



Memories of a Practitioner: Ciba–Geigy Crop Protection Activities in Indonesia in the 1980s, an Example of Local Embeddedness

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1. Introduction

In this chapter, I draw on my experience as a crop scientist and former manager for Ciba–Geigy and in later years its legacy companies Novartis and Syngenta.¹ My aim is to demonstrate the connectivity between the commercial activities of the global company Ciba–Geigy in developing economies such as Indonesia, and the concurrent transfer of useful soft skills and good practices to local society and specifically farmers, eventually resulting in a more efficient use of scarce natural resources, new local economic ecosystems and the creation of new jobs. The chapter sets the stage with a description of the situation after World War II, with its challenges of food security around the globe.

In Indonesia, Ciba–Geigy’s crop protection business model profited from this set-up of industrialized agriculture that was pushed by the so-called “Green Revolution”, an international initiative mainly sponsored by public sector institutions to address the global food security challenges in view of rapid population growth. The company won large contracts with the Indonesian Government, to deliver and apply by aircraft rather indiscriminately crop protection products over vast tracts of land. The owners of the fields, typically small rice farmers with holdings of 0.5–1 hectares of paddy land, were not really involved in the process. While the “Green Revolution” approach certainly helped overcome the rice production deficit and rendered Indonesia self-sufficient in rice production by 1985, it became obvious in the early 1980s that this “one treatment fits all” policy had a number of serious

¹ Ciba–Geigy was formed in 1970 by the merger of J. R. Geigy Ltd. (founded in Basel in 1758) and CIBA (founded in Basel in 1859) (pharmaphorum). The merged company was mainly active in pharmaceuticals, textile auxiliaries, and plant protection agents. In 1996, Sandoz, the other Basel-based pharmaceutical company, and Ciba–Geigy merged to form Novartis (pharmaphorum). In the year 2000, the agro business divisions of both Novartis and AstraZeneca (Swedish–British pharmaceutical company) were divested to create Syngenta that produces agrochemicals and seeds and is based in Basel. Since 2017, Syngenta has been owned by ChemChina, a Chinese state-owned enterprise.

draw-backs. While farmers were mostly seen as, and pushed to be, rather passive adopters of subsidized products and technologies, the government faced increasing budget constraints that eventually made the subsidies unaffordable. Other negative side effects of this public-sector-driven approach to agricultural modernization were the overuse of agrochemicals and fertilizers, and the replacement of many traditional rice varieties by few high-yielding varieties that encouraged monocultural practices and increased the risk of new pest outbreaks.

Once the Indonesian Government decided to put a stop to all agrochemical subsidies, Ciba–Geigy was forced to rethink its business strategy. As a consequence, the company eventually discovered the farm household as the new direct customers for a sustainable business and commenced to engage with its members in its very own interest. This started with local initiatives such as farmer Field Days for thousands of individual small farmers in Indonesia in the 1980s, followed by the development of the Farmer Team Concept by Bill Vorley in the 1990s, eventually leading to the “Good Growth Plan”, announced by Syngenta in 2013. While, in the 1980s in Indonesia, Farmer Field Days seemed to be the obvious thing to do from a local business perspective, Ciba–Geigy was still a long way from recognizing the company’s global corporate responsibility that eventually led to the “Good Growth Plan” 25 years later. Two years thereafter, in 2015, the Sustainable Development Goals (SDGs) were published by the United Nations General Assembly, many of which were anticipated by and reflected in Syngenta’s “Good Growth Plan”, aimed at sustainably managing its business.

2. The Green Revolution

World War II had transformed the global geopolitical, economic and social landscape. On the political side, borders were moved, new countries were created, political systems were overturned and the “traditional” colonial systems of economic exploitation got under pressure and started to shift. Economically, globalization in its modern, capitalistic form started to rapidly expand, supported by advanced production capacities developed during the wartime experience and technological advancement, such as the development of shipping containers or airline systems. And socially, with the adoption of the Universal Declaration of Human Rights by the

United Nations General Assembly in 1948 (General Assembly Resolution 217 A) a new guideline towards a more humane world was adopted.²

Yet, the geopolitical situation after World War II was also characterized by the growing confrontation between the United States and the Soviet Union. The resulting Cold War was also a battle over the hearts and minds in the so-called non-aligned states, representing mostly developing countries in the Global South that were on the verge of embracing communism, believing that it would address the concerns of the poor in a more effective way. The United States responded to this challenge, among others, by launching a global initiative, which was later called the 'Green Revolution' (Gaud 1968), to enhance agricultural productivity and improve food security in non-aligned tropical countries. The aim was to demonstrate that the capitalistic system was more effective in feeding a growing population and lifting people out of poverty. The main promoter of the Green Revolution was Henry Wallace, Vice-President of the United States under F.D. Roosevelt, who launched the Mexican Agricultural Program with the support of the Rockefeller Foundation. Its purpose was to promote agricultural modernization on the basis of the latest breeding technologies, application of industrially produced fertilizers and the use of modern crop protection, catapulting productivity of cereals and later rice way beyond the typical one to two percent annual yield progress. In this context, it was the American Plant Breeder Norman Borlaug who set the first milestone in the genetic improvement of wheat in Mexico, by introducing more productive and resistant semi-dwarf varieties that were made more daylight insensitive through shuttle breeding, to be more adapted to different latitudes. His approach was then replicated in Asia for rice. The introduction of the Dee-Gee-Woo-Gen (DGWG) dwarfing gene into tall varieties of *indica* rice at the International Rice Research Institute (IRRI) in the Philippines (Swaminathan 2009) resulted in high-yielding varieties that responded well to irrigation and fertilizer application and were less prone to falling over (lodging) (Hargrove and Coffman 2006). Rice production in Indonesia, for example, increased from 12 million tons in the early 1960s to 44 million tons in 1989 (Ricepedia 1989); yields increased from 1.76 metric tons per hectare (t/ha) in 1961 to 4.25 t/ha in 1989, equivalent to an annual yield increase of more than eight percent (calculated from data on Ricepedia).

² General Assembly resolution 217 A was proclaimed by the United Nations General Assembly in Paris on 10 December 1948. Available at: <https://www.un.org/en/universal-declaration-human-rights/> (accessed 9 May 2020).

The Green Revolution proved wrong the pessimists who argued that population growth would outpace growth in agricultural production and thus lead to famine and starvation, as reported by the economist Thomas Robert Malthus who predicted this scenario already at the beginning of the 19th century. But it also had its downsides since it encouraged monocultural practices with all its undesirable side-effects for the environment and agrobiodiversity (Gómez et al. 2013). So, while Borlaug has contributed considerably to save millions of people from starvation and certainly deserved his Nobel Peace Prize, his approach also created environmental and with it socioeconomic issues when applied on a large scale. In response to these shortcomings of the Green Revolution, a paradigm shift took place after the end of the Cold War. With the fall of the Iron Curtain (Iron Curtain refers to the border between Soviet influenced Eastern Europe and democratic Western Europe before 1989) in 1989 and the UN Conference on Environment and Development (UNCED) in Rio in 1992,³ the focus moved away from the narrow production paradigm, more towards a systemic approach to agricultural development that also takes into account the exhaustion of resources, and the threat to biodiversity and the environment, from human agricultural activities.

In response to this paradigm shift, “Sustainable Management” started to show up in the agendas of political organizations and corporate meetings. Early discussions were heavily biased towards the economic component and it took time for politicians and top managers to accept the simple reality that the social and environmental components in the discussions were of equal importance. In spite of early recognition that urgent actions were needed, it took another 25 years until the SDGs were approved by the United Nations General Assembly in 2015, getting rid of the defensive attitude and accepting that the focus on economic development was the main component for the slow progress on sustainability. And here my story goes back to Indonesia.

3. Rice Production in Indonesia

In view of the success with Borlaug’s high-yielding wheat varieties in Mexico and India, the International Rice Research Institute (IRRI) was founded in the Philippines to replicate the success for rice cultivation. It was established with the support of the Governments of the United States and the Philippines and mainly financed by the

³ Rio de Janeiro Earth Summit was a major United Nations conference held in Rio de Janeiro in June, 1992, to align Member States on common goals and international cooperation on development issues after the Cold War.

Rockefeller and Ford Foundations. The rice genetic program was led by Te Tzu Chang (1927–2006), a prominent Shanghai-born agricultural and environmental scientist. He had first studied agriculture and horticulture at the Nanking University, received an MSc from Cornell in 1954 and a PhD in plant genetics from the University of Minnesota in 1959. He is the father of IR8, the first “Green Revolution” rice variety released into South East Asian (SEA) countries in 1966 (Hargrove and Coffman 2006). IR8 was a cross of PETO, then the most important Indonesian tall rice variety, with DGWG, an important Taiwanese dwarf variety (Hargrove and Coffman 2006).⁴ IR8 was followed by a number of improved IR varieties, such as IR36 and IR64, both with Rice Brown Plant Hopper (BPH, *Nilaparvata lugens*) resistance. At the time (1960s), Indonesia was the world’s largest rice importer and depended heavily on supply from mostly regional neighbors such as Vietnam or Thailand, but still the average supply of calories was way below basic requirements (personal information). Rice shortages were then part of the general economic malaise that contributed to the fall of President Sukarno in 1966 (Coleman et al. 2007). The new regime under General Suharto (1967 to 1998) decided that economic development must have precedence over all else (Coleman et al. 2007). The first priority was to invest in the productivity of food crops such as rice, the primary staple food, to achieve self-sufficiency (Manning 1987). Suharto saw the big advantage of the industrial approach to rice growing and forced Indonesian farmers to abandon their traditional forms of agriculture (Manning 1987). This in turn leads to the erosion of local rice growing and religious traditions, more dependence on seed, fertilizer and crop protection suppliers and started to fundamentally change the very traditional Indonesian society (Manning 1987). These changes were very much in the intention of the Pancasila doctrine which had been proposed by Sukarno and followed by Suharto,⁵ to move Indonesia away from

⁴ “IR8-288-3—which was eventually named variety IR8—was a semi-dwarf rice, about 120 cm tall with strong stems that held the plant upright, even when heavily fertilized. It was also non-sensitive to photoperiod, or day length, scientists would later learn. That meant it could be grown in many latitudes, at any time of the year” (Hargrove and Coffman 2006, p. 37).

⁵ “Pancasila is the official, foundational philosophical theory of Indonesia. It had been presented first in 1945 by Sukarno to the *Investigating Committee for Preparatory Work for Independence* (Badan Penyelidik Usaha Persiapan Kemerdekaan (BPUPK)) and defined the five principles of Pancasila” (Schindehütte 2006). “The principles include: 1. Indonesian patriotism; 2. Internationalism emphasizing justice and the virtue of humanity; 3. Deliberative consensus emphasizing a form of representative democracy in which ethnic dominance is absent and each member of the council possesses equal voting power; 4. Social Welfare premised on the theory of the welfare state and emphasizing popular socialism, and; 5. A Divinity that is an ultimate unity (a formulation that can be seen as implying both monotheism or pantheism, thereby allowing space for all of Indonesia’s major religions)” (Schindehütte 2006).

its historic colonial structure towards becoming a modern society and independent nation (the five principles include: nationalism, internationalism, democracy, social prosperity, belief in god), to lead Indonesia out of its colonial history and become a “modern” society (Schindehütte 2006).

Suharto understood well that cheap rice was key for political stability and thus gave high priority to rice production. Despite continuing rice shortages and price increases in the early years of his regime, its success in obtaining large amounts of foreign aid for rice imports and in rehabilitating BULOG (*Badan Urusan Logistik*, the rice purchasing and price stabilization agency made directly responsible to Suharto) began to show results as rice prices (and the general cost of living index) began to stabilize in the late 1960s (Timmer 1975, pp. 212–16). BULOG’s purpose of providing food security mostly to government staff was extended to become the safety stock holder and most important rice trader in Indonesia. This included import and export management, rice stock management and price guarantees. BULOG thus became politically very important to stabilize the emerging modern society of city dwellers, albeit generally at the cost of the traditional society of (rice) farmers

The most significant factor in the increase in output and productivity of rice was the rapid spread of high-yield rice varieties (Hargrove and Coffman 2006). They were promoted together with subsidized fertilizer, pesticides, and credit through the “mass guidance” or BIMAS (*Bimbingan Masal*) rice intensification program (Manning 1987). This extension program also offered technical assistance to farmers unfamiliar with the new cultivation techniques. Government investments in irrigation had also made a significant contribution to increased rice production in Indonesia, also allowing a second paddy crop to be grown during the dry season (Manning 1987). The BIMAS program, besides being an outlet for heavily subsidized fertilizers and crop protection products, was setting up public extension services in the form of teaching and training programs for farmers, designed to help adapt modern rice growing techniques into the traditional Indonesian village structure. In this context, young students spent time in remote villages, educating farmers on more advanced rice growing practices. In 1969, the Jatiluhur irrigation project was started to irrigate 240,000 hectares of rice around Cikampek, in the highly fertile coastal plain of North Java, one hundred kilometers east of Jakarta. This project is related to my former activities at Ciba–Geigy in Indonesia.

4. Ciba–Geigy’s Original Business Model

These heavy investments in improved infrastructure and rice production systems paid off well for Indonesia, leading eventually to rice self-sufficiency in 1985

(Manning 1987), stopping the currency from further devaluation. For farmers, the change was fast, drastic and often difficult to understand and follow. Ciba-Geigy, at the time an important supplier of crop protection products to Indonesia's BIMAS system, decided to become more active in this lucrative market and Ciba-Pilatus (a collaboration of CIBA Agro and PILATUS Stans) was founded in 1959,⁶ with the aim to commercially apply crop protection products. While active in other countries as well (e.g., Sudan for cotton), Ciba-Pilatus started to work in Indonesia from a small air field in Karawang, half way between Jakarta and Cikampek, in the fertile Jatiluhur irrigation zone, to treat rice, in close cooperation with government organizations. This worked well for Ciba-Pilatus and went on throughout the 1960s and into the 1970s, with financially good results, probably some questionable business models and definitely not much discussion with individual farmers.

At the time, Ciba-Geigy opened a small experimental field station in Cikampek, to support their activities. In the late 1970s, with farmers being better trained, the government wanting more independence from international companies and indiscriminate aerial application becoming too costly, the spraying activities of Ciba-Pilatus were ceased. Ciba-Geigy, however, continued to sell large quantities of crop protection products to the Indonesian Government. Consequently, the small experimental field station in Cikampek became Ciba-Geigy's first science-driven agricultural experimental station in South East Asia in 1978. As of 1982, with the appointment of my predecessor Rudolf Guyer,⁷ the first expatriate leading scientist at the station, Ciba-Geigy started to heavily invest in the site, developing an up-to-date infrastructure and introducing modern field trialing and management methods. Most work at the time was dedicated to traditional herbicide and insecticide development mainly in rice, and, around the time when I arrived, activities were extended to also

⁶ The Ciba-Pilatus Aerial Spraying Co. of Switzerland utilized for many years, besides other aircraft types, the Pilatus PC-6 Porter STOL (Short Takeoff and Landing) utility aircraft which had been equipped with spraying equipment (https://de.wikipedia.org/wiki/Pilatus_PC-6, accessed on 10 May 2020).

⁷ Rudolf Guyer (1953–), a Swiss citizen with a MS in agronomy from ETH Zurich, Switzerland and a PhD in weed science from the University of Hohenheim, Germany, worked for Ciba-Geigy and its follower companies Novartis and Syngenta from 1978 until 2008 in various R&D and commercial functions. He managed the Indonesian R&D organization of Ciba-Geigy from 1982 to 1986. He later established the crop protection industry organization CropLife Africa Middle East and served as their Director from its establishment in 2002 until 2017. Today, he is an independent agricultural consultant, offering his experience in crop protection and project management through his firm AgriConsult AG, based in Bülach, Switzerland.

include fungicide and biocontrol products, and covering additional crops such as corn and vegetables.

5. Business Model Adaptation

During that same period, the Rice Brown Plant Hopper (BPH), originally a minor issue in rice due to broad genetic resistance in the local varieties, had become a major problem, which led to the introduction of the above-mentioned BPH resistant varieties IR36 and IR64. In a short time, however, BPH resistance broke down and the pest developed into a real problem. As was soon understood, this was due to resurgence, a phenomenon where the heavy use of broad spectrum insecticides such as the prevalent OP's (Organo-Phosphate insecticides) at the time, certainly would kill the pest but at the same time also killed most of the over one hundred known predators of BPH, leading to a hyper fast recovery of BPH in absence of any natural enemies. With this knowledge in mind, the Indonesian government stopped the supply to farmers of heavily subsidized and therefore overused insecticides, as of 11 November 1986.⁸

For Ciba-Geigy, this meant that the existing simple business model of selling large quantities of pesticides to the Government became obsolete overnight. As a consequence, the time of easy catering to one large customer (i.e., the Government) was over and in due time the roughly 30 million individual Indonesian farmers became the new focus of attention in Ciba-Geigy's Indonesian business.

6. Embeddedness Effects

In retrospect, the government decision was very sensible, not only to get rid of the heavy financial burden for the subsidies, but also to take care of all the corruption typically ensuing such a regulated set-up (Manning 1987). On top, this allowed rice management practices to be pushed towards Integrated Pest Management (IPM) principles, relying on a variety of methods to limit pesticide use for the control of insects, plant diseases and rodents. Not least, such a development allowed farmers to regain some of the individual responsibility to manage their own affairs, that had been stripped off from them during the whole "development" process.

While the woes in Ciba-Geigy were mostly in our marketing and sales organization as the company had lost its one customer and sales went from close

⁸ For more information see <https://www.cbd.int/financial/fiscalenviron/indonesia-subsidyfuel.pdf> (accessed on 10 May 2020).

to USD 100 million per annum to less than USD 5 million overnight, Research and Development (R&D) suffered a lot less of a set-back, as this part of the organization had a given spending budget that was not tied to the country sales and at the time did also include a lot of work for other South East Asian (SEA) countries. Already under the leadership of Rudolf Guyer, the Cikampek station had started to collaborate with a nearby government-run rice research facility, even though they were mostly concerned with rice breeding. The first field days for farmers were organized in late 1982, where we invited local and regional farmers to visit our trials and explain to them the opportunities and risks of crop protection products in their fields.

A typical field day would include about 200–250 farmers that were taken in small groups through several different stations in the course of a day, including safe handling of crop protection products, correct field application, demonstration of crop protection products, explanation of IPM principles, followed by a general discussion which was usually very lively. While these field days clearly had a marketing perspective to overcome the government's decision to stop supplying pesticides and were aimed at establishing Ciba–Geigy as a supplier of crop protection products at the farmer level, this was also the first time in Indonesia that we started to interact with rice farmers directly.⁹ The fact that we had a well-established field trialing station allowed us to do product development work and invite visitors to demonstrate to them the results of our work.

It became clear very quickly that safe handling of crop protection products and IPM principles were the major topics that needed to be addressed. This started with the safe storage of chemicals, not an easy task in a one- or two-room bamboo house without locks, or the use of labelled bottles, as often the local dealers would buy a large bottle and repack it into small soft drink bottles, with the obvious risk of accidental misuse. Applying the right amount of product in the right way and at the right time (this included determination of treatment thresholds based on insect counts) was another teaching topic, as the “more is better” attitude was prevalent among farmers, historically driven by the availability of cheap subsidized agrochemical products. And not least the use of some very simple protective measures such as the use of face masks, rubber boots and washing after application were taught.

Throughout the 1980s and early 1990s, we usually had two farmer field weeks per year, one in the dry season and one in the wet season, that were attended by over

⁹ At the time, foreign companies had no right to directly sell products in the country and had to go through local importers and distributors. Only technical activities (i.e., R&D) were exempt from this rule.

25,000 farmers over the twelve-year period. This does not seem to be a lot in view of the 30 million farmers in Indonesia at the time. But most of these farmers, many of them from Java but some coming also from other islands, especially Sumatera, were village elders/leading farmers that had great influence on the behavior of other farmers at home. Upon returning from the field day, which often was a great event in their life, they would sit on their bale (a kind of large local sofa) in front of their house in the evening and educate their neighbors in the community, as it has been the tradition in the Indonesian rural society, thus multiplying our efforts to many more farmers. Often, upon visiting a village to look at trials, somebody would come up to me, recounting the learnings and experience they had made on the field days.

Besides the farmer field days, every season we offered two to three internships to excellent agronomy students, which were proposed by their professors from key agricultural universities, such as Gadjah Mada in Yogyakarta or the agricultural Universities in Padang or Medan. They were selected by my close collaborator Marjudin Kusnawiria, a senior Indonesian agronomist and plant pathologist in my team, who had excellent connections into the local academic environment. Typically, they were doing a small project, including field trials, under the supervision of the various Ciba-Geigy specialists at the Cikampek station. For the students, this was an extraordinary experience, being able to learn modern trialing technologies, to connect with experienced Cikampek staff and working with an infrastructure which at the time was usually not available at the universities. How important such an experience was for these young people I only realized many years later. While on a field visit to an oil palm plantation in Medan in 2012, more than 20 years after having worked in Indonesia, a middle-aged man who was part of the plantation management team came up to me and profusely thanked me for the opportunity he was given in the 1980s to do an internship at Cikampek, which he said had been a crucial experience in his career.

Obviously, our R&D staff, all together between 20–25 people, were also part of the embeddedness effects. Besides the fact that they were paid quite well, including a health and pension plan, which at the time was far from being standard in the country, they regularly travelled in Southeast Asia and beyond. Being experts with international exposure (at the time a rare experience in Indonesia), they became sought after specialists in their country.

We also hired daily laborers on a seasonal basis, typically about 50–100 people from neighboring villages. While they had relatively low salaries, the equivalent of USD 50–150 per month, it did bring into the local economy a steady stream of cash and allowed many children to go to school properly fed, dressed and equipped

with the necessary books which had to be provided by the parents. When building a second station at Lembang, in the highlands of Bandung, earth work totaling over 2000 cubic meters, was done by hand. It was marginally more expensive than using a bulldozer, but it provided 100 jobs for a whole year to local villagers and prevented destroying the delicate volcanic soils structure of the site by heavy equipment.

The most memorable part of my time in Indonesia started, when Bill Vorley came to join me for a year (1988–1989).¹⁰ He was an IPM expert and had joined Ciba–Geigy shortly before. I spent many evenings in his house in Cikampek, where we enjoyed lengthy discussions over a cold Bintang beer, talking about the development of small farmer agriculture in Indonesia and comparable economies. I was not very knowledgeable at the time about IPM or sustainability (“Sustainability” was just starting to become a word of the standard vocabulary, as a consequence of the Brundtland Report, (Brundtland 1987)) and learnt many things from him which would later influence my own thinking. He was an unorthodox practitioner and thinker and led an experimental program on our station, focusing on IPM approaches for rice pest control. To locally make best use of our trial data and with his deep knowledge of IPM, he sat together with a *dalang* (a traditional Indonesian shadow puppet player) and scripted an educational story on how to properly grow rice in a modern, IPM driven way. The *wayang kulit* (literally leather puppet) show was then played in many villages around the station and enjoyed very much by the village communities, as a piece of entertainment that at the same time was very educational. And I remember that sometimes, when I was invited for a meal in a modest farmers hut, the kids would challenge their father to wash his hands before the meal, referring to what the “Good Farmer” in the puppet show had taught them.

7. Discussion

Even though the word embeddedness had been coined by Karl Polanyi (1886–1964) already in the middle of last century, I was not even aware of its existence when I was working in Indonesia, let alone its application to our activities there as a large global company that was essentially present to do business transactions. Embeddedness, as a term and as an inherent part of corporate activities in a specific

¹⁰ Bill Vorley (1957–), a UK citizen with a Bachelor in Applied Biology from the University of Bradford, UK, and a PhD in Applied Ecology from the University of Southampton, UK, worked for Ciba–Geigy from 1985 until 1994 and was part of the Indonesian R&D team, 1988–1989. He is presently linked to the IIED (International Institute for Environment and Development, London, UK) as a Senior Associate and works as an independent consultant from his home in East Sussex, UK.

economy, only came to my attention recently, when working on joint projects with the Center of Corporate Responsibility and Sustainability (CCRS) at the University of Zurich (Aerni 2018; Schluemp 2019). It made me reflect on my times in Indonesia, at a time when the local economy was still very traditional and most people neither had the education nor the experience and understanding of how to make use of what a global player, represented in their economy, could offer them, beyond strictly transactional business.

To be fair, even I did not really see or reflect much on the soft potential of what my company could offer to the local economy. It was more of a spontaneous approach, originally driven by business needs and probably to some extent influenced by my experience as a student, reflecting the “Zeitgeist” of the 1960s. Moreover, looking back, I would probably be more critical of the rather opportunistic approach of Ciba–Geigy in selling whatever governments wanted to buy in countries like Indonesia. But, in retrospect, everyone eventually learns and becomes smarter. Multinational companies must generate revenues and the way they earn them largely depends on the institutional setting, which they themselves cannot really influence.

Nevertheless, Ciba–Geigy, with its embedded commercial activities in Indonesia, had some lasting positive effects on the local society and economy, also thanks to the changing institutional setting at the end of the Cold War. Here are just some of the most obvious examples:

It started with the building of an R&D team of locally educated people who then were exposed to a global network of agricultural experts, within and outside of the company, vastly expanding their knowledge, experience and exposure to “other” ways of running business, doing research and connecting to the farming economy. They were closely connected to local academia through presentations and lectures to students and the internship programs, thus passing on their expanded personal experience to a whole generation of young Indonesian agricultural students. And I remember well the coaching sessions in proper Indonesian behavior and language I received from the team before giving my first lecture on fungicide resistance management to a body of students at the prestigious Gadjah Mada University in Yogyakarta.

A second important effect of the company’s activities was the injection of cash into the rural societies around our stations. It may have been, relative to the size of the country, a small token, but for the local communities it made a big difference, especially in helping children’s schooling efforts. While schooling was compulsory and free, parents often struggled to pay for the school uniforms and books as these were cash out items.

A third effect was our close interaction with the farmers. Field days were always the highlight of the season, for the commercial team to prepare the list of invitees, for the R&D team to set up the program and prepare the show trials and lectures, and, of course, for the farmers who were selected to come to our research station in Cikampek, as it often meant a refreshing break from their daily life activities in the village. I was always impressed by their intrinsic knowledge of rice growing, their keen interest to learn, and their ability to listen and observe. They were also very active participants in the discussions and brought up many critical and interesting questions, despite the fact that many of them had only limited formal education. Personally, I believe that these field days were our most lasting and effective way of connecting with the farmers and teaching them new insights into rice growing and crop protection.

Of course, there were many other companies that left their imprint on Indonesia's economy at the time. My chapter is a very personal reflection on the most challenging and interesting time in my early career and how I experienced it through my company. It demonstrates that a company can contribute to decent work and inclusive growth through local embeddedness, which is an inherent component of any commercial activity pursued by a global company that sets up business in a particular economic environment. It is in the self-interest of the company to collaborate with local stakeholders and ensure that they co-benefit from corporate investment. A commitment to local embeddedness is especially beneficial in a developing country context, in which the transfer of soft knowledge and behavior can be a stimulus to the local people and economy, way beyond the core of the transactional part of business. My experience in Indonesia taught me many important things about fruitful local collaboration, which I could later use again while working in Latin America and Africa, as many of these farming communities were facing very similar issues and were very open and keen to any kind of educational stimulus.

8. Aftermath and Outlook

My personal experience in Indonesia was not unique. Similar learnings had been collected by Ciba-Geigy collaborators in other parts of the developing world. Coincidentally, there was growing pressure on the chemical industry, notably after the explosion of Union Carbide's Bhopal plant in India in 1984 and the Sandoz warehouse fire in Schweizerhalle, Switzerland, in 1986. Driven by public pressure and supported by in-house learnings, there was growing recognition at the company leadership level of the importance of corporate responsibility and sustainable business management.

Ciba–Geigy under the leadership of Dr. Alex Krauer,¹¹ then President of the Board, developed its Vision 2000 where the “triple bottom line” responsibility of economy, environment and society was introduced for the first time (Vorley 2013). While the strategy certainly was a step in the right direction, introduced through an extensive collaborator training program and aimed at supporting an open dialogue with the public, it was never incorporated to its full extent due to internal policy swings. It was also focused too narrowly on efficiency increases as well as waste reduction in production.

An equally important step toward a more responsible business behavior was the establishment of the Farmer Support Team (FST) in 1991 in Ciba–Geigy’s Crop Protection business, under the leadership of Bill Vorley. It was financed with CHF 2 million annually and its aim was to support and train small farmers in the developing world of Africa, Asia and Latin America, obviously with the intention to gain new customers, but just as much in the innovative spirit around the Vision 2000 to transfer knowledge and capabilities designed to make farmers more familiar with “environmental and ethical product stewardship” (Vorley 2013) and advanced methods in integrated pest management. While the project was not yet holistically aimed at promoting sustainable agriculture at the time, it was the first time in the company that a realistic and serious attempt had been started to address the problems of small holders in the developing world. In spite of Vorley’s convincing arguments and hard work and dedication to the project, progress was slow and the project was under constant pressure from the more conservative faction of our organization. Not surprisingly, Vorley left the company in 1994, frustrated over the slow progress and continuous confrontations. Obviously, while these first attempts for a change in thinking were made in Ciba–Geigy, the time for a breakthrough was just not ripe yet.

While working in Colombia in the late 1990s though, I was lucky to have a strong FST in place and relied heavily on it for small farmer education and training, late proof of the solid base that had been laid out by Vorley. In the same years, it was decided to phase out all the highly toxic OP’s, which at the time were the company’s main-stay insecticides. The decision was controversially received and with all the good intention at the time, it eventually took about 20 years to actually reach this goal. Another aspect of the changing attitude in Ciba–Geigy was an increased focus on biological products which culminated in the acquisition of Bioline AgroSciences Ltd.,

¹¹ Dr. Alex Krauer (1931–), economist from Basel, Paris and London School of Economics, PhD in Political Sciences from the University of Basel, was a longstanding Ciba–Geigy manager and President of the Board at Ciba–Geigy 1987–1996.

Colchester, UK in 1992. The business developed nicely over the years, but always constituted only a small portion of Ciba–Geigy’s agrobusiness. This was not really due to a lack of interest but rather the complexity of the biologicals business and the incompatibility with our chemicals business model.

After the formation of Syngenta in 2000, sustainable farming and small farmers became a growing point of interest for the company’s agribusiness, not least because there remained a large vacuum for the technification of agriculture in developing economies, including a substantial business potential. And there were also business opportunities in the developed world around the sustainable management of agriculture under the pressure of growing regulatory constraints and increasing customer expectations. In 2008, the first “Forum for the Future of Agriculture (FFA)” was held in Brussels by Syngenta, together with the European Landowner’s Organization, to “create an open platform, where all stakeholders interested in contributing to a more sustainable agriculture system could come together and debate and share knowledge and expertise on how this could be achieved” (Forum For Agriculture 2020). The FFA constituted the start of a real breakthrough in Syngenta, where sustainability issues in agriculture, problems of farming communities and consequences for society at large were publicly addressed and discussed. The learnings from these meetings, not least the strong public reaction to this “coming out” of Syngenta eventually led the company into the launch of its “Good Growth Plan” in 2013.¹² The plan’s six key focus points are:

- Make crops more efficient
- Rescue more farmland
- Help biodiversity flourish
- Empower small holders
- Help people stay safe
- Look after every worker

With the “Good Growth Plan”, Syngenta as the legacy company to Ciba–Geigy for the first time introduced a fully integrative plan for the sustainable management of its business and the relationship with its customers. The plan, introduced in 2013, has been successful and achieved its challenging goals by 2020, well within its set targets. The plan is in line with Syngenta’s corporate responsibility position, and

¹² For more information see <https://www.syngenta.com/sustainability/good-growth-plan>; accessed on 14 June 2020.

its execution was monitored and audited by external stakeholders. It aligns very well with the United Nation's SDGs and fully encompasses SDG 8, decent work and inclusive growth. So, finally, fifty years after starting to recognize the risks and downsides of the "Green Revolution's" industrial approach to agriculture, public (SDGs) and private (Good Growth Plan) sectors have aligned around agreed base principles of how an agricultural business has to be managed, not only from its strictly economic, transactional aspect, but also from the local embeddedness perspective to contribute to inclusive and sustainable growth and decent work, especially in developing countries.

9. Conclusions

Looking back to almost 40 years of working in Ciba-Geigy and its legacy companies, I only realize today how we were often caught by the moment, around an exciting idea, a breakthrough or an opportunity, and at the same time blind to the bigger context, or the consequences and impact on society at large. I do not want this to be understood as negative critique or outright condemnation of the approaches we took at Ciba-Geigy (or for that matter the industry at large). It is simply the recognition in hindsight of how much we are all caught in the zeitgeist of societal norms and limits, our wishes and projections, and our excitement.

Corporations are set up to earn money, not to resolve societal problems. They will change over time as they recognize direct negative consequences for their business, when societal norms move or laws (typically driven by the societal change) force them into new behaviors. This was the case with labor laws in the 19th century, sustainability in the late 20th century and climate change in the early 21st century. In this context, the UN SDGs, with their emphasis on global partnerships, constitute a great joint effort to further incentivize industry to contribute to sustainable change.

Education: During my educational years in the 1960s and 1970s, a time of massive change, driven by the experience of a global war and its consequences, the essential driver was economic growth. The recognition of the limits of unabashed growth was at best dawning, sustainability was not a goal and compartmentalized thinking was the norm. Meanwhile, full employment and decent work were highly politicized terms embedded in the narratives of the two ideologies of the Cold War.

What we need today is a change in education in two critical areas: (1) A consequent move from learning in compartments to learning that promotes connectivity and contextual thinking, addressing risk and its consequence for the environment and societal integration at all school levels. I am aware, of course, that this is to some extent wishful thinking, limited by financial and political constraints,

but I am convinced that it would constitute a useful long-term investment that would benefit society, business and the environment alike. (2) Introduction of integrated management, leadership and responsibility training at all levels of higher education. This would give young leaders the vocabulary and base understanding of the inherent virtues of SDG 8 and positively affect individual and corporate behavior in the long term.

Corporate: Financial goals are and remain critical when managing companies. But there is more acceptance today of the fact that environmental and societal aspects are integral parts of corporate management and many companies have embedded them in their corporate strategy. Unfortunately, this process of recognition was rather slow and consequential action even slower, often only under huge societal/legal pressure. Additionally, views on how to politically integrate sustainable development goals, including SDG 8, into societies, laws and education differ greatly across the globe. In the long term, this issue can only be addressed by a dual strategy which relies on (1) consequent integration of SDG-8-related topics into the educational systems at all levels and (2) societal pressure (legislation and consumer behavior) to hold corporations responsible for their commitment to sustainable and inclusive change. In reality, we have to accept that such changes will never come overnight. Effects of educational approaches take at least a generation to become effective and societal changes tend to be rather slow, as proven by the SDGs which were approved by the United Nations in 2015 only, although first recognition of the underlying issues goes back to the 1950s and 1960s. We also have to accept that individual corporations will respond differently to the expectations of society. Legal consequences have to be applied systematically and have to bite to bring up the laggards and deniers.

Society: Societal processes are slow and cumbersome, driven by recognition of critical facts and their acceptance and integration into behavior over time. Smart leaders and visionaries at all levels can speed up change, just as much as conservative thinkers and or profit oriented opportunists may slow it down, for economic or political reasons. In view of the odds of all nations agreeing to a common base, the adoption of the SDG principles seems like a miracle and is a crucial step in the right direction. The UN SDGs have become a global reference point at all levels for corporations to design their strategic goals and corporate responsibility plans, for NGO's to reference progress and point out deficits, for political structures to align around and converge on common goals, for nations to design their legal frames and for global organizations to hold each other responsible.

A critical societal issue that slows the roll-out of SDGs is the economic divergence within and across nations. Affluent nations can "afford" to be more sustainable but

at the same time they are the biggest consumers, while the poorer nations remain essentially focused on economic growth, just to fulfill the minimum of SDG 8 goals. There is clearly a responsibility but more and more also a self-interest of the developed nations to support the less affluent world in developing through investments in inclusive and sustainable change and thus contributing to a fairer sharing of wealth. An awareness of the need to preserve our natural resource base in order to secure the future of mankind will, in the end, be the critical driver for this process. So, while the SDGs are a leap in the right direction, it will probably be another generation before they are truly embedded in society and broadly adopted. However, the fact that they exist is a great advantage to educate the younger generation against a set of globally agreed principles that should drive sustainable and inclusive growth.

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