European Agro-biotechnology Investment Trends in Asia

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The common perception is that European companies are finally following the US and Japanese firms in increasing their investment in agro-biotechnology in Asia. Both push and pull factors contribute to this growth. However, it is difficult to get an accurate overview of the actual investment patterns by European agro-biotechnology in Asia. Based on literature review and additional interviews, this article draws the first preliminary conclusions.

Although no precise figures are available, estimates from different sources indicate that biotechnology investment by European firms in Asia has increased from US$ 220 million in 1993 to US$ 270 million in 1995. The rising investment is accompanied by an increasing number of business ventures. While in 1994, Asia accounted for 7 per cent of the total deals signed by the European firms. This share grew to 9 per cent in 1995. Predictably, Japan is the leading target of the European investment in Asia. Japan accounts for 53 per cent of the total alliances.

European investors can be divided into two groups. The first consists of well-established companies in Asia that are branching into biotechnology. The second group are relatively new companies that have been established solely for biotechnology. The first group of companies invests more in Asia than the second group.

With regard to agriculture, European companies have generally entered into the seeds and floriculture sectors. In the seed sector the players are few but the volume of investment is large, and mainly directed towards advanced technology. In floriculture many players share the relatively smaller investment.
Seed industry

Asia has become the world’s largest seed consumer in the 1990s. In 1994, consumption was 43.2 million tonnes. The consumption rate is rising at 1.3 per cent per year. While US companies are the largest foreign investors in the Asian seed sector, European companies are fast catching up to the huge market potential of Asia. Most of these European investors are big agro-chemical companies which are expanding into seeds to further secure their positions in the Asian market. For example, while still waiting for the European market approval, Ciba-Geigy, Switzerland plans to launch its *Bacillus thuringiensis* (Bt) maize, Maximizer, on the Asian market in 1997.

Another example is *S&G Seeds*, the Netherlands, which is the operational company of Swiss *Sandoz*. In 1992, when Sandoz reorganized its seed business, S&G Seeds took over the Asian operations. It has established offices in countries such as China, Singapore, Taiwan and Japan. Though the company has not disclosed its market share in Asia, Sandoz’s annual reports suggest a rise in sales from 2 per cent in 1993 to 5 per cent in 1995 in the Asian seed sector. S&G Seeds has started a number of breeding programmes for Asia. Research focuses on disease resistance, increased productivity, transportability, stability of nutritional value and climatical adaptations. In addition, in 1991 Sandoz signed an agreement with the Dutch company *Mogen International* to develop fungal resistant varieties of horticultural and agricultural crops such as tomato. S&G Seeds will market these varieties in Asia.

Many European companies are actively seeking joint ventures with Asian firms. The 50:50 alliance with the *Indian Tobacco Company* (ITC) is one of the many joint ventures of *Zeneca*, UK with Asian companies. The joint activities include research, development, production and marketing of hybrid seeds in India. *Zeneca*-ITC conducts a breeding programme in India, mainly for cereal crops and oil seeds. Aside from expanding agro-chemical companies, European biotechnology companies are similarly establishing joint ventures with Asian companies.

For example, Belgian biotechnology firm *Plant Genetic Systems* (PGS) is entering the seed business and has a large germplasm collection of *oil seed rape* (OSR). PGS has chosen India to enter in the Asian market. The company established a 50:50 joint venture with the Indian company *ProAgro*, called *ProAgro-PGS India Ltd*. PGS’s investment in the Indian venture has grown from US$ 1 million to US$ 3 million, a rise of 200 per cent, in the last three years. The alliance aims at combining PGS’s Seedlink technology (a genetically engineered pollination system, see *Monitor No.*
(19) with ProAgro’s research expertise and germplasm collection to develop hybrid OSR. In addition, ProAgro-PGS India Ltd. has been conducting field trials in India on transgenic mustard, and greenhouse trials for Bt tomato for the past two years. The company has also been given permit to test Bt eggplant in India. Some of the emerging alliances are more focused on marketing than on R&D. For example, Bejo Zaden BV of the Netherlands and its partner Bejo Sheetal of India have been marketing hybrid seeds for which biotechnology was used to overcome difficulties in classical breeding methods.

Floriculture

Industry experts roughly estimate floriculture investment at about US$ 40 million in Asia. In 1994, total investment by the European floriculture firms in India alone was US$ 18 million. This grew to US$ 23 million in 1995, an increase of 28 per cent. Rough estimates show that India accounts for the biggest investment of European companies with a total of 40 per cent, followed by China (20 per cent), Thailand (25 per cent), and Malaysia (15 per cent).

Most of the increase in investment is through joint ventures. Between 1993-95, as many as 64 agreements were signed. Although most of these joint ventures involve the mere transfer of the production technology, 60 per cent of the Dutch CMO Holland’s share in a joint venture with the Chinese Shanghai Donghai State Farm involves technology transfer. Virus-free planting materials are of great importance. For example, its tie-up with the Dutch company West-Stek BV provides the Indian company SPA AGRO access to ELISA diagnostic technology. Moreover, other companies use biotechnology to assist in their conventional plant breeding, such as in enhancing colour and fragrance of flowers.

The investment strategies in Asia vary amongst the different companies. For flower marketing companies such as Flodac bv, the Netherlands, Asian alliances help to ensure the production and supply of quality flowers for worldwide distribution. As part of these alliances, Flodac provides more than marketing and distribution services. It has carved new niches in the Indian market by adding technical support. This enabled Flodac to enter into over 30 joint ventures within 1993-95. Some of these joint ventures included the provision of 100 per cent buy back arrangement, aimed at ensuring a ready market for the Indian partner firms, and consistent supply for Flodac. However, only a few of the Indian partners have opted for this provision.
The absence of such a provision gives them an opportunity to market some of their products at the best possible prices. This open-ended arrangement is to the disadvantage of Flodac, which wants to retain its hold on marketing. Hence, it has required strict partners’ compliance to the buy-back arrangement. Other European companies in the flower sector use a different investment strategy. For instance, the Dutch Skillco and CMO Holland, first formed a strategic alliance to supplement each other’s area of specialization before they jointly entered Asia, particularly India. Skillco has the technical expertise in plant breeding, marketing and training, while CMO Holland is a manufacturer/supplier of greenhouses with advanced monitoring facilities. The company has entered a partnership with Muti Hue Flora, Tropical Floritech and Venus Floriculture in India to upgrade flower cultivation and standardize planting materials export.

**Motivation for agricultural investment**

The shift towards Asia is motivated by a number of factors: *New economic policies*. Just as in other business sectors, biotechnology investment is attracted by liberalizing investment policies and expanding Asian economies. For example, the increasing purchasing power in many Asian countries leads to the demand for more perishable goods such as vegetable and flowers. *Barriers to import*. Contrary to the liberalization policies, some barriers are still in place to discourage the import of products, and thus stimulate local R&D adaptations. The barriers to import capital and intermediate goods, as well as the rising transportation costs to Asia increases the demand for manufacturing to be based in Asia.

*Intellectual property rights (IPR) regime*. Many European firms want the implementation of the IPR regime in Asia. However, many Asian countries have not yet fully endorsed plant breeders’ rights, for example by not adopting the international *Union for the Protection of New Varieties of Plants (UPOV)*. Nevertheless, PGS was motivated to invest in India, instead of licensing agreements, due to the weak IPR regime of the country. According to *O’Brien*, PGS has directly entered into a joint venture, instead of licensing their technology, since the latter is difficult to protect under a weak IPR regime. Nevertheless, PGS aims to benefit again once the IPR system is implemented. By that time, the IPR will be able to protect the new PGS products.

*Low cost skills for research and production*. Compared to Europe, most Asian countries have lower costs of production, especially because of low wage levels. For example, Zeneca finds it more economical to base its R&D in India. According to
them, India has a high level of well-trained technologists. Furthermore, the warm climate in Asia offers a cheap source of energy as compared to heated greenhouses in Europe. Several plant breeders in the Netherlands are considering basing their plantlet production abroad.

Incentive policies. Some Asian governments have initiated activities to attract foreign investment and to develop local expertise. An example is Singapore Bio-Innovations (SBI), a company funded by the Singaporean Ministry of Trade and Industry. SBI makes equity investment in foreign companies which have opted for alliances with Singaporean firms, for R&D, manufacturing, marketing and/or distribution. SBI incentives also include tax holidays and training grants. As a result, some foreign biotechnology companies plan to make Singapore a base for their Asian activities. Since its establishment in 1990, SBI has invested US$ 15 million in shares in 3 European, 5 Asian and 15 US based companies. The European companies are all British: Oxford GlycoSystems, Xenova LTD, and International Biotechnology Trust. Some of SBI’s portfolio local companies are Aroma Biotech, and Planteck International.

Tailor-made products. There is a need to adapt biotechnological products to the local environment. For example, specific research needs to take into account the persistence of biopesticides under local conditions and differences in host organisms. New effective viral and bacterial strains need to be specially developed for certain geographical areas. For instance, Sandoz, one of the major supplier of Bt biopesticide in Asia, is developing novel strains targeted towards a specific pest. Such a research undertaking requires partnership with Asian universities or research institutions.

European push factors. In Europe, the costs of production are high, and there is an increasing competition for tapping raw materials, such as germplasm, from Asia. Strict European environmental legislation, such as pesticide use, motivate companies to move to Asia where there are less regulations and/or weak enforcement of legislations. Additionally, some firms seek to increase their investment abroad because of the European policy to reduce the land area under crop cultivation. According to Zeneca, the decrease in land cultivation in Europe was the main reason for the 4 per cent decline of the European agro-chemical market.

The Asian economies are expanding rapidly and within the next five years its combined Gross National Products are predicted to represent one-third of the world economy. For many Asian countries, biotechnology has the potential of diversifying
business with high value-added products. Despite a lack of published data, it can be observed that European biotechnology companies are responding to these Asian trends.

However, while the Asian market is big, it remains fragmented, with different countries implementing different liberalization policies, with varying capacities for R&D and financial investment. So far, the investment trend is limited to a number of countries, such as Japan, Singapore and India. Amongst the investment activities in the areas of research, testing, production and marketing, investment is still dominant in marketing.

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