INTELLECTUAL PROPERTY MODELS TO
ACCELERATE SUSTAINABILITY TRANSITIONS
(IPACST)

Glossary

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The following definitions are working definitions for helping us set a common understanding of the terms and work towards a common objective.

Intellectual property (IP):

IP is a broad concept and includes many different intangibles (e.g. patents, inventions), copyright (works of authorship including technical manuals, software, specifications, formulae, schematics, and documentation, among other things), know-how (e.g. expertise, skilled craftsmanship, training capability, understanding of how something works), trade secrets (a protected formula or method, undisclosed customer or technical information, algorithms, etc.), trademarks (logos, distinctive names for products and services), industrial designs (the unique way a product looks such as a computer's molding), and semiconductor mask works (the physical design of semiconductor circuits) (European IP Helpdesk).

Intellectual property rights (IPRs):

Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time (WTO).

Intellectual property model:

IP model refers to the way owners of an intellectual property (e.g. firms, not-for profit organizations, social ventures, universities, public bodies, individuals, academics) control the ownership, access and usage rights of the IP by the owner itself and others (Vimalnath et.al., 2019).

IP model can be on a spectrum from closed, semi-open to open depending upon the degree of openness along the dimensions of ownership, access and usage rights.

Closed IP model:

An IP model is considered a closed IP model when the IP ownership is concentrated to a single actor and the owner keeps the IP completely to itself, hence completely restricting access and commercial usage by outside actors. In other words, the owner limits the exploitation of the IP to internal usage, thus strongly restricting external IP

exploitation. In the strictest closest case, IP owning actors employs trade secrets to protect their IP, wherefore no IP is made public (e.g. through patent applications).

Semi-open IP model:

An IP model is considered a semi-open IP model when the IP ownership is either concentrated to a single actor or distributed amongst a selected group of actors; the access and usage of IP is restricted to members of the group or the access and usage is open to anyone but with some restrictions (eg. commercial restriction).

Open IP model:

An IP model is considered an open IP model when the inventor chooses not to claim ownership of the IP through formal IP rights and allows free access to and usage of IP by others without any restrictions.

IP strategy:

IP strategy is a set of activities and guidance process for decision making regarding exploration, generation/acquisition, protection, exploitation/enforcement and periodic assessment of intellectual property (rights) to maximize value creation and capture from an organization's inventions like technologies, products, services, literary and artistic works, design, symbols, names and images in support of and thus in alignment with its business objectives (Tietze & Vimalnath).

Sustainability:

The standard definition provided by the Brundtland report defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." In line with the Brundtland report, we understand sustainability as an inclusive concept that takes account of all social interests. Sustainable projects are those that go beyond monetary benefits and contribute to society as a whole by facilitating the realization of the UN Sustainable Development Goals. Finite resources, growing population, and inequalities make sustainability a primary objective for ensuring a peaceful life on Earth.

Given the variety of stakeholders involved in sustainable development, a common understanding of "sustainability" remains a challenge. For the purpose of the IPACST project, the term "sustainability" is understood in relation to technologies, products, business models and design that contribute to achieving the UN Sustainable Development Goals. Though sustainable businesses represent the main focus of IPACST, their contribution goes beyond Goal 9: Industry, Innovation and Infrastructure. For example, sustainable plant breeding programs that aim at developing crops resistant to pest and disease and adaptable to climate change help achieve Goal 2: No Hunger. Similarly, diagnostic tools and affordable medicines contribute to Goal 3: Good Health and Well-Being. Technologies that extract drinking

water from dry desert air helps meet Goal 6: Avoid wasting water, and Goal 3: Good Health and Well-Being.

Business model:

A business model is a conceptual tool to help understand how a firm does business and can be used for analysis, comparison and performance assessment, management, communication, and innovation (Osterwalder and Pigneur, 2005).

Sustainable business models:

Sustainable business models draw on economic, environmental and social aspects of sustainability in defining an organization's purpose; use a triple bottom line (people, profit, planet) approach in measuring performance; consider the needs of all stakeholders rather than giving priority to shareholder expectations; treat 'nature' as a stakeholder and promote environmental stewardship; and encompass a system, as well as a firm-level perspective (Stubbs & Cocklin, 2008).

In addition to financial performance, a sustainable business model aims at reducing negative impacts for the environment and society. Examples can be companies that promote responsible consumption (recyclable products), replace toxic chemicals in the production process with environmentally friendly substances, invest in natural capital, use renewable materials, etc.

Transitions to sustainability

Transitions to sustainability are multilevel-stakeholder processes (Elzen et al., 2004; Geels, 2010) towards a status where the needs of future generations are not compromised. During that process modes of production and consumption are developed so they create lower negative and maximize positive impact in the company's sub-system.

The ultimate outcome of a transitions to sustainability is a sustainable world for all. According to the UN Sustainable Development Goals, in order to achieve a better future for all, we need to address challenges, "including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice" (UN 2019).

Business transitions to sustainability:

The process during which firms move to a sustainable business model. This requires a redesign of the business model and of the resources. For instance, transitioning towards sustainable mobility requires novel engine technologies, batteries and power management, a network of low-cost, easy-to-use recharging points, and safe payment infrastructure coupled with novel business models. The transition to sustainability is an urgent challenge in order to meet the Sustainable Development Goals to end

poverty, protect the planet, and ensure prosperity for all as part of the sustainable development agenda.

IP models & sustainability transitions:

IP models may affect sustainability transitions. Open IP models may facilitate knowledge sharing and technology transfer, enable market entrants, and nurture niches on sustainable innovations. Closed IP models, on the other hand, can spur innovation and growth including by turning intangible assets into tradeable goods and attracting foreign investments. Firms, however, are often locked into trajectories (path dependency) due to prior investments (e.g. manufacturing plants) and infrastructure (e.g. oil production, global supply chains and gas stations). Driven by shareholder needs, they may use IPRs to expand the commercial exploitation of their protected, less sustainable technologies, thereby hindering market entrance of actors advocating more sustainable technologies. Differences between national laws and lack of IP expertise may also impede transitions to sustainability, especially when value chains span across countries, such as in textiles or automotive industries. To date, we lack the frameworks for better understanding these complex interactions of IP models and sustainability transitions.

Circular economy (CE):

A circular economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and be-yond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations.” (Kircherr et. al., 2017)

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