

## OPEN ACCESS: A HIDDEN INGREDIENT TO SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES

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### Abstract

Science and technology are considered amongst the most effective means to enhance growth and socio-economic development of nations. Sustainable development encompasses a variety of development schemes in social, cleantech and human resources segments which have caught the attention of both Central and State governments in public and private sectors. Every nation requires the fastest, efficient and convenient resources to facilitate their development with the best of communication, buildings, and technological facilities. Economy, technology, diplomacy and military are the four pillars of growth for any developing country. The First 3 out of the 4 pillars depend on innovation and inventions which begins in the minds of intellectuals. A refreshing diplomatic efforts and a strong selfless political will to share equally the creations of the human minds especially for the lesser fortunate people is the need of an hour. Intellectual property rights and Open Access provide a platform to achieve the innovative and sustainable development of the country. This paper describes the importance of IPR in developing countries. With the increase in the cost and limited access to resources, the paper also discusses as how the open access removes the stumbling hurdles and diminishes the economic difficulties to give a free and open regime of knowledge to usher Nation's prosperity.

**Keywords:** Open access, IPR in developing countries, Sustainable Development, Socio-Economic Development.

### 1. Introduction:

“Development” is truly much more than merely economic growth. Development is a comprehensive process involving economic as well as social and environmental changes. Different countries have different priorities in their development policies. But indicators of wealth, which reflect the quantity of resources available to a society, provide no information about the allocation of those resources. Every country wants the fastest, most efficient, convenient resources to facilitate the development of their nation. All the demands of developing and developed nations require the manipulation of natural resources like coal, petroleum, electricity, wood and steel to survive. Industries cannot run until they are fed these precious and stealthily depleting resources. It is in demanding times like the present that the world has become aware of how these resources are fast depleting. Sustainable development is the only way we can keep Mother Nature, our growth economy and present and future generation happy and smiling. Developing countries are increasingly improving their capacity to use scientific and technical knowledge to solve these problems. They are investing in communication infrastructure and improving technology policies by accessing to the world pool of knowledge. Essential information is locked away behind some barriers such as journal subscription charges, individual article download fees and copyright licenses that prevent reproduction, distribution, translation, or the creation of derivative works, all of which would

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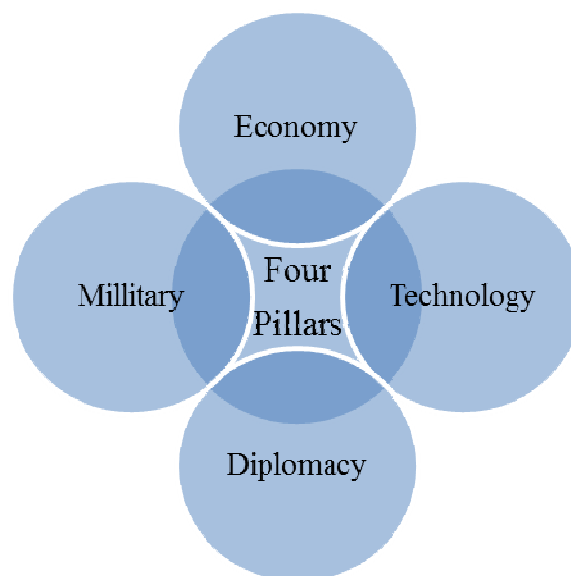
help published work to be used for innovation. These restrictions are compounded by infrastructure inadequacies and lack of incentives for increasing the use of scientific and technologic knowledge in solving challenges in developing countries. The conventional view is that intellectual property is not good for the developing world, since it primarily benefits the developed world or we can say that the developing world has more gain from Open Access as has the developed world.

## 2. What Does Sustainable Development Mean?

For the most part, people don't really understand the idea of 'sustainable.' All they know is that it's something that means an action which will be helpful to the environment. A Development - that meets the needs of the present without compromising the ability of future generations. Sustainable development focuses on improving the quality of life for all of the Earth's citizens without increasing the use of natural resources beyond the capacity of the environment. Sustainable development is not a new idea. Many cultures over the course of human history have recognized its need for harmony between the environment, society and economy. Sustainable development includes economic, environmental, and social sustainability, which can be achieved by rationally managing physical, natural, and human capital. The first three dimensions address key principles of sustainability, while the final dimension addresses key institutional policy and capacity issues.

### 2.1 Four Pillars

For the development and growth of any country, the four basic dimensions are Economy, technology, diplomacy and military, the four pillars. Sustainable Development is modeled on these four basic pillars. The diagram shows four interlocking circles considering the society but does not explicitly take into account 'human quality of life'. The first three pillars depend on the intellectual minds of the people and fourth one is important for the safety and security of nation.



**Figure 1: Four pillar diagram for the development of Nation**

#### 2.1.1 Economy

Latest research proves that the long held expectation i.e. a population's education and health status plays a significant role in a country's economic development. Better education

leads for long-term economic growth. For international policymakers, education should become the top priority because it empowers the people to improve governance, help themselves and to reduce corruption. Intensive effort for much more primary and secondary education combining national and international forces would appear to be the most promising route out of poverty and towards sustainable development for the developing countries.

### **2.1.2 Technology**

IT is seen as one of the most significant forces of modernization. Young people in all the countries are both a major human resource for development and key agents for social change, economic development and technological innovation for the homeland. The influence of new technologies on society and development touches various interests and domains. The effective and appropriate use of technology requires consideration of social, cultural, economic, political, and environmental contexts. The opportunities and challenges applying the technologies to old problems require the guidance from a new breed of professionals and policymakers who can integrate technological expertise and a clear understanding of its wider ramifications as a guide. Technology and cooperation associated to local capacity building make a clear difference in fostering sustainable development in developing countries.

### **2.1.3 Diplomacy**

Diplomacy is an important factor determining whether a nation is an independent state. The main use of diplomacy revolves around the representation and protection of the interests and nationals of the sending state, as well as the promotion of information and friendly relations. As quoted by Dan Gillerman "Diplomacy is not something you can learn at school or in the foreign service. A diplomat is a person who can tell you to go to hell and actually make you look forward to the journey." Economic diplomacy and trade negotiations are the issues that need to be considered in developing countries.

### **2.1.4 Military**

The Military Engineer Services is one of the pillars of every land which provides rear line support. Increasing deployment of militaries from developing countries could help spread infections across borders. Military spending is an important issue for developing countries. It is an expenditure by governments that has influence beyond the resources it takes up, especially when it leads to or facilitates conflicts. Its economic impact is therefore of considerable concern for the countries. Most of the arms transfers, licensing agreements and co-production arrangements take place under the aegis of transnational corporations which are only in part under Government control.

## **3. Role of IPR in Developed and Developing Countries**

We encounter intellectual property at every step of our life today. Everyone knows what a property is. In day to day parlance we associate the word property with some object or land that belongs to a particular person. However in law, the word is a little differently understood. It refers to the bundle of rights. It is defined as an exclusive right to possess, enjoy, use, transfer, alienate and exclude others from doing so an object. The property rights when granted for such intellectual property become the intellectual property rights. Thus Intellectual property (IP) is the name given to property arising out of human intellectual effort. The output of human intellectual effort often manifests itself as new or original knowledge or creative expression which adds desirable quality to a marketable product or service.

### **3.1 IPR in Developed Countries**

Developed countries have a fundamentally different view of the role of intellectual property rights. They view IPR as a way of incentivizing innovation. The way IPR are viewed is also a reflection of the western world's views of property in general, namely, exclusive ownership, the right to limit use, and the ownership right of control over propertized goods. Trade-related aspects of intellectual property rights (TRIPs) reflect all of these concepts. Developed countries argue that patents are essential to international economic development because they provide a means to guarantee a return on invested time and capital in R&D.

### **3.2 IPR in Developing Countries**

Underdeveloped countries are at a huge technological disadvantage in the global high tech economy today. They have immeasurably fallen behind developed countries in both acquired technology and domestically developed technology. An efficient and equitable intellectual system can help all countries to realize intellectual property's potential as a catalyst for economic development and social and cultural well-being. The intellectual property system helps strike a balance between the interests of innovators and the public interest, providing an environment in which creativity and invention can flourish, for the benefit of all. Developed countries often proceed on the assumption that what is good for them is likely to be good for developing countries, but in the case of developing countries, more and stronger protection is not necessarily better.

Developing countries should not be encouraged or coerced into adopting stronger IP rights without regard to the impact this has on their development and poor people. They should be allowed to adopt appropriate rights regimes, not necessarily the most protective ones. The intellectual property rights system, as a whole is less advantageous for developing than for developed countries in many areas of importance to development, such as health, agriculture, education and information technologies. The system increases the costs of access to many products and technologies that developing countries need. Developing countries participate in global intellectual property systems as 'second comers' in a world that has been shaped by 'first comers'. When their economies were at comparable stages of maturity, most developed countries did not follow the stringent intellectual property standards they now advocate for developing countries. Developed nations take the economic needs of developing countries fully into account when seeking to craft international intellectual property rights systems.

The impact of IP rights on people will vary according to socio-economic circumstances. IP systems should be tailored to a country's state of development and its particular circumstances. Developing countries need to shape their IP laws to promote development generally and keep in mind some of the negative impacts of overly generous IP protection. Even the complete absence of IP rights would not solve the lack of sufficient resources in developing nations. Countries need other measures to stimulate development in the interests of people. To accomplish these goals, countries need a combination of increased international funding and support for increased education and training within developing countries.

## **4. Open access**

At the end of the last century, the combination of powerful desktop computers with electronic distribution over the internet, prepared the ground for the development of all electronic scientific journals. Today, authors routinely produce what is effectively "camera-ready copy". The rest of the production process is carried out within an all-electronic publication system, and the final distribution is on the world-wide-web. Authors and referees generally carry out their work at no charge. These facts provided the stimulus for scientists and institutions to reassess the traditional subscription model of scientific publishing and to

come up with a new model appropriate for the digital age; this model has been called Open Access and also known as open-access publishing and free online scholarship.

#### **4.1 Why Open Access?**

Open Access is an important step on the way towards open science. Open Access seeks to return scholarly publishing to its original purpose: to spread knowledge and allow that knowledge to be built upon. Price barriers should not prevent students or anyone from getting access to research they need. Open Access, and the open will have a significant positive impact on everything from education to the practice of medicine to the ability of entrepreneurs to innovate. This communication step is crucial, as it adds to our global knowledge foundation for new research questions or ideas that may eventually lead to things like "innovation", "insight" and "progress". Access is a movement to lift those access barriers, and it is not only useful to researchers but it can also to the common public. It can help to inform public debates about research data with scientific implications. Some of the major benefits for different communities are provided below.

##### **i. Open Access for researchers:**

- Open Access will improve the visibility and impact of your research.
- Open Access will enable you to gain immediate and free access to all the literature you need for your research.
- Open Access will enable you to have more control over how your publications are used.

##### **ii. Open Access for universities:**

- Open Access will improve the visibility and prestige of your institution.
- Open Access will enable research institutions to better account for their research output.

##### **iii. Open Access or policy makers and funding agencies:**

- Members of the public are entitled to access to the peer-reviewed scientific articles based on research that has been funded by governments.
- Open Access will increase the government's return on investment in research by enabling more widespread dissemination and uptake of knowledge.
- Open Access will enable research funders keep track of outputs from their funding, and measure and assess how effectively their money has been spent.

#### **4.2 Open Access: Challenges?**

##### **For Staff**

- Manages 'human' side of the repository including content policies, advocacy, user training.
- Manages technical implementation, customization and management of repository software.
- Manages metadata fields and quality, creates usage reports and tracks preservation issues.

##### **For Skills**

Knowledge and abilities required for the development and management of a successful institutional repository must have the ability to:

- Manage the user needs in line with resources;
- Manage the repository service by identifying goals and future strategies for improvement in the repository service.
- Manage the day-to-day running of the repository including any mediated-deposit service or self-archiving by authors.

### **4.3 IPR and Open Access**

Intellectual property right and open access is much touted phrase in today's era of market competition and globalization. The object of granting IPRs is to prevent unauthorized usage of someone's artistic creation and thus encourage creativity and innovation. Thus intellectual property rights are exclusive rights of an owner of an invention or a musical or literary work etc. to derive benefits from his work thus giving him financial incentives to innovate and create. They are paid for their work by the publishers who want to publish their books or songs. You can easily relate this to the 'All rights reserved' condition that one comes across in a book.

In contrast Open Access (OA) is a publication model for cultural and academic publications that relies on the use of the internet. Peer review in academic open access publication is carried out either by Open Access journals or by readers commenting on the papers online. Authors, peer reviewers and OA journal editors all donate their time. OA is also supported by cultural heritage organizations which believe that it should be easier to gain access to cultural content online. OA is typically funded by institutions which host the material, sponsorships, fee payments by authors, subscription by companies, or the provision of advertising or auxiliary services.

#### **OA has a number of advantages over IPR:**

- There are no price barriers: access is free.
- There are no permission barriers: OA publications are copyright-free.
- OA licenses typically protect the integrity and attribution of content.

### **4.4 IPR Issues facing open access**

Intellectual property rights also have a large impact on international trade. Due to the emergence of information and communication technologies, namely the Internet, defining the boundaries of intellectual property has become more challenging. Technology has advanced to a state where previous copyright codes and laws no longer fit. Some people find that is restrictive to digital age of file sharing and blog publishing. A Creative Commons license allows for more flexibility for the creator to attribute parameters on sharing their work. Many people differ on the definition of piracy when it comes to files for download on the Internet. While some see it as an obvious infringement of copyright law, others believe ownership is more complex. The process of making files available to other users over the Internet for downloading purposes is called peer-to-peer (P2P) file sharing. While the Web provides easy access to articles, essays and other texts, it is imperative to credit the original author by properly citing sources. Failure to do so or intentional plagiarism may result in severe penalties to major legal fines and penalties.

#### **4.4.1. Ethics and Law**

The IPR do not conflict with public access rights. The protection of intellectual property through ordinary patents or trademarks can even be conceived as a social contract under which society protects the owners' rights while products are marketed to the public. Sometimes patents or trademarks are viewed as insufficient and are reinforced by supplementary protective measures such as copy bars. The World Trade Organization and trade-related aspects of intellectual property rights resolved the long-standing deadlock over intellectual property protection and public health. Governments finally agreed on legal changes to facilitate poorer countries' import of cheaper generics made under compulsory licensing if they are unable to manufacture the products and medicines themselves.

#### **4.4.2. Information ethics**

Four main ethical issues with respect to information systems are often focused on: privacy, accuracy, property and access. These four issues can in turn be traced back to three main sources:

- The pervasive role and capacity of systems for collecting, storing and retrieving information.
- Information technology complexity.
- The intangible nature of information and digital goods, such as digitized music or software.

#### **4.4.3. Property**

The World Intellectual Property Organization implores studies in an expanding field of activities ranging from the Internet, health care, science and technology, literature and the arts, patent systems and access to drug care, genetic resources and traditional knowledge. Intellectual property such as licensed software is clearly protected by several legal mechanisms such as patents, or trade secrets. Faced by digital piracy and illicit copying, proprietary software producers in addition frequently restrict or limit use.

### **5. IP Protection in the Age of Open Access**

The broad aim of IP protection is to improve the understanding of intellectual property rights related issues among developing countries and to assist them in building their capacity for ongoing as well as future negotiations on intellectual property rights (IPRs).

#### **5.1 Digital Rights Management**

Digital Rights Management (DRM) technologies have been evolved as the tools for the control of access and usage of digitized information resources over the internet. DRM technologies possess the ability to gather information about users' intellectual, social and psychological preferences. The consumption of various forms of digital contents, in the age of the open access paradigm depends on a number of refined, surprisingly complex, and at times conflicting elements of law, public policy, economics, and technology. Unfortunately, open access also enables unauthorized usage of resource by those who divest copyright owners the right benefits for their efforts. Today, a world of information is available with little effort and almost at no cost to the user. Access to resource materials in an age where libraries are getting computerized, digitized and virtual is obviously without limits.

#### **5.2 The Changing Culture of Publishing and Open Access**

Increasingly now, open access is gaining ground. Access may be interpreted restrictively to refer only to the open versus closed access of users to library materials. Here the trend has been from closed to open access almost everywhere except in archival and research collections. In context of the Information ethics, access has a far wider application than libraries. It is interesting to probe further and see who or what is leading the charge towards open access. This movement is led clearly enough by the medical and health sectors. Firstly it is in these areas that there is potentially a resonance with the marketplace for commercialization, and with an expressed need for application and deployment. Secondly, medical and healthcare research is one opening – a vantage point – in regard to life sciences sector. Thirdly and most of all, it is organizations like the National Institutes of Health that have gone furthest, in introducing open access policies.

## **6. What need to be done to promote Open Access?**

Libraries are becoming increasingly active in promoting positive change in the scholarly communication system. This is represented by a growing number of library outreach programmes in the public policy arena. A good first step for librarians in promoting Open Access is to initiate discussions with the various stakeholders about the benefits. It should be noted, however, that the incentives for supporting Open Access differ for various communities, and efforts to promote Open Access are more effective if the messages are tailored appropriately.

The full power of Open Access, however, can only be harvested if all other steps within the scientific cycle including, e.g., notebook keeping also become increasingly open. Also, the economic growth of the nation is based on the idea that education leads to increased productivity, which, in turn, leads to increased wages.

## **7. Conclusion**

The learning environment in developing countries suggests a serious problem in respect of access to knowledge goods. While there are several factors complicit in producing this access gap, several of the identified problems i.e. excessive pricing, unavailability and unsuitability of material, and government/ institutional resource constraints can be traced. While noting that progressive copyright licensing movements are promising, open content licensing policies can offer significant benefits to access to learning materials. Empirical evidence shows that IPRs can facilitate diversity in access to knowledge and benefit-sharing from innovation in developing countries. Tailored IP laws are a necessary prerequisite for knowledge protection systems to engage a wider range of people in accessing the benefits of knowledge in developing countries through open access. In short, IP rights are only one factor among many in the development process. Their importance should be recognized, but not overstated.



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