

Intellectual Property Rights and Access to Climate-related Technologies:

Lessons from Indian experience

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Outline of the Presentation

- ∞ Arguments for and against patent protection
- ∞ The climate change context
- ∞ Perspectives on IPR and technology transfer
- ∞ Patent regimes in developing countries
- ∞ Select cases: biotechnology, solar power and wind power
- ∞ Concluding remarks

Why Patents?

- ∞ Innovation is a public good and hence marginal cost is zero => without IPR there will be no R&D
 - Patent gives monopoly right and hence makes innovation inaccessible to a large number of people
 - If there is no sufficient checks and balances, the very objective of granting patent rights is defeated – why should the state promote innovation when it does not help people?
 - Provision for compulsory licensing and other remedial measures
- ∞ Without IPR, the innovators will not disclose the knowledge which will adversely affect further R&D and innovation
 - In reality, companies do not disclose everything. They continue to use both IPR and trade secrets in combination, depending on the situation
 - In patents, winner takes all. Nobody else is allowed to develop same or similar technology, even if done independently

Patent Pains

- ∞ Patents are used not only for protection of knowledge but also for trade, reputation and strategic competitive tools
- ∞ Patent does not guarantee commercial application of knowledge but exclusion of others from using the same
- ∞ We are in a one product many knowledge (and many patents) situation
- ∞ Too many people are excluded from too many things - rise of “anti-commons” – patent thickets – making available knowledge unusable

Patent Pains

- ∞ Access to Patented knowledge as well as full utilization is a concern
- ∞ Internalization of the patent regime has raised further concerns
- ∞ Tools like compulsory licensing and compulsory patent pooling (forcing multiple patent holders to work together) become difficult to use
- ∞ Access to existing knowledge – research exemption often not adequate - Patenting of research tools – particularly in biotechnology, nanotechnology etc., - knowledge created through research exemption faces commercialization hindrances

Patent Pains – the case of golden rice

- ☞ Dr I Potrykus developed technology of enriching rice with β -carotene with support from Rockefeller Foundation
- ☞ 70 different patents held by 40 different owners required
- ☞ Dr Potrykus transferred the right to Syngenta who bought rights from other relevant IPR owners
- ☞ Humanitarian use :
 - Use in low-income, food-deficit countries (FAO) by farmers with an annual income of less than US\$10K
 - selling without any surcharge for the technology
 - where national sales are allowed by such farmers, and where re-use of harvested seed is allowed.
- ☞ Will commercial entities take up such research?

The Climate Change Context

- ∞ India wants UNFCCC COP to address IPR related barriers to technology transfer in climate related technologies (both existing and future)
- ∞ Studies shown emission can be reduced significantly by using existing technologies
- ∞ Many technologies would be of great help in adaptation to CC as well
- ∞ There have been technology denials – companies refused to license technologies
- ∞ Example of TRIPS and public health campaign, Doha Declaration and subsequent TRIPS amendment is quoted
- ∞ Did not pick as much momentum as the issue is not as

Perspectives on IPR and tech. transfer

- ⌘ Developed countries argue that lack of strong intellectual property rights protection in developing countries is one of the major factors for technologies not spreading
- ⌘ They also argue that technology transfer does not mean that hi-tech goods should be produced in developing countries, if they have access to such goods, then that is good enough
- ⌘ Developing countries argue that IPR is one of the barriers
- ⌘ Developing countries should be able to produce these goods and only then these goods would be cheap enough for wide use

Patent Regime in Developing Countries

- ☞ Do people respect IPR in developing countries?
- ☞ **NO**
- ☞ Are there rampant infringement of patent rights?
- ☞ **NO**
- ☞ Violations are quite common in copyrights, trademarks, designs etc. but not in patents
- ☞ Why?
 - **Not all knowledge in public domain (patented) but partly kept as trade secret**
 - **Poor absorption capacity (partly due to denial of technology over long time)**
 - **Costs/risks are very high**

Select Cases



Qualitative Assessment: Biotech, Wind and Solar power

Indian Biotech Industry - Nature

- ∞ Genesis in generic pharmaceuticals industry: Bio-generics – generic therapeutic products
- ∞ Outsourcing, including contract research activities
- ∞ Agri-biotech – dominated by foreign companies
- ∞ Indian biotechnology industry is still at a nascent stage more of generic-focused rather than innovative research-oriented – but this is changing
- ∞ Three types of players:
 - Established local companies who diversify to BT operations
 - Multinationals (active mainly in agri bio which they dominate; R&D in home country) and
 - Start up companies with major focus on BT, many of them are in services like contract research and clinical trials

Indian Biotech Industry - Structure

- ∞ Indian biotech industry is dominated by medical biotechnology. But agricultural biotechnology segment is dominated by one company or rather just one product as Bt Cotton accounts for about 90 percent of the revenue in this segment
- ∞ High export orientation as it earns about 60% of its revenue from the export markets. Bio agri and bio industrial segments are domestic market oriented
- ∞ Some companies see US and EU as their potential markets.
- ∞ There are products invented by Indian companies already in US and EU markets but not in India
- ∞ There are many non-transgenic biotech products particularly bio-fertilizers and bio-pesticides that are not able to get appropriate place in the market

Access to Patented Knowledge

- ☞ Access to patented knowledge is an important issue/concern for the development of biotechnology industry in India
- ☞ Some companies/research institutes avoid some areas of research as they are over-patented and getting license would not be easy
- ☞ Indian patentability criteria is quite strict which gives some flexibility to potential innovators
- ☞ Indian scientists often find out a new process to avoid the hassles of getting licence to patented knowledge which might not be the most cost effective and time-saving way
- ☞ Patent infringement might be occurring due to low level of awareness among the researchers
- ☞ In India researchers have not been too enthusiastic about patenting their work which meant that their work remain less publicized and hence less prone to charges of infringement

Access and Infringement Issues

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- ∞ Medical biotechnology had initial advantage in bio-generics but agricultural biotechnology did not have such advantage

Wind Power

- ☞ Largely driven by policies and regulatory incentives
- ☞ Technologies came from outside almost no domestic R&D
- ☞ Technologies came as black box and crucial components are imported
- ☞ Upfront technology costs and royalties are not too high, creating the impression that costs of technology transfers are not too high – important components are imported with high costs, hiding the actual costs of import of technology
- ☞ Some companies bought foreign companies with high prices to acquire IPR/technology
- ☞ Little attention to adapt technology to local situations
- ☞ Imported technology is good for low temperature and dust free environment with consistent wind speed and direction
- ☞ In India breakdown rate is high making it less efficient and less reliable

Solar Power

- ☞ Largely driven by policies and regulatory incentives
- ☞ Technologies used are quite old and off-patent
- ☞ Mostly photovoltaic cell based which cannot take us too far particularly for grid-interactive power generation
- ☞ Solar thermal technology is still expensive and not much in the hands of Indian companies
- ☞ Technologies are not always IPR protected, large part is also subject to trade secret

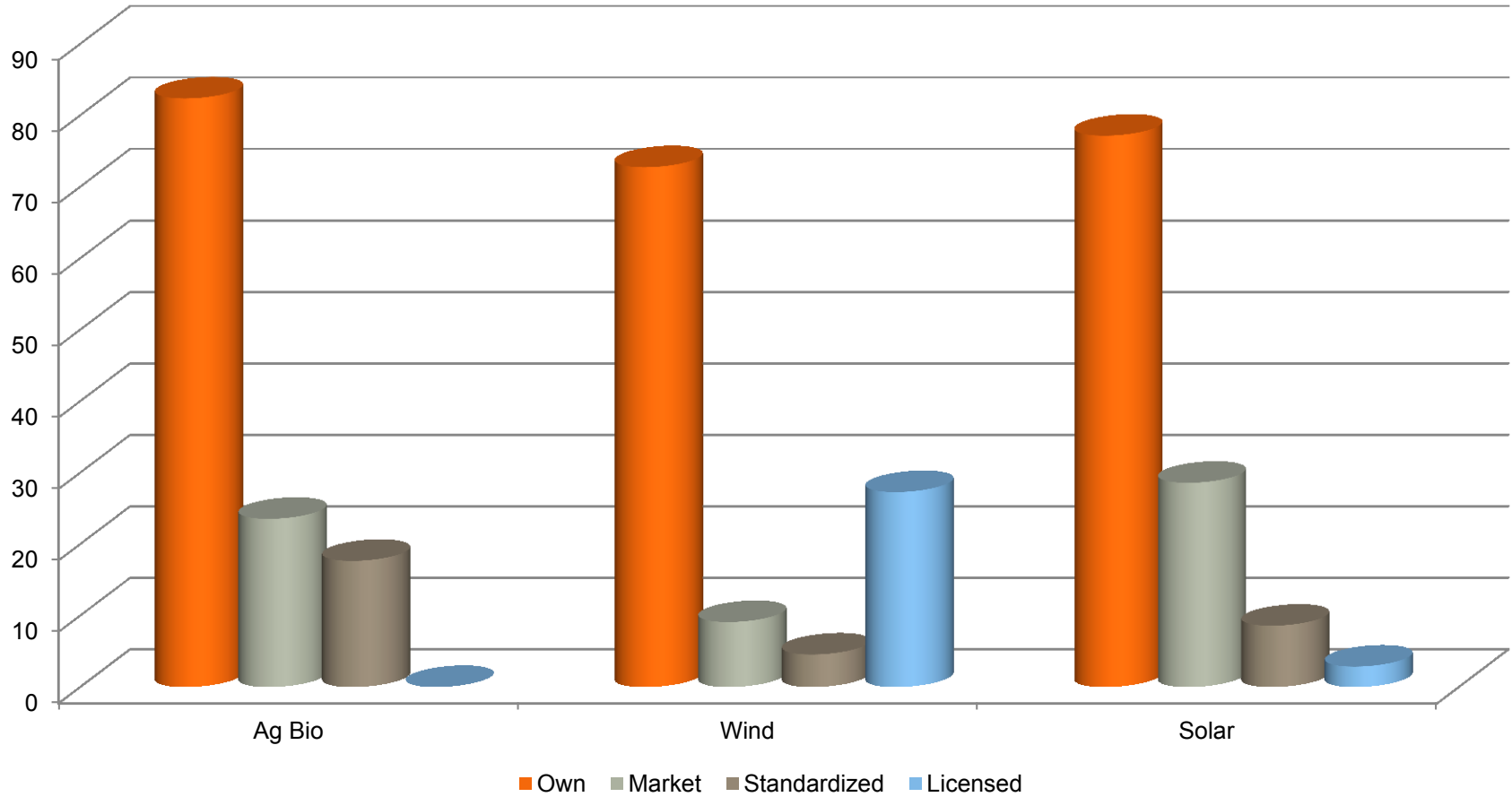
Select Cases



Quantitative Assessment: Agro-biotech, Wind and Solar Power

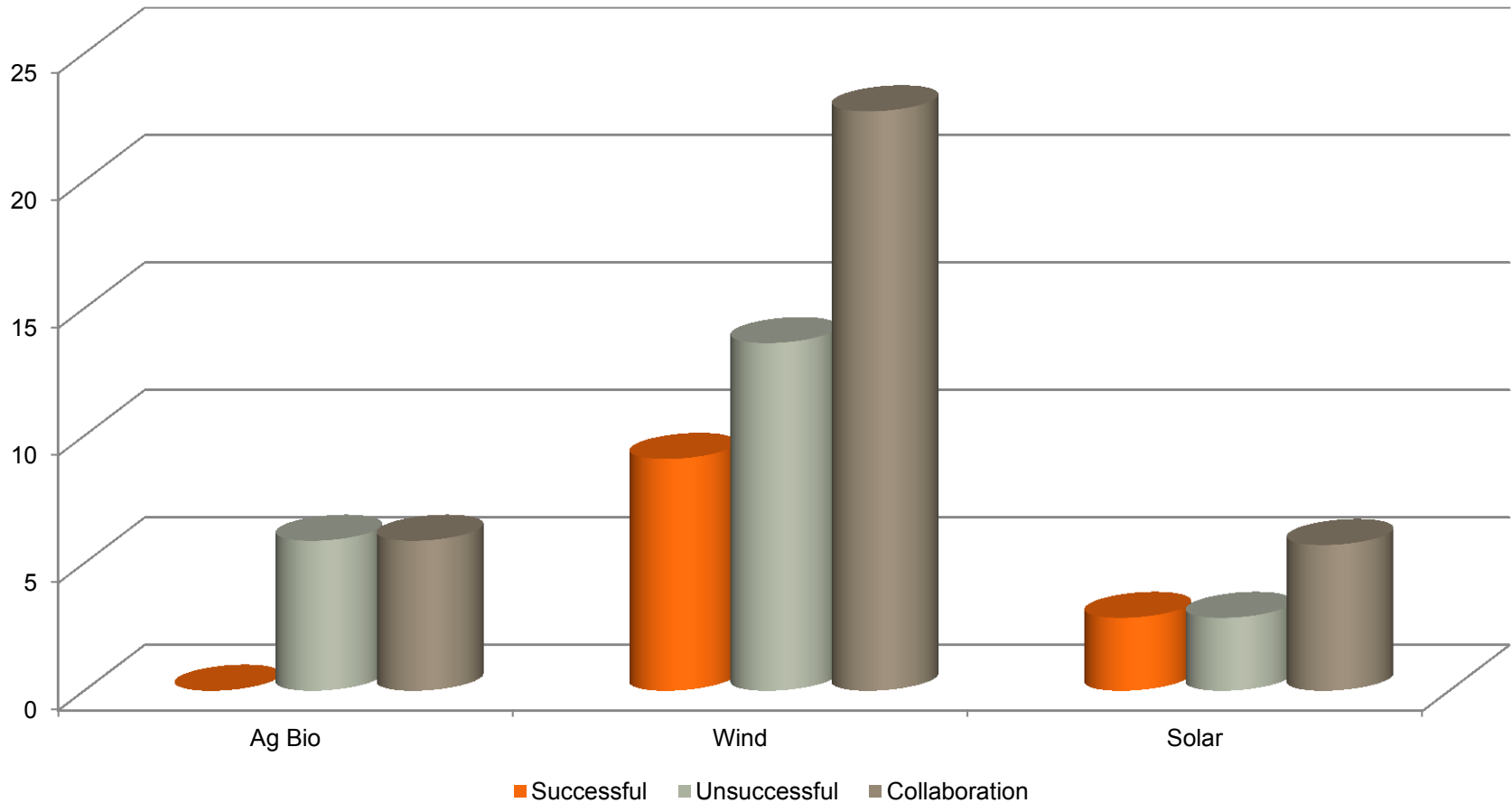
Sources of Technology

(Ag Bio = 17; Wind 22; Solar 35)



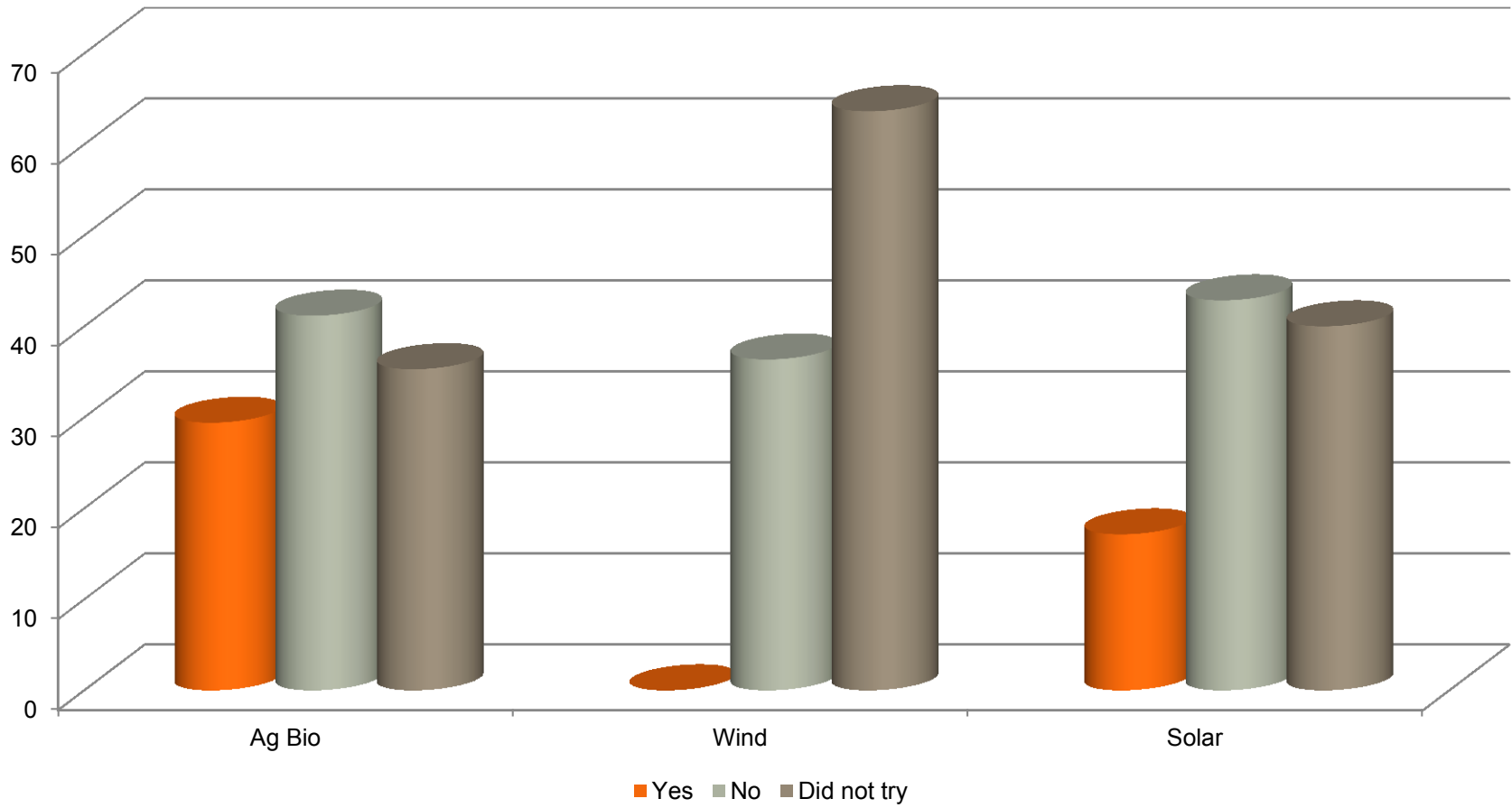
Technology Collaboration

(Ag Bio = 17; Wind 22; Solar 35)



Technology Denial

(Ag Bio = 17; Wind 22; Solar 35)



Concluding Observations

- ☞ Patents can promote innovation but with significant adverse effects
- ☞ Market and patent based innovation promotion policies can ignore problems that need more attention in developing countries
- ☞ IPR creates obstacles and adaptation of technologies to local conditions may be ignored
- ☞ Dominance by large corporations (with the help of IPR) can create path dependence and can dump technologies that are not the best suited and drive away better (more appropriate technologies)
- ☞ Absorption capacity is an important factor that affects technology transfer
- ☞ India needs an “IP” policy rather than an “IPR” policy and IPR can be a small part of it

Thank You

