

Open Source, Open Innovation and Climate Change Technology Development and Transfer

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Overview

- Introduction- Tech Challenge
- Open Source
- Open Innovation
- User Innovation
- Examples
- Hypothetical Example
- User Participatory Innovation: Case Study in Agriculture
- Conclusion

Tech Challenges

- We need all types of innovation- radical, incremental and cumulative across sectors
- Diffusion and Transfer of Technology equally important
- Time Frame – few decades
- Tech Development & Transfer- Global, National and Local
- Customizing Technology and Adapting to user needs
- Top down approach – Linear Paradigm of Tech Development and Transfer
- Different Approaches – Open Source, Open Innovation, User Innovation and Their Relevance

Tech Challenges

- We need to think beyond traditional paradigms in both development and deployment
- Understand the relevance of IP and ensure that it is not a barrier or try to find innovative solutions
- Using IP to protect and monopoly rights vs. using IP to share, encourage others to contribute and still protect IP (e.g. non-exclusive licensing)

Open Source

- Open Source – Software and Beyond
- Biotech, drug discovery, post-human genomic research, in sciences and product development
- Using Open Source in Climate Change Context
- Issues and Challenges

Open Innovation

- “At its root, Open Innovation assumes that useful knowledge is widely distributed, and that even the most capable R&D organizations must identify, connect to, and leverage external knowledge sources as a core process in innovation” Chesbrough (2006)
- Facilitated by developments in ICTs, Global Networks and Opportunities in collaboration

Why Open Innovation

- The rationale for firms opting for Open Innovation stems from a pragmatic view that there are occasions in which cooperation in production and sharing can benefit all participants than each participant trying to secure monopoly rights through patents and enforcing them.
- Co-operate and benefit than fighting with each other through enforcing IP rights

Example

- . A study of 39 initiatives in biopharmaceutical innovation highlighted the different ways in which companies are willing to share, and exclude others outside the consortium but allow access to members and opt for joint management of knowledge assets so that all members can benefit and take advantage of knowledge and technology outside the firm Allarakhia et al., 2010

Why

- it makes sense to undertake cooperative knowledge production and open knowledge dissemination as they provide joint benefits in circumstances where upstream discovery research cannot result in commercial products and when the costs of upstream competition are high (Reichman, Foray)

Literature in Climate Change

- Clean Energy Group has come out with a comprehensive report on relevance of “open and distributed’ innovation for climate change (Morey et al., 2011)
- Rattray, 2009 on relevance of Open Source approaches
- My research & forthcoming publications

■ **Open Innovation and Open Source: Comparison and Differentiation**

- collaboration and tapping resources outside the boundary of firm through collaborative processes and networks
- facilitate flow of ideas, synergy in working and can result in solutions that a single firm/group alone would not have been able to develop

Open Innovation and Open Source: Comparison and Differentiation

- Difference: In Open Innovation firm is the centre of the network while in open source the issue/problem is the center/focus than firm per se.
- Difference in handling IP: Open Source Projects use GPL or its derivatives
- Open Innovation – Patenting is used but in such a way that it is used to encourage sharing and for defensive purposes than to prevent others

Pools, Commons, Clearing Houses

- Patent Pools- Medicines Patent Pool
- Patent Commons
- Clearing Houses
- Alternative Licensing Options
- These are some of the options to facilitate technology sharing and transfer
- Challenge is to develop flexible mechanisms and structures in organizing R&D and Transfer of Technology

Eco-Patent Commons

- WBCSD
- 100 Patents
- Available for free for clean energy technology development subject to conditions
- Patents are donated to Commons but patentee can impose conditions

GreenXChange

- Based on Creative Commons Licensing
- Some uses allowed, some restricted
- Patents are not donated but flexibility in using is encouraged
- Based in USA
- Can be used in Open Innovation/Open Source projects

Clearinghouses

- matching users and providers of goods, services, information and technology.
- technology exchange clearinghouses offer information services and enable technology providers and seekers to find partners and conclude contracts
- Can handle IP issues or can be facilitating sharing

Licensing Mechanisms

- Equitable Access Licensing
- Licensing for humanitarian purposes
- GPL/GPL based
- Can be customized for tech transfer
- Licensing is a creative way of using patents

Mitigation-Agriculture-Hypothetical Example

- Challenge: Develop Rice Varieties with Enhanced Nitrogen Use Efficiency and Transfer of Technology
- Organizing through Open Innovation and Open Source
- Consortium- Sharing of Resources-Identify IP issues- MTAs- patent landscaping and licensing from others
- Develop a IP policy to facilitate sharing within consortium
- Golden Rice example-40 organizations- 72 patents – resolved through negotiations and access granted
- Examples SNP Consortium, HapMap Project
- Pre-Competitive Collaboration Arrangements

Mitigation-Agriculture-Hypothetical Example

- Variety Development and IP- Patent but share
- Opt for PBRs where that is available
- Patent Pool as an option
- Patent for defensive purpose
- Licensing Strategies- for public sector, for breeders, for research
- Use IP creatively and encourage transfer of technology and sharing

User Innovation

- Users as Innovators, Users as source for ideas and Users as Collaborators in Innovation
- Advantages in involving users in innovation
- Encourage user innovation even if it is incremental
- Climate change context

Participatory Plant Breeding

- Farmers as users and evaluators
- Farmers test and response considered
- Farmers as source of germplasm and knowledge while breeders bring in modern R&D and S&T
- Collaborate to develop varieties that meet farmers' needs and useful in different agro-climatic regions

Case Study from China

- PPB in Karst Mountain Areas
- Project since 2000
- 200 varieties tested 6 farmer preferred varieties selected and used
- Five landraces improved
- Adapted 5 varieties from elsewhere and enhanced performance
- Open Pollinated Varieties- Women as seed growers and farmers can reuse these varieties

Traditional Knowledge, PPB

- TK holders as users and potential innovators
- Involve TK holders in PPB
- Varietal Development, In situ conservation and enhancing traditional varieties
- Better suited for local conditions and give farmers' more options than hybrids or commercial varieties

Some more issues

- Role of state in this
- Open and Closed Research in Technology Development and Transfer
- OS/OI not a panacea but options available
- Contextualize and evolve structures
- Revitalize public sector R&D to provide public goods

Thanks

- Presentation based on work-in-progress
- More publications are at SSRN
- http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=290086