers: 1,338,503 patents in 2017 (WIPO, 2018) (30% more than India) ; Out of the total 96 per cent filed by residents showing high level of domestic innovation

IPO: Low Filings but among Top 10 Patent Offices worldwide

Patent Applications at the Top 10 Offices (2016)



National IPR Policy(2016)

The IPR Policy lays down the roadmap for India's future in the realm of IPRs and strives to **“ ...spur creativity and stimulate innovation... ” by establishing an “ ...ecosystem in the country conducive to innovation and creativity not only in terms of IP awareness and creation, but also commercialization and enforcement...”** To create IP Awareness

The six Objectives of the Policy are: To stimulate generation of IPRs; Have strong and effective legal and legislative framework; Modernize and strengthen IP Administration; Get value for IPRs through commercialization; To strengthen enforcement and adjudication; To strengthen and expand Human Resources

Select IPR Initiatives by DIPP

- Creating IPR Awareness: Social Media Campaign and awareness programmes for stakeholders
- Strengthening of Institutional Mechanism: e.g. setting up of Centre for IP Administration and Management (CIPAM)
- Expediting the process of patent examination by
 - Augmentation of Manpower: 459 technically competent Patent Examiners in various fields of technology recruited
 - Dynamic Utility Facilities made available on Website of the Office of Controller General of Patents, Designs & Trade Marks (CGPDTM): issuance of electronic patent certificate and SMS service
- Advantage Startups: scheme named Start-ups Intellectual Property Protection has been launched
- Network of Technology and Innovation Support Centres (TISCs) set up pan-India

IP Commercialisation: Case of Mobile Industry

- Telecom Sector: The backbone of the digital infrastructure which is the prerequisite for innovative technologies like AI, IoT and other technologies
- In India the digital connectivity via broadband and mobiles is still low despite enormous demand and rapid market growth
- Crucial
 - To encourage investments in digital infrastructure
 - Monetisation of IP by market-driven approach
 - Commercialisation needs to be viable and reliable to assure conduciveness and investment confidence
 - Standard Essential Patents to be licensed at Fair, Reasonable And Non-Discriminatory (FRAND) terms

SEP Monetisation at FRAND terms

- Royalties can only be compatible with FRAND terms if they reflect the full-value contribution for the end user as the full contribution of the IP only becomes evident through complementarity and network effects when interacting with other components within one device: *Example 5G*
- Defining the royalty base based on the “smallest saleable component” would lead to multi-tier licensing
- Multi-tier licensing leads to increase of transaction costs leading to higher end consumer prices

Enforcement and Adjudication of IPRs

- Bottlenecks in the IP enforcement to be resolved through sensitisation and capacity building programmes for enforcement agencies such as the judiciary, police, and customs
- For resolution of disputes resort to Alternative Dispute Resolution (ADR) mechanisms, especially Arbitration
- Advantage of Arbitration:
 - Confidentiality
 - more control over the design of the process
 - more neutrality
 - faster as well as less expensive than court litigation
- Set up more commercial and fast track courts for IP infringement cases

Challenges: Scope for India-Europe Collaborations

Lack of R&D and Innovation in the Private Sector

- Given India's stagnant expenditure on R&D, not only the financial means for R&D have to be increased but also the way R&D done needs to be changed.

Lack of IP Protection: Computer Related Inventions (CRI)

- Concerns have been raised regarding 2016 CRI guidelines that has put a blanket ban on patenting of CRIs unless a novel hardware is also invented.

Low Level of Patent Applications Filed

- Increase patent filling can be through greater collaboration between Indian Patent Office and other leading IP offices of the world such as EPO through sharing of data and information.

Bottleneck in IP Commercialisation

- A collaborative model is crucial for pro-competitive innovation culture that is accessible to diverse range of innovators, especially small players, who depend more on financially viable technology cost retrieving mechanism.

Licensing Disputes Related to SEPs

- Acknowledging contribution by a patent to a standard, value of such patent depends on its interaction with a multitude of other companies.

Issues Related to Enforcement and Legal Procedures

- Putting in place more commercial courts for faster prosecution, the enforcement of the IPR in India remains to constitute a challenge for both domestic and foreign companies. Courts take years to come with final decision.

The Way Forward in IP

- **Monetisation of IP through Market-Driven Approach** will enable fast track journey into innovation economy
- IPR related policies should be attractive to both the SEP holders as well as the SEP implementers
- It would encourage local investment in developing new technologies and thus in achieving the objectives of the key government initiatives like Make in India
- India may look into European best practices and customise it to the need of the ICT sector (Ex: with regard to Form 27)
- The investment of the private sector in innovation in this sector has to be incentivised by following a market-driven commercialisation approach
- **Co-Creating Global Standards in ICT**
- It is of utmost importance to establish financially viable innovation models by recognising the end device's value (downstream approach) as the adequate way to define the royalty base - alternate dispute resolution mechanism such as Arbitration may be considered
- **Increasing the Number of Patent Filings through more R&D**
- Industries can also be encouraged to invest in innovations, open accelerators and incubators
- Delays in patent filing due to infrastructure bottlenecks need to be addressed through increased computerization, electronic payments system and IT-enabled processing

The Way Forward in IP...cont.

- More manpower recruitment is necessary in the position of examiners and controllers in order to process the pending patent applications and clearing the backlogs
- Public bodies at the Centre, state and local levels need to spend more on research and innovation to pave the way for increased cooperation with the private sector
- **Capacity Building**
 - It is important to do a study on mapping of skill gaps with industry requirements and availability at institutes offering relevant courses
 - Patent-centric innovation has to be encouraged as early as possible. School trainings and programmes at higher educational institutes could be a first step towards a more IP conscious business culture
- **IPR Enforcement**
 - The government, judiciary and other administrative bodies should take collective steps in ensuring proper enforcement of the IP laws
 - The enforcement authorities should take swift and stringent measures against IPR infringement

Thank you

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