
The Law to End Hunger Now: Food Sovereignty and Genetically Modified Crops in Tribal India—A Socio-Legal Analysis

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Abstract

This Article takes a socio-legal approach to analyze tribal India's current scenario related to genetically modified (GM) crops. The policies for GM crops play a critical role in India. The Article examines two recent legal frameworks: (a) the Biotechnology Regulatory Authority of India Bill, 2013, and (b) the Indian National Food Security Act, 2013.

The analysis using the socio-legal framework explores the dilemma of the effect of the GM food crop (*Bt* Brinjal/Eggplant) and GM cash crop (*Bt* Cotton) through the lens of one of the Scheduled Tribes—Bhil tribal men, women, and children—of India. This Article takes the social exclusion and inclusion approach to analyze the linkages between the high suicide rates in India among smallholders and cultivation of GM crops. Indirect gender implications are significant; when men, who are generally heads of household, commit suicide, women then bear the burden of household food security. This Article highlights the significance of the legal dimensions of the right to food, and the need to reflect the social dynamics in the global discussion of GM food and cash crops vis-à-vis food sovereignty.

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I. INTRODUCTION

“We have the technology to end hunger now!” This phrase has been repeated so often that its source has become unclear. When we searched it in Google, the first hit was to Norman E. Borlaug—Nobel Prize Laureate for Peace, 1970—who wrote the article “Ending World Hunger: The Promise of Biotechnology and the Threat of Antiscience Zealotry.”¹ This notion aims to place biotechnology squarely at the heart of the fight against hunger. In India, the fight against hunger has decidedly taken a turn toward legal instruments and rights-based approaches. While no one so far has had the audacity to claim “we have the *law* to end hunger now,” in this socio-legal analysis we will consider both notions—that it takes technology and that it takes law to end hunger—in connection to each other and to the realities of everyday life in India.

In our analysis we will not take a position toward any technology as such. Our research question targets the law. Does the legal structure that is being built in India hold the promise to substantially contribute to food security? India is home to the largest number of hungry in the world. To

1. See Norman E. Borlaug, *Ending World Hunger: The Promise of Biotechnology and the Threat of Antiscience Zealotry*, 124 *PLANT PHYSIOLOGY* 487, 487–90 (2000), available at <http://www.plantphysiol.org/content/124/2/487.full.pdf+html>.

substantially reduce the suffering caused by hunger and malnutrition in India, advances need to be made both on the supply side and the demand side. On the supply side, food must be available in a sufficient quantity maintaining nutritional quality to feed a population of over a billion people. On the demand side, there is a need to ensure access to food, as well as (cultural) acceptance and intake of this food for all not only at national level, but also for each household and person individually.

Currently, India is debating whether to open up the agricultural sector to new biotechnology such as genetically modified (GM) crops. GM crops are assumed to play a role in increasing production and thus in increasing the supply of food to eradicate hunger. Recently, an Act has been signed into law ensuring that in urban and rural areas all those who are below the poverty line can access at affordable prices a certain amount of food grains provided by the government. This Act came to light after over a decade of influence by the Indian Supreme Court, which has developed case law granting individuals and public interest groups acting on their behalf the right to stand up for their right to food in the courts of law. Beyond technology and law, it takes *food* to end hunger. One can only make meaningful statements about the contribution of technology and law to reducing hunger if one includes the micro-scale level of individual people and households in the analysis. For this level of the analysis, we have singled out one of the groups in Indian society who are among the most vulnerable in terms of food security: the Bhil tribe, which lives below the poverty line in the semi-arid tribal belt of central India.

Our analysis is of a social-legal nature. This means that we look at legal issues of right to food. However, we will limit ourselves to sketching the issues concerned, not providing an in-depth legal analysis. Instead—and this is the social part—we explore how local stakeholders give meaning to the legal developments. The Article is structured as follows. In Part II we discuss the background and some of the key concepts. Part III introduces the Bhil tribe after providing the legal frameworks of tribal people both from an international, United Nations perspective and from an Indian perspective. Part IV sketches the food law framework in India with emphasis on proposed legislations for biotechnology and the Food Security Act. Part V provides the social framework with core concepts of social inclusion and exclusion. The social framework analysis is used in Part VI to bring the strands from the previous sections together to analyze their likely effect on the Bhil tribal men, women, and children. In Part VI we discuss our findings. The Article concludes in Part VII with an attempt at answering the question: “How will the law help to end hunger and ensure food sovereignty in India?”

II. GLOBAL FOOD SOVEREIGNTY AND THE GM CROP DEBATE

One of the primary concerns surrounding global development is the question of how to feed the billions of people in this world; more specifically, there is an urgent need to increase the production of high-quality food without increasing the inputs.² Therefore, there is demand to better understand global food sovereignty and food security in the context of new biotechnology such as GM crops. The definition proposed by the Food and Agriculture Organization of the United Nations at the 1996 World Food Summit on Declaration of World Food Security is that “[f]ood security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life.”³ Pinstруп-Andersen explains that food security at the national and global level tends to focus on the supply side or food availability, but fails to take into account that food availability does not guarantee access or sufficient calories.⁴ The latter is referred to as nutritional diet.⁵ On the other hand, household food security refers to the ability of household members to obtain the food necessary to be food secure. There are two types of household food insecurity: transitory refers to periodic food insecurity (e.g., seasonal food insecurity), and permanent refers to long-term lack of access to sufficient food.⁶

In a majority of the developing and poorest countries, much of food production is dominated by smallholder agriculture. In the global South, land grabbing is an extreme process by which large areas of land are acquired and converted for the production of biofuels or food crops for exporting to developed countries. In this process, the local smallholders are excluded and often expelled from their land holdings.⁷ India alone accounts for 23 percent of global small farms, with women often taking

2. See Mark Tester & Peter Langridge, *Breeding Technologies to Increase Crop Production in a Changing World*, 327 *SCIENCE* 818 (2010), available at <http://passel.unl.edu/Image/FrancisTom1129929207/Science-2010-Tester-818-22.pdf>.

3. FOOD AND AGRIC. ORG. OF THE UNITED NATIONS, TRADE REFORMS AND FOOD SECURITY: CONCEPTUALIZING THE LINKAGES 29 (2003), available at <ftp://ftp.fao.org/docrep/fao/005/y4671e/y4671e00.pdf>.

4. See Per Pinstруп-Andersen, *Food Security: Definition and Measurement*, 1 *FOOD SECURITY*, 5–7 (2009).

5. *Id.*

6. *Id.*

7. See NORA McKEON, *GLOBAL GOVERNANCE FOR WORLD FOOD SECURITY: A SCORECARD FOUR YEARS AFTER THE ERUPTION OF THE “FOOD CRISIS”* (2011), available at <http://www.boell.de/en/content/four-years-after-world-food-price-crisis-governance-world-food-security>.

the lead without direct benefits.⁸ Lack of secured land tenure rights and access to resources create challenges, particularly in those marginalized communities such as indigenous people, including women. The majority of the smallholder's livelihood is dependent on the native seeds he possesses that not only provide him economic benefits, but also add to biological diversity. The social and biological dimensions are often ignored in the debate promoting GM food and cash crops. To counterargue the GM crop debate, we need to look at the emerging food sovereignty policy framework.

In India, like many other developing countries, food systems are embedded in complex diverse environments where most of the tribal poor people live without any advanced agricultural technologies. In this context, food sovereignty is emerging as an alternate for smallholders throughout the world, particularly promoted among civil society, indigenous peoples, and new social movements that are leading the debate against biotechnology such as GM crops, predominantly in the global South.⁹ Food sovereignty could be viewed as a *transformative process*, which aims to strengthen the autonomy and resilience of more localized food systems and promote diversity based on equity, social justice, and ecological sustainability.¹⁰ In 1996 during the World Food Summit, La Via Campesina¹¹ presented a set of principles as an alternative to world trade policies and a step toward realizing the human right to food. Food sovereignty, as defined by La Via Campesina¹² is promoted as the

right of people to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self reliant; to restrict the dumping of products in their markets, and; to provide local fisheries-based communities the priority in managing the use of and the rights to aquatic resources. Food Sovereignty does not negate trade, but rather, it promotes the formulation of trade policies and practices that

8. See H. Charles J. Godfray et al., *Food Security: The Challenge of Feeding 9 Billion People*, 327 SCIENCE 812, 812–18 (2010), available at <http://www.sciencemag.org/content/327/5967/812.full>.

9. See MICHEL PIMBERT, TOWARDS FOOD SOVEREIGNTY: RECLAIMING AUTONOMOUS FOOD SYSTEMS (2009), available at <http://pubs.iied.org/pdfs/G02268.pdf>.

10. *Id.*

11. In 1993, La Via Campesina was set up during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) to provide an alternative to small farmers to defend their livelihoods against the global agricultural monopoly. See GÉRARD CHOPLIN, THE FOUNDING OF LA VIA CAMPESINA IN RELATION TO AGRICULTURAL GLOBALISATION 2 (2013), available at <http://viacampesina.org/downloads/pdf/openbooks/EN-14.pdf>.

12. For more information, see generally LA VIA CAMPESINA, <http://www.viacampesina.org>.

serve the rights of peoples to food and to safe, healthy and ecologically sustainable production.¹³

Globally, the mainstream definition of food security reflects on consumption—enough nutritious food for all—and therefore demands more food production, but it fails to capture the dynamics of food systems such as who produces the food, under what conditions the food is grown, and who gains or loses. This failure creates a gap in understanding the food security discussion in totality. In brief, food sovereignty is regarded as a precondition to achieving food security.

III. THE UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES, 2007

Globally, owing to continuous disregard of indigenous peoples' rights, there has been an increased demand for a unified legal framework from the international community. After more than 25 years of negotiation, the United Nations Declaration on the Rights of Indigenous Peoples ("the Declaration") was finally adopted by the General Assembly in September 2007.¹⁴ This long-awaited United Nations (UN) Declaration, before being adopted by the General Assembly, was subjected to critical review since the beginning of the UN Working Group on Indigenous Populations in 1992.¹⁵ The Declaration was drafted with a concern that "indigenous peoples have suffered from historic injustices as a result of, *inter alia*, their colonization and dispossession of their lands, territories and resources, thus preventing them from exercising, in particular, their right to development in accordance with their own needs and interests."¹⁶

The Declaration makes an effort to set out the individual and collective rights of the world's 370 million indigenous peoples, calls for the maintenance and strengthening of their cultural identities, and emphasizes their right to pursue development in keeping with their own needs and aspirations.¹⁷ The Declaration provides no direct provision for

13. *Peoples' Food Sovereignty—WTO Out of Agriculture*, LA VIA CAMPESINA (Sept. 2, 2003, 6:12 PM), <http://viacampesina.org/en/index.php/main-issues-mainmenu-27/food-sovereignty-and-trade-mainmenu-38/396-peoples-food-sovereignty-wto-out-of-agriculture>.

14. See generally UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES (2008), *available at* http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf.

15. See Jérémie Gilbert, *Indigenous Rights in the Making: The United Nations Declaration on the Rights of Indigenous Peoples*, 14 INT'L J. ON MINORITY & GROUP RTS. 207, 207–30 (2007).

16. UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES, *supra* note 14, at 2.

17. *Id.*

natural resources or common property rights, but through Article 10 it highlights land rights and affirms: “Indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return.”¹⁸ The Declaration, with regard to land and resources, explicitly recognizes the importance of both the collective and individual natures of indigenous peoples’ land rights. India was one of the 143 votes in favor of the Declaration in 2007. The fact that the Declaration is a non-legally binding instrument absolves many countries from abiding by its rules.

A. *Constitutional Recognition of India’s Scheduled Tribes and Scheduled Areas*

India’s population is 1.3 billion, making it the most populated democratic country in the world.¹⁹ About 84 million people, or eight percent of the nation’s population, are tribal ethnic minority groups.²⁰ *Adivasis*, or indigenous peoples, due to their long historical association with forests, are also known as *vanputra*, *jungli log*, *vanavasi*, *vanyajati*, aboriginals, and tribal.²¹ As early as pre-medieval India, around 325 to 273 BC, Chanayka makes reference to forest dwellers in his book *Arthasatra*.²² During the colonial period, various castes and tribes in the British provinces of India were all grouped together broadly as Depressed Classes.²³ In 1919 the Indian Franchise Committee created a separate subcategory within the Depressed Classes to recognize the identity of ethnic minority groups and to provide job opportunities.²⁴ The Government of India (Scheduled Castes) Order in 1936 contained a list, or schedule, of castes to implement reservation of seats in education

18. *Id.* at 6.

19. *India Profile*, BBC (May 23, 2013), <http://www.bbc.com/news/world-south-asia-12557386>.

20. *India Overview*, WORLD DIRECTORY MINORITIES & INDIGENOUS PEOPLES, <http://www.minorityrights.org/5648/india/india-overview.html> (last updated Dec. 2008).

21. The term *adivasis* closely refers to indigenous people and is a commonly used term for to tribal communities in India. It refers to oldest ethnological group of the population. *Adivasis* are recognized as indigenous peoples per the definition of United Nations and International Labour Organization Convention. See *India*, INT’L LABOUR ORG., http://www.ilo.org/indigenous/Activitiesbyregion/Asia/SouthAsia/India/lang--en/index.htm#P1_717. We prefer to use the short term “tribal” in lieu of Scheduled Tribe or *adivasis* and “tribal areas” instead of Scheduled Areas for the rest of this paper without changing the legal definition.

22. See L.K. JHA, INDIA’S FOREST POLICIES: ANALYSIS AND APPRAISAL 15 (1994).

23. See THE INDIAN CONSTITUTION—A CASE STUDY OF BACKWARD CLASSES (R.G. Revankar ed., 1971).

24. *Id.*

institutions and government jobs for the depressed classes as per the Government of India Act of 1935.²⁵

The Government of India Act of 1935 defined the term Scheduled Castes as “such castes, races or tribes or parts of groups within castes, races or tribes, which appear to His Majesty in Council to correspond to the classes of persons formerly known as the ‘Depressed Classes,’ as His Majesty in Council may prefer.”²⁶ This Scheduled Caste list was inclusive of tribal communities. A detailed separate statutory list was prepared under the Constitution Scheduled Tribes Order of 1950, which came into force after the reorganization of the Indian states.²⁷ However, the criteria used by the different states for the identification of a community as a Scheduled Tribe remain a debated issue.²⁸

Article 366(25) of the Constitution of India describes the Scheduled Tribes as “such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under article 342 to be Scheduled Tribes for the purposes of this Constitution.”²⁹ Article 342(2) reads: “[p]arliament may by law include or exclude from the list of Scheduled Tribes . . . any tribe or tribal community or part of or group within any tribe or tribal community.”³⁰ To safeguard the rights of the Scheduled Tribes, the Eighty-Ninth Amendment of the Constitution created a constitutional body, the National Commission for Scheduled Tribes, to safeguard the rights of the Scheduled Tribes.³¹ In October 1999, the Government of India formed a separate Ministry of Tribal Affairs to ensure development of Scheduled Tribes.³²

25. See The Government of India Act, INDIA CODE (1935). Note that the Scheduled Castes correspond to the castes at the bottom of Indian caste system, while Scheduled Tribes refer to indigenous tribal population.

26. *Id.*

27. See G.S. GHURYE, THE SCHEDULED TRIBES (1963).

28. Note that definition of “Scheduled Tribe” continues to be a debated issue in the two recent versions of the draft national tribal policies. For detailed discussion, see V.K. Srivastava, *Concept of “Tribe” in the Draft National Tribal Policy*, 43 ECON. & POL. WKLY. 29, 29–35 (2008).

29. INDIA CONST. art. 366, § 25, available at <http://lawmin.nic.in/coi/coiason29july08.pdf>

30. *Id.* art. 342, § 2.

31. Article 338 of the Constitution (89th Amendment) of India (2003) provides details about the appointment of members, their roles, and the functioning of the Commission. According to the *State of India’s Indigenous and Tribal Peoples Report of 2008*, the functioning of the National Commission on Scheduled Tribes is ineffective due to inherent institutional flaws, lack of devolution of powers to enforce its recommendation, and lack of sufficient funding. See Asian Indigenous & Tribal People’s Network, *The State of India’s Indigenous and Tribal Peoples Report 39* (2008), available at www.aitpn.org/Reports/Tribal_Report2008.pdf.

32. See M.K. Sinha, *Minority Rights: A Case Study of India*, 12 INT’L J. ON MINORITY AND GROUP RTS. 355, 372 (2005). Describing diversity, Sinha writes: “India has six main ethnic groups and fifty-two major tribes, six major religions and 6,400

The term Scheduled Areas, as per Article 342 of the Indian Constitution, refers to areas with a high percentage of inhabitation of groups categorized as Scheduled Tribes. Article 244 of the Constitution of India provides guidelines for “such areas as the President may by order declare to be Scheduled Areas.”³³ The President of India and Governor of the state hold direct authority to cease, increase, alter, or rescind the area of the Scheduled Areas.³⁴

In this context, India’s obligation to the UN Declaration can be justified with the initiatives of the Ministry of Tribal Affairs’ proposed draft National Tribal Policy (A Policy for the Scheduled Tribes of India) to provide a holistic policy for the development of tribal people.³⁵ The National Tribal Policy Draft states that there are nearly 700 tribal communities; collectively, the Indian Government recognizes them as the “Scheduled Tribes.”³⁶ Since the legislative recognition of a tribe depends upon the state governments, often there are demands by some communities who recognize themselves as tribal in order to receive certain benefits and schemes from the state.³⁷ Heterogeneity within Scheduled Tribes is immense and sometimes observed within the same tribe across geographical boundaries having distinct languages and dialects, habits, costumes, beliefs, religions, and customary practices.³⁸ Bose et al. raise the question that the issue of whether some 84 million people categorized as Scheduled Tribes can also be referred to as “indigenous people” is politically contested within the country, because such terminology might grant them additional rights.³⁹ This is despite the fact that India has voted in favor of the United Nations Declaration on the Rights of Indigenous Peoples, adopted by the General Assembly

castes and sub-castes; eighteen major languages and 1,600 minor languages and dialects.” *Id.* at 359.

33. INDIA CONST. art. 244(1), § 6 (Fifth Schedule).

34. *Id.*

35. *Id.*

36. See generally INDIA MINISTRY OF TRIBAL AFFAIRS, DRAFT NATIONAL TRIBAL POLICY (A POLICY FOR THE SCHEDULED TRIBES OF INDIA) [hereinafter DRAFT NATIONAL TRIBAL POLICY], available at www.indiaenvironmentportal.org.in/files/tribal.pdf; see also Sinha, *supra* note 32, at 359.

37. Note that in recent years, in many parts of India, violence has erupted over the issue of non-recognition of several ethnic minority groups as Scheduled Tribes. See P.S. Kavoori, *Reservation for Gujars: A Pastoral Perspective*, 42 ECON. & POL. WKLY. 3833 (2007). For example, in May 2008, the Rajasthan state of India saw riots due to the protest by the Gujar, a pastoralist community, demanding that the government recognize them as a Scheduled Tribe. Gujars are classified by the government as an “Unscheduled Tribes.”

38. DRAFT NATIONAL TRIBAL POLICY, *supra* note 36, at 2.

39. See Purabi Bose, Bas Arts & Hans van Dijk, “Forest Governmentality”: A Genealogy of Subject-Making of Forest Dependent “Scheduled Tribes” in India, 29 LAND USE POL’Y 664, 664–73 (2012).

in September 2007. It is because of this sheer diversity that it is beyond the scope of this Article to attempt a comprehensive analysis of all tribal communities. This Article is restricted to the Bhil tribe of the Fifth Scheduled Area.⁴⁰

1. The Bhil Tribe

Bhils are the third largest Scheduled Tribe in India after the Gonds and the Santhals, and one of the poorest.⁴¹ They are the predominant tribe of the Fifth Scheduled Area located in the semi-arid climatic zones of the contiguous districts of Gujarat, western Madhya Pradesh, southern Rajasthan, and northern Maharashtra of the western Indian states.⁴² The “Bhil” name is believed to have been derived from the Dravidian word *Billu*, meaning bowman; this tribe is known for its archery skills in this region.⁴³ *Bhilli* is the most common language spoken in this region. As David Mosse points out, “historically, Bhil identity has been forged from a complex history of forest livelihoods, rule and resistance, and a history of relationships with dominant groups in society.”⁴⁴ To a great extent, Bhils were able to maintain their political and cultural independence by practicing customary rules.⁴⁵

40. Article 244(1) of the Fifth Schedule of the Constitution is applicable to the administration and control of the Scheduled Areas in any state except the states of Assam, Meghalaya, Tripura and Mizoram, for whom the provisions of the Sixth Schedule apply. See INDIA CONST. art. 244(1), § 1 (Fifth Schedule) & art. 244(2) (Sixth Schedule). Note that term “state” in India refers to the biggest administrative division and is different from the political meaning of “State.” As of December 2008, in India there are in total 28 states and seven union territories. *States and Union Territories*, KNOWINDIA.GOV, http://knowindia.gov.in/knowindia/state_uts.php.

41. Purabi Bose, *Community-Based Adaptation of Tribal Women to Climate Change in Semi-Arid India*, 16 PARCERIAS ESTRATÉGICAS 41, 43 (2011).

42. For the purpose of this paper, the authors restrict their discussion of Bhil inhabitants to those from the Fifth Schedule areas of western India. A small number of Bhils also live in the Tripura state of northeast India, *i.e.*, in the Sixth Schedule areas. The Bhil tribal population is critical in this Article because the first Public Interest Litigation was filed in Rajasthan in July 2001 (that later became a stepping stone for the Right to Food Bill) on behalf of the poor (such as Bhils) who had not received the required employment and food relief as mandated by the Rajasthan Famine Code of 1962).

43. See P.K. MOHANTY, *ENCYCLOPEDIA OF SCHEDULED TRIBE IN INDIA* (2006). Note that the Bhil have a long history dating back to the sixth century AD; the word “Bhil” in Sanskrit is found in (circa 600 AD) *Katha-Sarit-Sagara* of Gunadhya.

44. See DAVID MOSSE, *CULTIVATING DEVELOPMENT: AN ETHNOGRAPHY OF AID POLICY AND PRACTICE* 54 (2005).

45. See R. DELIÈGE, *THE BHILS OF WESTERN INDIA: SOME EMPIRICAL AND THEORETICAL ISSUES IN ANTHROPOLOGY IN INDIA* (1985); see also AJAY SKARIA, *HYBRID HISTORIES: FORESTS, FRONTIERS AND WILDERNESS IN WESTERN INDIA* (1998). See generally Marcus Colchester, *Indigenous Peoples and Communal Tenures in Asia*, 1 LAND REFORM 28 (2004).

In this region, Bhils lost control of customary forest land use due to introduction of a state monopoly over timber and settled agricultural practice banning shifting cultivation.⁴⁶ Thus, Bhils were exposed to several external forces that affected their livelihoods. Mosse aptly explains that “Bhils have been patronized and disciplined, displaced or protected, integrated or excluded, reformed or rescued, ennobled or accused in colonial or post-colonial policies on the ‘tribals’ or in contemporary environmental debates on deforestation or dams.”⁴⁷ A typical Bhil village is made of several *phalias*, or hamlets, spread across hillocks and ridges. Sjöblom explains the social composition of *phalias*, noting that they “reflect[] a history of settlement; land being allocated to men invited to marry and stay in the village in order to clear forest, expand cultivation and increase security, or offered in lieu of brideprice (*dej*).”⁴⁸

Bhils were traditionally a matriarchal society and also have their own traditional or customary institutions. Over the years, the majority of Bhils have become settled agriculturalists like mainstream society and have avoided matrilineal kinship practice in relation to agricultural land title rights.⁴⁹ On average, the agricultural landholding of a Bhil household is less than a hectare. Agriculture is rain-fed and labor-intensive. Poor soil quality due to soil erosion and low rainfall are major determining factors for the choice of crop diversity in the field. Crops using native seeds grown during *kharif* (summer) season are largely rain-fed crops, including non-hybrid varieties of maize and millet such as *bajra* (*Pennisetum typhoides*), *kutki*, or little millet, which form the staple diet of this region.⁵⁰ The region has tropical weather, with the temperature reaching 45 degrees Celsius in the summer months, and has an average rainfall of 650 mm to 950 mm. One of the impacts of climate change is frequent droughts resulting in crop failure.

A recent detailed evaluation report, State of World’s Minorities 2008, points out that discrimination against minority groups and indigenous communities in India makes it harder for them to cope with

46. Bose, *supra* note 41, at 43.

47. MOSSE, *supra* note 44, at 54.

48. See D.K. Sjöblom, *Land Matters: Social Relations and Livelihoods in a Bhil Community in Rajasthan, India* (1999) (Ph.D. Dissertation, The University of East Anglia), cited in MOSSE, *supra* note 44, at 56.

49. See AMITA BAVISKAR, *IN THE BELLY OF THE RIVER: TRIBAL CONFLICTS OVER DEVELOPMENT IN THE NARMADA VALLEY* (1995).

50. The data presented in this paper was collected by the first author during fieldworks in the tribal districts of western India between 2007 and 2012. Note that on an average Bhil household have a half-hectare of agricultural land. Maize comprises 75% of the rainfed cropped areas; most of the millets are traditional crops and have high nutrient value, low cost, are drought-resistant, and are grown easily in dry and degraded lands.

the impacts of climate change because they rarely receive any drought related relief packages.⁵¹ Because of recurrent crop failures due to droughts, Bhils are forced to migrate for supplement income. Bhil women bear the worst impact of drought, poverty, land alienation, and scarcity of natural resources. With the restrictions of access to commons, they face the brunt of hardship to collect potable water, fuel wood, fodder, medicinal plants, and other minor forest produce.⁵² Their identity and property rights are interrelated; as Moses states, “women *are* rather than *have* property and Bhil brideprice traditions and negotiations clearly express this condition.”⁵³ Yet, informally Bhil women may hold power in household decision making and in agricultural practices.⁵⁴

IV. LEGAL FRAMEWORK: FOOD BIOTECHNOLOGY AND FOOD SECURITY

The global debate about the food security issue is closely associated with large-scale industrial food production at low cost rather than with food sovereignty. Until recently, most believed that, to achieve global food security and eradicate hunger, we must increase food production; this limits the discussion of food sovereignty. The perception that we need more food to ensure food security among marginalized populations, particularly in countries of the global South, is rapidly changing. In this Article, the two recent legal frameworks of 2013 are analyzed. These two legal frameworks, when implemented will have a direct impact on tribal peoples’ livelihood, seed sovereignty, right to food, and tribal identity. The first legal bill discussed in this Article is a proposal for the Biotechnology Regulatory Authority of India (BRAI) Bill, 2013; and the second legal framework referred to below is regarded as a historic right to food Act—the Indian National Food Security Act, 2013.

51. MINORITY RIGHTS GRP. INT’L, STATE OF THE WORLD’S MINORITIES 2008: CLIMATE CHANGE SPECIAL 200 (2008), available at <http://www.minorityrights.org/download.php?id=459>.

52. We refer to minor forest produces (MFPs) like honey, *tendu patta* (*Diospyros melanoxylon*), *mahua* flowers (*Madhuca indica*), *chirota* (*Cassia tora*), and resins supplement that provide income for the Bhil households. In some tribal districts, MFPs are restricted to members of forest users’ committee or village members protecting the adjoining forests. See Int’l Inst. For Env’t & Dev., Janet Seeley, Meenakshi Batra & Madhu Sarin, Women’s Participation in Watershed Development in India (2000), available at <https://ueaeprints.uea.ac.uk/40262/1/6347IIED.pdf>.

53. MOSSE, *supra* note 44, at 58.

54. *Id.*

A. *The Biotechnology Regulatory Authority of India (BRAI) Bill, 2013*

On January 23, 2003, India ratified the Cartagena Protocol. The Cartagena Protocol protects biodiversity from the possible risks of Genetically Modified Organisms (GMOs), the output product of modern biotechnology. The Cartagena Protocol requires the establishment of a regulatory body. In 2008, under the draft bill, the BRAI was proposed as a regulatory body for monitoring the uses of biotechnology products including genetically modified organisms in India.

The BRAI Bill,⁵⁵ 2013, was tabled in the Lok Sabha. The Bill aims to “promote the safe use of modern biotechnology by enhancing the effectiveness and efficiency of regulatory procedures and provide for establishment of the Biotechnology Regulatory Authority of India to regulate the research, transport, import, manufacture and use of organisms and products of modern biotechnology and for matters connected therewith or incidental thereto.”⁵⁶ It is expected that the Bill, if approved, will give authority to the Environment Appraisal Panel, which is a subdivision of the BRAI. The BRAI Bill proposes setting up an inter-ministerial governing board and Biotechnology Advisory Council, which will oversee the performance of BRAI. In addition, a National Biotechnology Advisory Council of stakeholders will be constituted to provide feedback on the use of biotechnology products and organisms in India. The regulatory body, according to the Bill, would be an autonomous and statutory agency to

regulate the research, transport, import, manufacture and use of [biotechnology] organisms and products as specified in Schedule I so as to ensure the safety to human health, animal health and the environment.⁵⁷

The BRAI Bill has a mandate to promote biotechnology in India. However, the Bill is considered as a quick fix approach to help the GM corporations. The argument against the Bill, by the unanimous concerns of the Parliamentary Standing Committee on Agriculture and the science-based recommendations of the Supreme Court-appointed Technical Advisory Committee (TAC), is that there will be only five scientists in the Ministry of Science and Technology who will be empowered with decision-making authority to clear the patented

55. The Biotechnology Regulatory Authority of India Bill, INDIA CODE (2013), as introduced in the Lok Sabha. The Lok Sabha, or House of the People, is the lower house of the Parliament of India, available at https://www.sciencemag.org/content/suppl/2013/05/01/340.6132.539.DC1/BRAI_bill_2013_draft.pdf

56. *Id.*

57. *Id.*

technology of the GM corporations in the whole country. Other committees proposed in the Bill only have an advisory role. According to the Parliamentary Standing Committee on Agriculture and the TAC, the regulatory body of the BRAI should to be located in the Ministry of Environment and Forests and the Ministry of Health and Family Welfare, as compared to proposed idea of placing it under the Ministry of Science and Technology. Thus, there is an urgency to remove conflicts of interest from the regulatory body. The proposed BRAI Bill attempts to bypass the approval that is currently required from the state governments. Moreover, it also dilutes the Right to Information Act, 2005. The Bill implies that in case an application requires the disclosure of confidential commercial information, such information shall, notwithstanding anything contained in the Right to Information Act, 2005, be retained as confidential by the Authority and not be disclosed to any other party. The Bill also ignores the Report of the Task Force on Application of Agricultural Biotechnology, 2004.⁵⁸ The report notes that the

[t]ransgenic approach should be considered as complimentary and resorted to when other options to achieve the desired objectives are either not available or not feasible.⁵⁹

As recounted in a press release from the Coalition for a GM-Free India:

In [a 2012] Supreme Court hearing in the [Public Interest Litigation] on GMOs, the Government of India, through its representative from the Ministry of Agriculture (and not the Ministry of Environment and Forests, which has the jurisdiction on regulation of GM crops), opposed the scientifically sound recommendations of the Technical Expert Committee to make the GM regulation and testing more robust and trustworthy.⁶⁰

58. See Jay Mazoomdaar, *Biotechnology Regulatory Authority: The Bill that Will Decide What You Eat*, FIRSTPOST (June 17, 2013, 5:03 PM), <http://www.firstpost.com/blogs/biotechnology-regulatory-authority-the-bill-that-will-decide-what-you-eat-877863.html>.

59. See Kavitha Kuruganti, *Should Field Trials of GM Crops Be Banned? – YES*, Hindu Bus. Line (Oct. 26, 2012), <http://www.thehindubusinessline.com/opinion/should-field-trials-of-gm-crops-be-banned-yes/article4034938.ece>.

60. Press Release, Coal. for a GM-Free India, Gov't's Position in Court a Let-Down and Unacceptable, a Bow to the Pressure from the Biotech Industry (Nov. 9, 2012), available at <http://indiagminfo.org/?p=478>.

According to Convener of Coalition for a GM-Free India (“the Coalition”), Sridhar Radhakrishnan.⁶¹

The GM technology was vetoed out in the people’s court during the public consultations; it was vetoed by the people’s representatives when the Parliamentary Standing Committee made a detailed and comprehensive inquiry into the matter. We welcome the fact that these have already had some impact in the political and people’s decisions. An immediate Order from the [Supreme Court] could have saved us from the threat of open air releases of untested and unknown organisms, in the garb of field trials. Civil society groups have repeatedly brought to the fore instances of problems with field trials taking place parallel to biosafety testing—it is clear that the regulatory regime lacks in institutional capabilities of monitoring such trials, lacks scientific rationale and caution in terms of crops, locations and traits of trials, reflects sheer indifference to violations of various norms, rules and guidelines and is glaringly absent in terms of liability regime.⁶²

Further, the Coalition, in a statement, mentioned that the Government of India needs to take the view about the risks of GM crops expressed by the farmer organizations, independent scientists, and the general public, as well as the scientifically sound recommendations of the Supreme Court-appointed Technical Expert Committee, in order to take a position that safeguards the interests of both the environment and the people, and not the biotech industry. The Coalition condemns the attempts by the biotech industry lobby to paint a false image of the committee’s recommendation as against farmers’ interests in India.

The report of the Supreme Court-appointed Technical Experts Committee on GMOs also recommended withholding any field trials of GM crops until gaps in the regulatory system are addressed. A Gazette Notification issued by the Ministry of Consumer Affairs, Food and Public Distribution with effect from January 1, 2013 mandates packaged food producers to disclose GM ingredients, if used any, in their products.⁶³ In India, the only GM crop allowed to commercialize so far is *Bt* Cotton, as compared to countries like the United States, Canada, Brazil, and Argentina, where a majority of GM crops are cultivated. It is expected that implementation of GM food labeling—wherein every

61. See Kavitha, *Government’s Position in Court a Let-Down and Unacceptable, A Bow to the Pressure from Biotech Industry*, IndiaGMInfo (Nov. 9, 2012), <http://indiagminfo.org/?p=478>.

62. *Id.*

63. Look out for “GM” Label on Packaged Food from Tuesday, Hindu Bus. Line (Dec. 31, 2012), <http://www.thehindubusinessline.com/industry-and-economy/agri-biz/look-out-for-gm-label-on-packaged-food-from-tuesday/article4259459.ece>.

package containing the GM food shall bear at top of its principal display panel the acronym “GM”—will be monitored by the Food Standards and Safety Authority of India, under the Ministry of Health.⁶⁴

B. The Indian National Food Security Act (The Right to Food Act), 2013

Food security is regarded in India as one of the core human rights. India’s constitutional guarantee of a right to food is perhaps not the only progressive one amongst the world’s constitutions. According to the Food and Agricultural Organizations of the United Nations, about 22 national constitutions explicitly mention a right to food that applies to the entire national population, and there are other constitutions that indirectly provide for a right to food through a right to life with dignity or through social welfare rights.⁶⁵ Yet, India’s guarantee of a right to food is a historic attempt, and will remain the most prolific and far-reaching, covering over half-a-billion people in rural and urban India. India’s food governance is a matter of social and political concern. According to the Food Policy Research Institute’s Global Hunger Index, 2011,⁶⁶ India ranked 67 of the 81 countries (lower than Rwanda), making it one of the nations with the worst food security status in the world.

One of the explanations India’s formulation of the National Food Security Act, 2013 (hereinafter interchangeably used with “the Food Rights Act,” or “the Act”) was the demand for achieving the Millennium Development Goals (Sustainability Development Goals) that should be met by 2015. What remains as a big challenge for the government is the difficulty in implementing the Food Rights Act. The Food Rights Act has been expected to bring revolutionary changes in the country, but demands huge financial investment. In particular, the outcome of the Food Rights Act is to alleviate poverty and provide food security to those who are in households below the poverty line. India remains a marginalized country, particularly in the context of land security, eradication of malnutrition, poverty, and child mortality among marginalized groups (ethnic groups, women, and the economically

64. See generally FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA, <http://www.fssai.gov.in/>.

65. See FOOD & AGRIC. ORG. OF THE UNITED NATIONS (FAO), INTERGOVERNMENTAL WORKING GROUP FOR THE ELABORATION OF A SET OF VOLUNTARY GUIDELINES TO SUPPORT THE PROGRESSIVE REALIZATION OF THE RIGHT TO ADEQUATE FOOD IN THE CONTEXT OF NATIONAL FOOD SECURITY, INFORMATION PAPER: RECOGNITION OF THE RIGHT TO FOOD AT THE NATIONAL LEVEL (2004), available at <http://fao.org/docrep/fao/meeting/007/j0574e.pdf>.

66. See *Global Hunger Index 2011*, INT’L FOOD POL’Y RES. INST., <http://www.ifpri.org/publication/2011-global-hunger-index>.

disadvantaged). In other words when we talk about India's food security, it is not limited to just the availability or food quantity, but also to the food quality and nutrition that translates into better diets.

The concept of a right to food has established itself in India through social activism. In a landmark move in the case of *People's Union for Civil Liberties v. Union of India & Others* (hereinafter *PUCL*),⁶⁷ handed down on November 28, 2001, the Supreme Court directly addressed food security in the Indian context and explicitly recognized a constitutional human right to food in India.⁶⁸ In this way, *PUCL* also made advances in providing a definition of what the right to food means in India, criteria of who receives the benefit, and the ways it has to be enforced. Thus, *PUCL* makes India a front-runner among other nations by legally enforcing the human right to food. The *PUCL* order of November 28, 2001, was one of the historical moments in the ongoing movement of Public Interest Litigation for the establishment and enforcement of a right to food in India. Several orders followed since then. At the time of writing, the case is still open. By keeping the case open, the Supreme Court maintains pressure on the government to live up to its constitutional obligations.

The Public Interest Litigation was first filed by PUCL in 2001 in the state of Rajasthan on behalf of the poor for the right to food. At the time of filing, Rajasthan suffered from severe drought and the people received no support from the government. The original writ petition requested a more general order for enforcement of Rajasthan's Famine Code;⁶⁹ however, the first interim order of July 23, 2001, was a more detailed request to the Supreme Court seeking information from the state and central governments.⁷⁰ Specifically, Interlocutory Application No. 8 identifies specific social security schemes funded by the central government and requests that the Supreme Court direct the respondent governments to fully implement those schemes.⁷¹ In Rajasthan, the consequence was that it left huge numbers of the unemployed and food insecure without any of the food relief that was mandated by the Rajasthan Famine Code of 1962. In the background on constitutional

67. *People's Union for Civil Liberties v. Union of India & Others*, (2001) Writ Petition (Civil) No. 196 (Nov. 28, 2001, interim opinion), available at <http://www.righttofoodindia.org/orders/nov28.html>.

68. See *Right to Food Act: Introduction*, RIGHT TO FOOD CAMPAIGN, http://www.righttofoodindia.org/right_to_food_act_intro.html.

69. *Id.*

70. *People's Union for Civil Liberties v. Union of India & Others*, (2001) Writ Petition (Civil) No. 196 (July 23, 2001, interim opinion), available at <http://www.righttofoodindia.org/orders/july23.html>.

71. *People's Union for Civil Liberties v. Union of India & Others*, Writ Petition (Civil) No. 196 (2001, Interlocutory Application No. 8).

precedent defining the right to life as “the right to live with human dignity and all that goes along with it, namely, the bare necessities of life such as adequate nutrition,”⁷² the Public Interest Litigation sought enforcement of a constitutional right to food under Article 32 of the Constitution of India. This was in response to inadequate government drought relief measures and failure to provide subsidized food grains to eligible beneficiaries.⁷³

The government’s failure to adequately address hunger was striking because it did have surplus amounts of food grains that were being stored in the Food Corporation of India’s storage/*godowns* (about 50 million tons of grains higher in the stock than what is federally recommended for the buffer stock); this surplus lay unused.⁷⁴ The Public Interest Litigation movement began with the petitioners in *PUCL* demanding the enforcement of a constitutional right to food under Article 39 of the Constitution of India, which obliges the states to direct their policy toward ensuring that the citizens, men and women, equally, have the right to an adequate means of livelihood.⁷⁵ In addition, Article 21 of the Constitution of India guarantees a fundamental right to life and personal liberty and includes the right to food.⁷⁶ Though the Public Interest Litigation was initially begun in the state of Rajasthan, it was extended to the Central Government of India, the Food Corporation of India, and six state governments on the argument that these bodies had ineffectively managed the public distribution of food grains. Later the Public Interest Litigation was further expanded to apply to all state governments addressing issues on food security and hunger. Finally, on June 4, 2009, the President of India declared her support for legislation and “propose[d] to enact a new law—the National Food Security Act—that will provide a statutory basis for a framework which assures food security for all.”⁷⁷

India has been signatory to and ratified various international legal instruments such as the United Nations’ 1948 Universal Declaration of Human Rights; the International Covenant on Economic, Social and Cultural Rights; the Convention on the Right of the Child; the

72. S. Radhakrishnan, *Development of Human Rights in an Indian Context*, 36 INT’L J. LEGAL INFO. 303, 308 (quoting *Francis Coralie v. U.T. of Delhi*, 1 SCC 608 (1981)), available at <http://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=1141&context=ijli>.

73. *Id.*

74. See generally Lauren Birchfield & Jessica Corsi, *Between Starvation and Globalization: Realizing the Right to Food in India*, 31 MICH. J. INT’L L. 691 (2010).

75. INDIA CONST. art. 39.

76. *Id.* art. 21.

77. See Birchfield & Corsi, *supra* note 74, at 697 (quoting Shrimati Pratibha Devisingh Patil, President of India, Address to Parliament (June 4, 2009)).

Convention on the Elimination of All Forms of Discrimination Against Women; and relatively recently the 1996 Rome Declaration of the World Food Summit. Yet, it took the right to food campaign, the PUCL's Public Interest Litigation for the right to food, and the Commission that enforced the implementation of the legislative framework to push the government move toward making the right to food a human rights issue in India.⁷⁸ India's National Food Security Bill was highly debated by various stakeholders in the country. The aim of the National Food Security Bill is explained from the following statement: "Food security means availability of sufficient foodgrains to meet the domestic demand as well as access, at the individual level, to adequate quantities of food at affordable prices."⁷⁹

It was also acknowledged in the Lok Sabha report that the proposed legislation will mark a "paradigm shift in addressing the problem of food security—from the current welfare approach to a right based approach."⁸⁰ The Bill was debated at length after its introduction into Parliament in December 2012. The Bill was passed only in August 2013 and was signed into law as the Indian National Food Security Act (also known as Right to Food Act) on September 12, 2013.⁸¹ This Act is historic in the sense that it is India's first food law with an aim to provide subsidized food grains to about two-thirds of India's one billion people. Under the provisions of the bill, beneficiaries are to be able to purchase five kilograms per eligible person per month of cereals at the following prices: rice would be provided at Rs. 3 (USD 4.6¢) per kilogram (kg), wheat at Rs. 2 (USD 3.1¢) per kg, and coarse grains (millet) at Rs. 1 (USD 1.5¢) per kg. The rest of the targeted population would get at Rs. 3 (USD 4.6¢) per kg of grains per person per month at half the minimum support price offered to farmers by the government during procurement. However, the each individual state of India is responsible for determining eligibility criteria.⁸²

78. See *People's Union for Civil Liberties v. Union of India & Others*, (2001) Writ Petition (Civil) No. 196 (Nov. 30, 2001, Civil Original Jurisdiction, Writ Petition), available at <http://www.escri-net.org/docs/i/401033>.

79. See National Food Security Bill, INDIA CODE (2011), as introduced in the Lok Sabha [hereinafter National Food Security Bill], available at <http://164.100.47.134/lsscommittee/Food,%20Consumer%20Affairs%20&%20Public%20Distribution/Final%20Report%20on%20NFSB.pdf>.

80. *Id.*

81. Press Release, Ministry of Law & Justice, The National Food Security Bill, 2013 Receives the Assent of the President (Sept. 12, 2013), available at <http://pib.nic.in/newsite/erelease.aspx?relid=99309>.

82. See National Food Security Bill, *supra* note 79.

V. SOCIAL FRAMEWORK: EXCLUSION AND INCLUSION

The above-mentioned legal dimensions to food sovereignty raise several social and human dimension questions in relation to the implementation plan of the Right to Food Act and the Biotechnology Bill in India. In this Part, we will discuss briefly the fundamental aspects of the social framework on exclusion and inclusion, and how that determines the applicability of the legal frameworks to food and agricultural production in tribal India.

The ability to produce and access food is interrelated to poverty. Here, poverty could be understood in broader context of one's ability to earn adequate income, ability to meet basic human needs (food, shelter, clothing, health and education), and availability of opportunities. To understand poverty, it is critical to understand social inclusion and exclusion. At the micro-level, poverty could be at the institutional level (community), or at the individual level (household and individual men, women, and children); also implicated is communities' and peoples' ability to participate in decision making. Thus, social exclusion plays a critical role in understanding the implications of poverty on food sovereignty and food security. Typically, the scientific way to define the poverty line often emphasizes living cost, particularly the cost of food. The main reason for this emphasis is that marginalized populations in the global South, for example, spend on average almost half of their income on food.⁸³ India's way to address the challenge of meeting the Millennium Development Goals was to revive the poverty lines. The challenge of defining "below the poverty line" in India's population of over 1.2 billion becomes even more urgent now than ever before. In the study area, the biggest issue is about defining the poverty line. The majority of tribal households in the study area lack basic human needs and have little access to agricultural technologies. In 2004, the Planning Commission of India computed the poverty line equivalent, in terms of purchasing power parity, to 1 USD per person per day, while the new poverty line is Rs.29 (equivalent to 1.25 USD) per person per day.⁸⁴ However, this definition of the poverty line not only impacts the Bhil tribal men, women, and children's social inclusion, but also the discussion of food sovereignty. The question here is about the exclusion of those individuals who are just above the defined category of poverty

83. See Mohan Guruswamy & Ronald Joseph Abraham, *Redefining Poverty: A New Poverty Line for a New India*, 41 *ECON. & POL. WKLY.* 2534, 2534–41 (2006).

84. See Mahendra Kumar Singh, *New Poverty Line: Rs 32 in Villages, Rs 47 in Cities*, *TIMES OF INDIA* (July 7, 2014, 12:45 AM), <http://timesofindia.indiatimes.com/india/New-poverty-line-Rs-32-in-villages-Rs-47-in-cities/articleshow/37920441.cms>.

(i.e., those earning 1.50 USD are not counted as poor) based on consumption. The underlying question is to what extent the poverty line could be generalized to the entire population, which indirectly excludes people from benefits of government programs. Though the Right to Food Act is expected to cover 67 percent of Indians, which is more than three times the number of people living below the consumption poverty line (22 percent) it raises many questions.⁸⁵ One of the critical questions that arises is where and how the food will be produced, and what will happen to smallholders in tribal areas. The changing circumstances are coupled with the lack of secured food systems. The smallholders, in attempt to earn fast cash, are trapped in experimenting with cash crops, which demand high inputs.

VI. GM CROPS, GENDER, AND THE MARGINALIZED TRIBAL PEOPLE

The suicide rate among farmers in India made headlines in the global media. The cause for the suicide rate, as suggested by various non-governmental organizations and farmers' unions, was the introduction of biotechnology—new varieties of GM seeds with high need for fertilizers and pesticides.⁸⁶ Over 833 million people, or about 70 percent of India's population, live in rural areas. The majority are smallholder farmers, and they often lack secured land tenure rights and access to agricultural technologies. The suicide rate, according to latest statistical research, has “strong causal links between areas with the most suicides and areas where impoverished farmers are trying to grow crops that suffer from wild price fluctuations due to India's relatively recent shift to free market economics.”⁸⁷ This study has found that “India's shocking rates of suicides are highest in areas with the most debt-ridden farmers who are clinging to tiny smallholdings—less than one hectare – and trying to grow ‘cash crops,’ such as cotton and coffee, that are highly susceptible to global price fluctuations.”⁸⁸ This study indicated that the

85. See Mihir Shah, *Understanding the Poverty Line*, HINDU (Aug. 6, 2013, 4:32 AM), <http://www.thehindu.com/opinion/lead/understanding-the-poverty-line/article4989045.ece>.

86. For more information, see generally *Farmers' Suicides in India*, http://en.wikipedia.org/wiki/Farmers%27_suicides_in_India, and sources cited therein.

87. Vinoth Chandar, *New Evidence of Suicide Epidemic Among India's "Marginalised" Farmers*, UNIV. CAMBRIDGE (Apr. 17, 2014), <http://www.cam.ac.uk/research/news/new-evidence-of-suicide-epidemic-among-indias-marginalised-farmers>; see also Jonathan Kennedy and Lawrence King, *The Political Economy of Farmers' Suicides in India: Indebted Cash-Crop Farmers with Marginal Land Holdings Explain State-Level Variation in Suicide Rates*, 10 J. GLOBALIZATION & HEALTH 1, 1–9 (2014), available at <http://www.globalizationandhealth.com/content/10/1/16>.

88. Chandar, *supra* note 87.

farmers at highest risk have three characteristics: farmers who invest in growing cash crops; those with “marginal” farms of less than one hectare; and those who have debts of 300 Indian Rupees or more.⁸⁹

The majority of male farmers (often, they are the heads of household and responsible for providing the livelihood) become vulnerable when the farm production fails. Out of the shame of being unable to take care of their household responsibilities, unable to pay their debts and/or losing their land to money lenders, these farmers commit suicide by consuming the pesticides.⁹⁰ The consequence is that their spouses and children are left without any future food and land security. The Bhil tribal people not only have an average of one hectare of land without land rights, but they also find themselves vulnerable to agricultural biotechnology innovation that is tested in their area. With the Right to Food Act in the implementation phase, there are several concerns and areas lacking clarity with regard to how food procurement will happen at the national level, and what its consequences will be for the smallholder tribal people.

A. *GM Food Crops: Bacillus thuringiensis (Bt) brinjal*

Bt brinjal (brinjal *Solanum melongena* Linn, also known commonly as Eggplant/ Aubergina) is the first GM crop in India. The GM food crops have not yet been introduced to the Indian market. However, in 2008, when there were attempts to introduce the GM food crop (i.e., *Bt* brinjal), the Indian government faced opposition from the farmers’ union and several civil societies that opposed the liberalization of the food crop.⁹¹ In *Bt* brinjal, the insertion of a natural bacterial protein known as Cry1Ac alters the genetic material, which makes it resistant to pests and does away with the need for pesticides. The argument in favor of *Bt* brinjal is that it is one of the major food crops in India, but its production is still low compared to the demand chain. The low yield is often associated with the fruit and shoot borer infestation. The Indian Council of Agricultural Research (ICAR) together with Maharashtra Hybrid Seed Company Ltd (MAHYCO), a leading Indian seed company and subsidiary of Monsanto, developed *Bt* brinjal by inserting a gene, Cry1Ac, from soil bacterium called *Bacillus thuringiensis* through an Agrobacterium-mediated gene transfer. It is the first GM food crop in India that has reached the approval stage for commercialization. *Bt*

89. Chandar, *supra* note 87.

90. Chandar, *supra* note 87.

91. See generally Prabir Prukayastha & Satyajit Rath, *Bt Brinjal: Need to Refocus the Debate*, 45 ECON. & POL. WKLY. 42 (2010).

brinjal is expected to reduce the use of pesticides by 42 percent, and production is expected to double.⁹²

Yet, the commercialization effort of *Bt* brinjal was not without controversy. India's National Biodiversity Authority is probing the crop scientists involved in developing *Bt* brinjal for allegedly violating India's 2002 Biological Diversity Act. A non-governmental group alleged that Indian crop scientists may have violated the Act without receiving prior permission to make use of local cultivators and foreign technology.⁹³ The Technical Expert Committee appointed by the Supreme Court produced a report in a public interest litigation on GM.⁹⁴ The Technical Expert Committee consisted of six members, of which five submitted a report following the Parliamentary Committee on Agriculture's request on August 9, 2012, that the Government stop all field trials; the Technical Expert Committee also sought a ban on GM food crops like *Bt* brinjal. It imposed a ban on Herbicide Tolerant (HT) crops since manual weeding generates employment for smallholders in India. The Committee also sought a detailed probe as to how permission was granted to commercialize *Bt* brinjal seed when all the required evaluation tests were not carried out. The report of the Committee was tabled a day after Maharashtra Government cancelled MAHYCO's licence to sell its *Bt* cotton seeds.⁹⁵

The common argument in favor of *Bt* brinjal is that the reduction of insecticides will increase yield and create economic benefits for producers and consumers.⁹⁶ Though *Bt* brinjal offers to reduce insecticide use and yield higher production, both of which might benefit consumers, there is another dimension of its introduction. From the social dimension of the *Bt* brinjal debate, there are concerns about the ability of smallholder farmers to participate in biotechnology agricultural crops, which requires huge capital investment, adaptability of new skills,

92. See generally Vijesh V. Krishna & Matin Qaim, Potential Impacts of Eggplant on Economic Surplus and Farmers' Health in India 3 (2007), available at <http://ageconsearch.umn.edu/bitstream/9909/1/sp07kr02.pdf>.

93. See *Glare on Brinjal Genetic Study*, TELEGRAPH INDIA (Mar. 2, 2010), http://www.telegraphindia.com/1100302/jsp/nation/story_12165512.jsp.

94. Aruna Rodrigues & Others v. Union of India & Others, (2005) Writ Petition (Civil) No. 260 (Oct. 17, 2012, interim report), available at www.biosafety-info.net/file_dir/1774286933508f77cc70d55.pdf; see also Press Release, Coal. for a GM-Free India, All GM Field Trials in India to Be Stopped (Oct. 18, 2012), available at http://www.organicconsumers.org/articles/article_26463.cfm.

95. Satyarth Chaturvedi, *GM Crops Are No Way Forward*, HINDU (Aug. 24, 2012, 5:12 PM), <http://www.thehindu.com/opinion/lead/article3812825.ece?homepage=true>.

96. See NAT'L CTR. FOR AGRIC. ECON. & POLICY RESEARCH, SANT KUMAR, LAKSHMI PRASANNA & SHWETA WANKHADE, POLICY BRIEF: ECONOMIC BENEFITS OF BT BRINJAL – AN EX-ANTE ASSESSMENT (2010), available at http://www.ncap.res.in/upload_files/policy_brief/pb34.pdf.

affordability, marketing strategy, and cultural acceptance. All of these factors result in challenges for smallholder rural and tribal people in India. The Bhil tribe, for instance, cultivate the native brinjal varieties that not only contribute to high biological diversity, but also have higher adaptation to climate variability and droughts with minimal pesticide inputs. The diversity of native brinjal also meets the cultural and dietary needs of the people. The competition of producing large scale *Bt* brinjal might compromise the role of the Bhil tribal women who often cultivate the native variety in their home gardens for self-consumption and sale in the local market. The large scale production of *Bt* brinjal will influence the local markets, negatively impact the biodiversity of existing native varieties of brinjal, and make tribal households vulnerable to food security problems.

B. GM Cash Crops: Bacillus thuringiensis (Bt) Cotton

The first genetically modified cash crop, *Bt* cotton, has been part of the controversies linked to seed security⁹⁷ and the agrarian crisis that led to farmers' suicides in India.⁹⁸ *Bt* cotton is produced by the transfer of a gene from a soil bacterium into the seed, which produces a protein toxic to a targeted pest, the bollworm in case of cotton.⁹⁹ India's liberalization of the economy in the early 1990s is often regarded as a cause of the agrarian crisis. The agrarian crisis brought on a number of institutional and policy changes related to credits, subsidies, market investments, and external trade, among others. Smallholder farmers with marginal landholdings like Bhil tribals are often at a disadvantaged position because of increased cost inputs and the fluctuation of price in local markets.

Due to lucrative income, many farmers in India, including smallholders, shift to cash crops from inter-cropping or mixed cropping. The cash crop promises higher benefits and comes with higher associated risks. Cotton cultivation requires large amounts of capital and is very water-intensive; it also requires large quantities of fertilizers and pesticides. The marginal farmers in tribal areas are lured to cultivate the cotton crops for fast cash, but are affected by frequent droughts and the

97. See Vandana Shiva, Ashok Emani & Afsar H. Jafri, *Globalisation and Threat to Seed Security: Case of Transgenic Cotton Trials in India*, 34 *ECON. & POLI. WKLY.* 601, 601-13 (1998).

98. See Neelima Deshmukh, *Cotton Growers: Experience from Vidarbha*, in *AGRARIAN CRISIS AND FARMER SUICIDES* 175, 175-91 (R.S. Deshpande & Saroj Arora eds., 2010).

99. Rashmi Patowary, *Scrutinizing the Impact of GMOs Through the Prism of Human Rights*, 7 *OIDA Int'l J. Sustainable Dev.* 79, 81 (2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2503055.

inability to pay the debts taken from the local merchants. There are two social dynamics associated with GM cash crops for tribal people. The first social aspect is that of the ability of choice by the smallholders over their agricultural crops. The majority of marginal farmers are lured by the promise of big cash and adopt *Bt* cotton despite the fact that they risk investing in expensive seeds, pesticides, and irrigation methods. The second social dimension is about the long-term economic and environmental benefits of biodiverse crops over the GM cash crops. In general, the smallholders in tribal areas have local-based knowledge on native varieties of seeds and techniques of crop rotation, making them adaptable to climate change. The new agricultural technologies, however, fail to provide any security—social, economic, or environmental—that can help tribal farmers’ households from losing land titles due to heavy debts or food security due to crop failures.

VII. DISCUSSION: “FEEDING INDIA’S BILLION”

There is no simple solution to sustainably feed India’s billion (or, globally, the world’s nine billion) people. This Article analyzed the complex dynamics of India’s current political battle for the right vis-à-vis the future of new technologies targeted to increase the food production in context of marginal tribal men and women. Through the socio-legal analysis and the case study of Bhil tribal people, it is evident that the new technologies, both GM and non-GM, will be beneficial only when they are directed at the needs of tribal communities. New technologies, such as GM feed and cash crops, are targeted to the least-developed countries to improve production. However, communities within these countries are often vulnerable and marginalized compared to those of more developed country farmers. For the new technology to be useful when adopted by the poorest nations, there is a need for citizen participation in decision making in seed and food governance. The participation needs to move beyond the legal framework by designing appropriate implementation and monitoring techniques of the Acts at the local level. This needs to be done taking into account the local socio-economic differences and cultural richness of the population. Often, GM crops promoted in developing countries offer major economic promise, but there are associated risks related to exaggerated potential benefits, unclear labeling and regulation of innovations, prioritization, varied dietary need of citizens, and, importantly, the livelihoods of the marginalized men and women in the developing country involved in food production. The Technical Expert Committee appointed by the Supreme Court of India rightly recommended that there is no justification for the introduction of Herbicide Tolerant Genetically Modified Crops in India,

considering that the average Indian farm size is only three acres.¹⁰⁰ Moreover, from the social perspective in India, manual weeding provides employment to millions of women. This, combined with lack of decentralized democratic local institutions and local governance mechanisms, hinders the efforts to improve the sustainable production, distribution, and management of the food in the country.

The way forward for meeting the Millennium Developmental Goal of ending hunger is to ensure that the food security takes a holistic approach by including the marginalized tribal men and women without compromising the livelihood of smallholder agriculture. With the big investments coming from biotechnology organizations predicting that world hunger will be eradicated once GM crops are introduced, India becomes an easy example for this quick fix. This ignores the fact that challenges for India do not lie in production alone, but also in the distribution system. Moreover, any effort to increase food production using the new biotechnology innovation often negatively impacts the rich biodiversity of the country's crops. Through proper implementation of the Right to Food Act, taking fully into account government institutions and concepts of food governance, India might take a step forward in proving that hunger eradication is not just about producing more food. In brief, the goal of food sovereignty needs to move beyond the limit of maximizing food productivity by optimizing the use of a multifaceted landscape of social and human justice outcomes.

100. See Aruna Rodrigues, *Nip This in the Bud*, HINDU (Aug. 12, 2013, 12:18 AM), <http://www.thehindu.com/opinion/lead/nip-this-in-the-bud/article5012989.ece>.