

A thesis submitted to the Department of Environmental Sciences and Policy of
Central European University in part fulfilment of the
Degree of Master of Science

Seeds of Disenchantment

Seed networks in the Indian State of Maharashtra



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May, 2012

Budapest

Erasmus Mundus Masters Course in Environmental Sciences,
Policy and Management
MESPOM



This thesis is submitted in fulfillment of the Master of Science degree awarded as a result of successful completion of the Erasmus Mundus Masters course in Environmental Sciences, Policy and Management (MESPOM) jointly operated by the University of the Aegean (Greece), Central European University (Hungary), Lund University (Sweden) and the University of Manchester (United Kingdom).

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ABSTRACT OF THESIS submitted by:

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for the degree of Master of Science and entitled: Seeds of Disenchantment: *Seed Networks in the Indian State of Maharashtra*

Month and Year of submission: May, 2012.

This thesis is a concise, in-depth study of the interconnections between individual, community as well as co-operative seed bank initiatives that have gradually been taking root mainly in the Indian state of Maharashtra, which is one of the epicentres of the mammoth agrarian crisis that India has been facing during the past decade. This research has been conducted on the basis of the understanding that the social as well as economic implications of such (seed) networks are numerous and multifarious, which makes it imperative to investigate their potential to be a pivot for change through serving as instruments for a more consumer/ farmer friendly policy formulation. The following analysis is based on an examination of the connections between (a) the gradual privatization of the public sector domain fostering introduction of non-indigenous varieties of seeds (b) farmer suicides in the state (c) the aforementioned seed bank initiatives. It is essential to understand these connections so as to unravel the reasons for and the extent of the gross transgression of the fundamental right(s) of not only farmers, but also citizens and consumers can be gauged. The past two decades have seen a notable rise in awareness regarding farmers' rights and farmer networking through national and regional NGOs/ NPOs in India. Seed banks started by such organizations are bringing together farmers from all strata, and creating an egalitarian (as well as socially and politically rebellious) platform of/for networking. In the light of this, the following paper also investigates whether these seed bank initiatives have been undertaken as retaliatory defensive measures against the aforementioned exploitative legislations. This is examined using a theoretical framework based on Political Ecology (PE) and Environmental Justice (EJ) literature to examine the struggle over control and access of resources, change in power relations and marginality as a policy-induced construct.

Keywords: India, Maharashtra, seed banks, seed exchange, seed networking, PPVFR, NBRAI, Indian seed laws, farmers' rights

Acknowledgements

I am indebted to my supervisor Dr. Guntra Aistara who started out on this journey with me a year ago. None of this could have been accomplished without your quick pen, astute observations and indefatigable spirit. Thank you, Guntra.

Thanks are due to Professors Aleh Cherp, Alan Watt, Stephen Stec and László Pintér for their help and guidance throughout these two years, Krisztina Szabados and Irina Herczeg of the Departmental Secretariat for their efficiency and genuine concern for my well-being and Richard Kartosonto for helping with lost passports and numerous visas.

The fieldwork in India was greatly facilitated due to the selflessness of the Press family in the form of the generous Lydia Press Fieldwork Bursary. Thank you very much for your conviction in my work.

To my interviewees and all the farmers I interacted with, I owe a lifetime of knowledge and vicarious experience. Thank you for it all.

This research is the culmination of two years of collaborations with my colleagues in MESPOM, and I am especially grateful to Jovan Batancev, Dhaval Negandhi, Lea Baumbach and Logan Strenchock being there for me every step of the way.

Personal thanks to Mr. James Plumtree, Mrs. Radoslawa Jankowska and Mr. Zoltán Bogschütz for making Budapest home for me and to RD for clove smokes and lotus honey that gave me the strength to get on the flight out in the first place.

For my Aai, Baba and Tej.

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List of Abbreviations

| | |
|--------|---|
| CRRI | Central Rice Research Institute |
| DIRU | Deccan Institute for Rural Upkeep |
| FIRI | Foundation of Indian Rural Industry |
| GOI | Government of India |
| GR | Green Revolution |
| HYV | High Yielding Varieties |
| ICAR | Indian Council of Agricultural Research |
| IRRI | International Rice Research Institute |
| MAHYCO | Maharashtra Hybrid Seeds Company Limited |
| NBRAI | National Biotechnology Regulatory Authority of India |
| NDDDB | National Dairy Development Board |
| NEP | New Economic Plan |
| NSC | National Seeds' Corporation |
| PBR | Plant Breeders' Rights |
| PPVFR | Protection of Plant Varieties and Farmers' Rights |
| R&D | Research and Development |
| UPOV | (International) Union for the Protection of Plant Varieties |

List of Indian Words Used

| | |
|---------------------|--|
| <i>Bazaar</i> | A market |
| <i>Kharif</i> crops | Crops planted for the autumn harvest in the Indian subcontinent |
| <i>Mela</i> | A social gathering like a fair or a meeting. |
| <i>Taluka</i> | An administrative subdivision of a district in the Indian local government constituted of a group of villages. |
| <i>Khadi</i> | Handspun, handwoven cotton cloth which was the symbol of the Civil Disobedience Movement initiated by Mahatma Gandhi during the Indian freedom struggle. This cloth was used as an instrument for rural self employment and self reliance in defiance of import of British cloth aimed at killing the Indian textile industry which was a pillar of the indigenous pre-British Indian economy. |

“The most important thing to the majority of Asia is not capitalism or socialism or any other political ideology but food which means life itself”

Claude Alvares (1986)

Preface

India is known to be a country replete with diversity. The words that make up the aphorism ‘unity in diversity’ are embedded deep in the psyche of this “sovereign, socialist, secular, democratic republic” (MoLJ 1949). They have helped me describe the society I belong to for as long as I can remember. I believe that this is impressed on each and every one of us from an early age to help us overcome the various segregations that the law of the land exposes us to – most importantly caste, creed and religion – so as to enable us to co-exist with each other harmoniously despite a bloody and highly divided past (and present).

This omnipresent diversity is perhaps most evident in the natural forces that define characteristic features of the country. The *Himalayas* in the north and the deltaic plains of the perennial *Ganga*, *Brahmaputra* and the *Yamuna* that flow from their snow-capped peaks, the steep mountain ranges that run parallel to the eastern and the western peninsular coastlines (called the Eastern and Western *ghats*) and the central plateau that they form (the *Deccan* plateau) have all contributed to defining the mosaic that the topography and the climate of India is (refer to Fig. 1 below for details).

It is this tapestry that has in turn translated into a tremendous diversity in the agricultural traditions that have developed around the country. However the predominantly agrarian culture and traditions of the country as well as the resultant cuisines specific to the various regions that weave the fabric of this land of abundant milk, honey, fruit and grain have been able to evolve only because of the healthy and bountiful soul that they draw from – seeds.

– wild, diverse, indigenous and nurturing. Selfless seeds.

Seeds of an ancient civilization and a modern superpower.

Seeds of a Revolution – Green yet parched.

Seeds of abundance, seeds of wealth.

Seeds *ni le safran, ni le verte* – neither Hindu nor Muslim. Seeds without inherent caste, creed, faith or religion.

Seeds for men, and for women.

Seeds of a dream – two meals a day and a shade to rest in.

Seeds of peace and of chaos –

Seeds of disenchantment – seeds of pathos.

The environment that surrounds us is a very complex web of symbiotic, interdependent interactions with every creature playing a role in the survival of particular ecosystems as well as the biosphere as a whole. Destruction of natural ecosystems as a result of anthropocentric actions is not a novel occurrence as anthropogenic expansion especially since the advent of agricultural modernization and progress in modern transport, has allowed humans to access most places/ species (floral as well as faunal) that were previously inaccessible to them. In India (as in many other developing countries), this combined with the constant increase in the rate of population growth has put immense pressure on and increased the value of natural resources which at one point were taken for granted by society. One such

important and irreplaceable natural resource is seeds because loss of agricultural species is loss of local genetic and cultural values and most importantly, the loss of choosing healthy and delicious food to put on the table.

1. Introduction

1.1 *Brief background*

I began reading up about the issues at hand and those that were related to my area of interest more than a year ago. It was around the same time that I started speaking to farmers, activists, academicians and others that I thought might be even remotely connected or informative as I had little or no knowledge about the subject. All I had was an ample fury. It is essential to be able to identify with the reasons for my anger in order to understand the reasons behind my choice of research topic.

Indian society has long been rooted in an agrarian tradition. Of the entire area of the country, 60.89% is used for the purpose of agriculture (Venkataramani 1999). Agriculture is the country's most important economic sector employing an approximate 2/3rd of the entire population (Heitzman and Worden 1995). However, the apathy and neglect that the government has shown towards the majority of stakeholders in this formidable sector – the farmers – is shocking, to say the least. Over 200,000 farmer suicides in total (Shiva 2009) at an average of 16000 annually, have been recorded in the states of Andhra Pradesh, Karnataka, Kerala and Maharashtra (Gruere *et al* 2008).

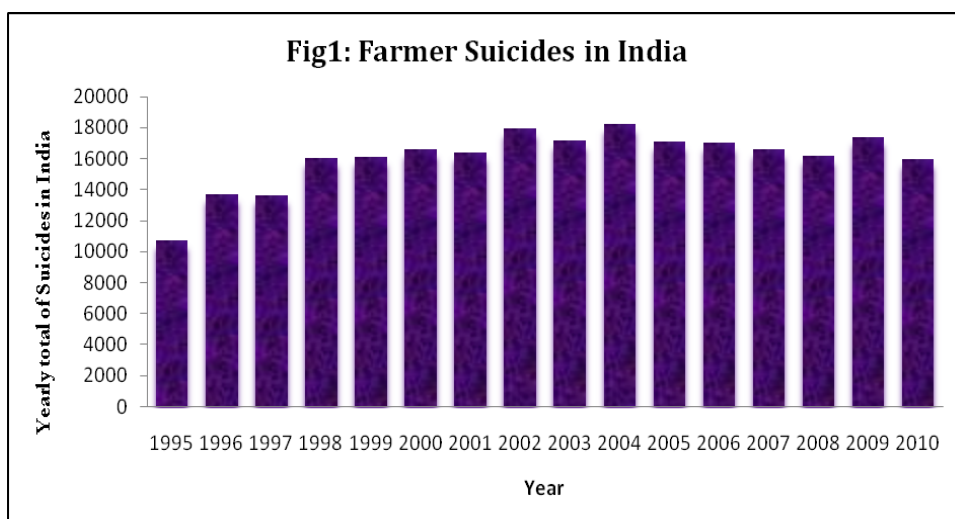


Fig. 2. Farmers Suicides in India

Source: (NCRB, 2011)

I could not possibly ignore this gargantuan tragedy that had been gradually unravelling in rural areas and farming communities around me. For a catastrophe of this proportion to be allowed to take place, the organization needs to have been fractured in multiple places with both deep rooted systems and long established traditions that were based on the local scientific know-how gradually decimating. One such tradition, which although an institution unto itself has been thoroughly (and perhaps methodically) disrupted in the throes of this agrarian disaster, is that of seed networking and the consequent conservation of indigenous landraces that thrives on the activities of local seed saving and seed exchange (Navdanya 2009; Chaudhari pers. comm. 2012¹). “A seed is an indissoluble nexus of relations (...)” (Yapa 1993: 255) which carries within itself historical, geographical, social and economic bonds that cannot be replicated by commercial seed producing endeavours. In India, where seed saving is predominantly a female-centric activity, it plays the additional role of empowering women in a primarily male occupation (Maheshwar pers. comm. 2012; Chaudhari pers. comm. 2012; Pionetti 2005; Rai pers. comm. 2012).

¹ Names of all interlocutors and associated organizations have been changed to protect anonymity.

Seed saving is also very important for a number of other ecological reasons, including overcoming diseases, upkeep and improvement of soil fertility, keeping the gene pool healthy and also for adapting to the incumbent changes in climate predicted in the coming years (Pionetti 2005). The Intergovernmental Panel on Climatic Change has stated that the potential consequences of climate change on agrobiodiversity could include a diminishing of the in-built, naturally extant resilience of species that will potentially lead to change in the way they respond, adapt and migrate (IPCC 2001). In the face of such trials, nurturing diversity in plant gene-pool gains increased importance. As Anderson and Winge (2008, 1) have stated “Plant genetic diversity is probably more important for farming than any other single environmental factor, because it is what makes it possible to adapt food production to changing environmental conditions”. The role that genetic diversity in crops plays in the upkeep of food security cannot be undermined (Steinberg 2001). This is more so in the case of small and marginal farmers (Anderson and Winge 2008) in dryland areas as in most parts of India and especially the state of Maharashtra (Pionetti 2005).

To keep up crop diversity in the face of restrictive legislations based on the international UPOV (Union for the Protection of Plant Varieties) model, farmers and civil society actors have gone to great lengths throughout the world. Many such cases can be found especially in the industrially developed countries of the Global North. Examples can be cited from singular initiatives like ‘Alive Places’ in Bulgaria to international actors like La Via Campesina that are active on multiple levels, not just seed conservation and networking (Martinez Torres and Rosset 2010). Cases that stand out are those cited by Steinberg (2001) – that of the Seed Savers’ Exchange in Decorah, Iowa and the Basque Seed Network in the Basque Country in Spain, cited by Andersen and Winge (2008). In the latter case, despite the difficulty in amassing members for this enterprise, which is evident in the fact that it had only 80 voluntary members six years after initiation (although it was abiding by the law to create

awareness about how to save, use and exchange seeds), the group has resolutely withstood lack of funds and a hostile and potentially volatile situation to resolutely carry on its conservation work. In contrast, in India, seed saving has been a characteristic of the Indian agricultural scene despite the GR and the economic liberalization policies of the 1990s in the form of the New Economic Plan (NEP). Seed networks like Beeja Sukara in Karnataka have a network of over 2000 seed savers while the FIRI Indigenous Varieties Preservation Program connects over 11 villages and 500 farmers (Lakshmi Narayana pers. comm. 2012; Chaudhari pers. comm. 2012). However, India does share certain characteristics with Zimbabwe where agrarian communities are increasingly threatened by drought and heightened commercialization and private sector intervention in seed production which has served as a driver in narrowing genetic diversity and thus reducing the non-monetary benefit sharing, an important function of the community seed systems there² (Andersen and Winge 2008).

The importance of crop genetic diversity, especially in the Indian context was emphasized on, by most of my interviewees; and Deshpande (pers. comm. 2012) and Maheshwar (pers. comm. 2012) reiterated that given the bi-seasonal, multi-cropping/ mixed-cropping agricultural system followed in India (the bi-seasonal, multi-cropping/mixed-cropping method) which is complementary to the small landholdings that characterize a large percentage of Indian farmlands crop genetic diversity gains even more importance (Pionetti 2005; Deshpande pers. comm. 2012; Chaudhari pers. comm. 2012). Even the PPVFR Act (2001) which is a different model from the UPOV, accedes that the importance of seed networking especially to uphold resource control and benefit sharing among farmers, is grave. Till the introduction of the new amendments to the Seed Bill (2004), the role of seed networking in the Indian rural milieu was understood and upheld by the Government even in

² This could also be due to a lack of legislations to rein in private players and commercial drivers.

the face of its agreement with the WTO and entry into the world market as a leading agricultural producer.

The largely organic interface of Indian agriculture (Barton 2001) was rooted in its seed networks, which have helped maintain the agro-biodiversity of the region through the development of new varieties and regeneration of the pre-existent ones (O'Neill, Holland and Light 2008).

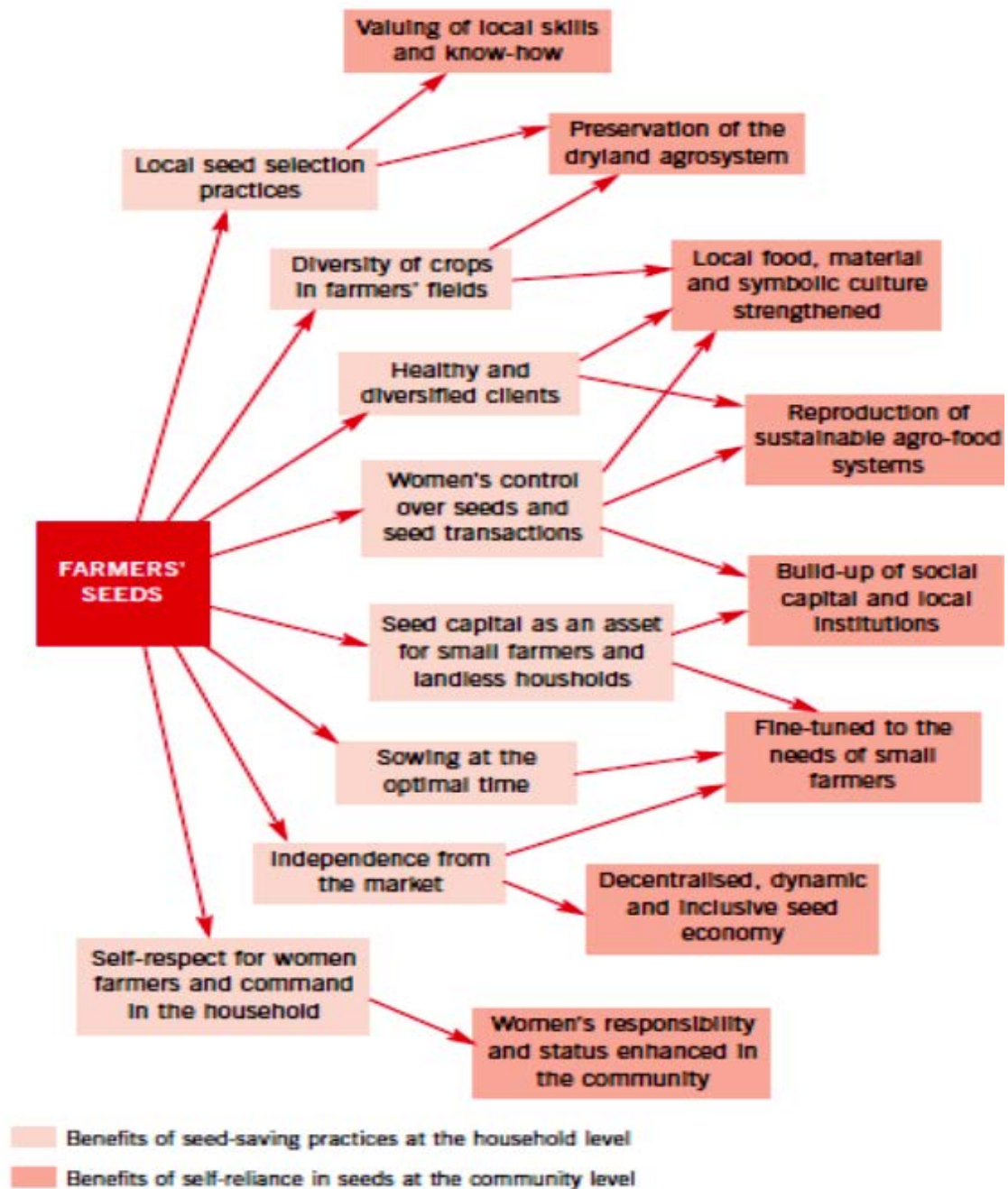


Fig. 3. Benefits of Seed Networking
Source: (Pionetti 2005, 155)

The importance of the tremendous potential of the germplasm that is available in developing agrarian countries with very limited restrictive legislation is not lost on private seed manufacturers within or outside the country. With raw material fundamental for plant breeding, biotechnology and genetic engineering up for grabs, unprecedented political

manoeuvring is being done in order to open the seed sector to private interests even further (Shiva *et al* 2002), and disruption of seed-networking and the resultant loss of biodiversity, the fracturing of local rural economies and a resultant gradual decline in autonomy of the rural areas (Pionetti 2005) is only the first stirring of the inevitable death knell that has already sounded in the industrialized countries of the global North. Andersen and Winge (2005, 13) have observed that developed countries in Europe and the USA are far more restrictive in their legislation curb saving and exchanging seeds so much so that farmers in the EU have to pay a license fee to use saved seeds of protected varieties on their own lands. Countries like Norway have are trying to amend legislations based on the UPOV model to better incorporate Farmers' Rights (Andersen and Winge 2005).

In India, the UPOV model has been moulded to better incorporate farmers' rights as well as those of plant breeders under the Protection of Plant Varieties and Farmers' Rights (PPVFR) Act (2001). Had the PPVFR Act been as restrictive as the UPOV model, it would have caused the complete collapse of the agriculture sector in India. Even at present, the emergence of the Seed Bill (2004) has diluted the effect of the PPVFR Act considerably as shall be explained in depth in Chapter 2.3. Exchange of farmers' seeds is a primary activity fundamental to the Indian system of agriculture (Pereira 1993). It is essential to understand the causes of the collapse of these seed bonds and the reasons behind their recent revival despite the odds that they face. It is only on understanding these that new links within the farming community can be outlined which may translate into public dissension and challenge the might and the policies of the State and perhaps even the Central government.

It is for this purpose that the State of Maharashtra, which is one of those hit worst by the wave of farmer suicides, has been selected as the area of research.

1.2 Scope of study

In the State of Maharashtra as well as in other parts of the country like Karnataka, Andhra Pradesh, Tamil Nadu etc. change in agricultural cycles, land-use, crop diversity, impacts on the water-table, biodiversity etc. are but a few concerns on account of the structural policy changes to encourage the use of hybrids and GMOs through national legislations. Other than problems such as the cost of seeds and reduction in yields (Shiva 2009), an important point that needs to be noted is the intellectual property rights clause that could potentially cause havoc in a largely illiterate peasant population in India.

In this context, there has been a notable rise in awareness regarding farmers' rights and the need for farmer networking. International organizations like La Via Campesina and GRAIN as well as national and regional NGOs/ NPOs/ think-tanks like Navdanya and the Deccan Development Society (DDS), the Association of Organic Agriculture (AOA), Foundation of Indian Rural Industry (FIRI) and Kananlakshmi are working towards further awareness creation and empowerment, and have started promoting seed banks (individual as well as co-operative). These seed banks are bringing together farmers from all strata, and creating an egalitarian (as well as socially and politically rebellious) platform of/for networking which has given an impetus to a definitive new trend in religion- and caste-ruled rural India.

This thesis gives an overview of national legislations that have shaped the Indian seed sector such as the PPVFR Act of 2001, the Seed Bill of 2004 and the proposed Biotechnology Regulatory Authority of India Bill (tabled in the 2011 monsoon session of the Indian National Parliament). It contrasts the implementation of these with the co-operative seed banks that have been gradually taking root in Maharashtra. It is essential to understand this connection in of one of the largest sectors in one of the fastest growing economies in the world, because neither the legislations cited above nor the administrative body that governs them (the

National Biotechnology Regulatory Authority of India) is easily accessible to the common populace in its design and/or implementation. This undermines the fundamental right(s) of citizens/ consumers to gain access to and decide about the content of the food they eat and the grain they feed their children. Furthermore, it highlights the need to study whether these co-operative seed bank initiatives have been undertaken by groups of farmers as retaliatory defensive measures against the aforementioned exploitative legislations, and how they mitigate their effects.

1.3 Methodology and research questions

This research is primarily based on observations using participatory research methods, mainly through interviews. A list of interviewees with representatives of all majority stakeholder groups carefully selected after analysis of information collected from academic as well as gray literature as a primary source of information was prepared and initial contact made in late 2011 to avoid delays during actual fieldwork. Although the method followed does have some elements of participant observation as defined by Dewalt *et al* (1998) in the form of formal and informal interviews, due to the limited amount of time available, other activities that form a core of this method like self-analysis and analysis of personal and/ or community documents over an extended period could not be attempted.

Most of the interviewees selected, in one way or another, hold an elite position in the context that they were interviewed – whether it be the farmer collective that they are part of or as head of an NGO/ think tank or an entire Ministry at the national level. However, informal and unplanned interviews of individuals did take place especially at seed *melas* (festivals) and/ or other public gatherings of stakeholders (like conferences, lectures etc). All interviews (except the ones with Maitreyee Kango and Raviraj Agarwal which were via telephone) were conducted in person, on project/farm sites or in the offices of the interviewees in question with the average length of each interview being approximately forty

to forty-five minutes. All this was done in a multi actor/ multi stakeholder milieu and Giddens's (1990) concept of 'phantasmagoric social actors' – actors *in absentia* who regardless exert influence on local stakeholders – was primarily used while listing main stakeholders and synthesizing information provided by powerful stakeholder lobbies such as private and public seed manufacturers and government documents and websites.

Table 1. Stakeholder categories and number of participants

Source: (Fieldwork research by self)

| Sr. No. | Stakeholder Category | No. of Participants |
|----------------|-------------------------------|----------------------------|
| 1 | Farmers | 5 |
| 2 | Activists/ Project initiators | 7 |
| 3 | Government Officials | 2 |
| 4 | Academicians | 4 |

Although there was a ready list of questions that were contextually posed to all interviewees, the interviews themselves were loosely structured. The main research questions included (but were not limited to) the following:

1. What encouraged the formation of the co-operative seed bank in question? What are its aims and what sustainable agricultural practices does it (plan to) foster so as to avoid (further) environmental/ biodiversity degradation of the area that usage of hybrid/ GMO seeds (may) cause?
2. Do co-operative seed banks in Maharashtra share a symbiotic relationship? If yes, does it stem from economic, social or environmental concern(s)? How do they deal with their concerns?

3. What is the outlook of the farmers towards the legislations? Have numbers of seed banks (and the resultant networking) risen on account of these legislations, the incentive towards using GMOs and the rise in farmer suicides?

The interviews (in English, Hindi and Marathi) were recorded after informed consent from the interviewees. These were later transcribed and analyzed. Trends (if any) were established and embedded in the narrative of the report. Furbishing the report with “depth, nuance, complexity and roundedness” (Mason 2002, 65) was one of the primary aims of the data collection and the following analysis and an in-depth literature review of journal articles and books produced by the government as well as the activist/ intellectual lobby along with gray literature was undertaken to this end.

Throughout the process of my fieldwork, I have been engaged in the activities of my interviewees to incorporate multiple contexts and points of view to the study, rather than a singular one. I felt it important to describe the three stories that follow in Chapter 3 to develop a sense of a narrative (following Mason 2002; Kvale 1996) and hence have included them in full. In my opinion, only on reading these stories with the background information contained in the preceding chapters can the reader form an informed opinion on the basis of this study to evaluate the present situation.

1.4 Charting the territory

Maharashtra is the second largest and most populous state in India, boasting the highest per capita income (\$800) in the country (WB 2011). Despite this, it is a study in contrasts as it houses 10 of the country’s 100 poorest districts with the disparity between the urban rich and the rural poor of the hinterland being well documented (one-fourth of the total population of the state has been classified as being deprived) and observed to be the sharpest among the marginalized sections (WB 2011).

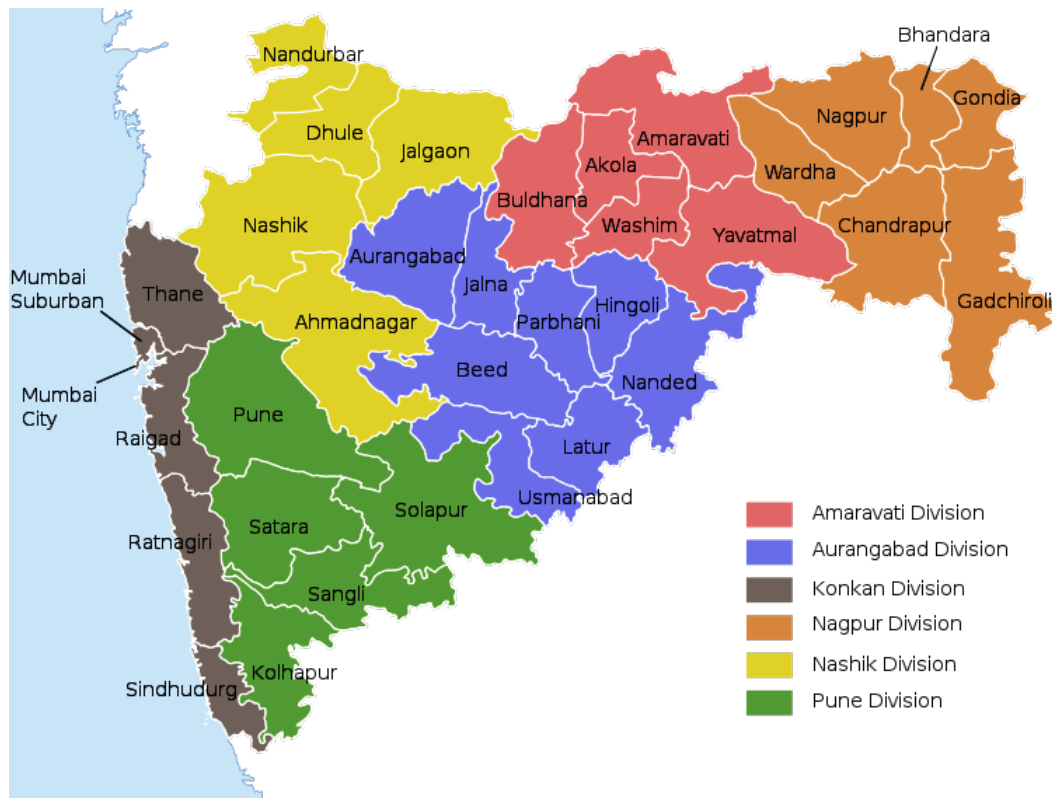


Fig. 4. Maharashtra district map
Source: (MLM 2011)

The state of Maharashtra is spread over an area of 308000 km². On the western side, it is bounded by the Arabian sea with the Western *ghats* (or the Sahyadri Ranges) running parallel to the coast. These ranges are a geographical divide and rise to an elevation of about 1200 m above sea level (Kulkarni *et al* 2005) This has given the state a characteristic topography with the upland plateau region being a part of the western coastal strip (also known as the *Konkan* region). The Western *ghats* are also attributed with being an important climatic divide in the state causing a rain shadow effect on the eastern side (Kulkarni *et al* 2005).

Maharashtra is part of the 42% of India that is classified as ‘semi-arid’ (Pionetti 2005; Kulkarni *et al* 2005). The state has a variable rainfall with the western areas receiving the highest rainfall (up to 4000 mm) (YASHADA 2000). The western coastal area receives an annual mean rainfall of approximately 2380 mm while the central west region records only around 580 mm on an average per annum (Kulkarni *et al* 2005). Nine agro-climatic zones

have been demarcated in the state, dividing the state according to characteristics such as rainfall, soil quality, temperature, cropping pattern, indigenous flora and fauna and suchlike (Deshpande n.a.). The state has a high percentage of land under cultivation (65% of the entire land area of the state). However only 23% (of this 65% cultivated land area) is irrigated and more than half of that is totally groundwater reliant (Phatak *et al* 1999; Kulkarni *et al* 2005)

1.5 Theoretical framework

This paper is an ethnographic study rooted in the paradigms of political ecology and environmental justice. It is aimed at producing what Little (1999) defines as ‘broad based knowledge’ to give an all-round, if not neutral, view of the environmental conflict that seed politics in India have given rise to. By opting for the ethnographic approach, I have given priority to the gathering, synthesizing and analyzing data material relevant to furthering social scientific knowledge in the context of the issue at hand. Given the limited time (and resources) at hand, I decided to focus on three main case studies, of which two I could personally visit and spend time at, meeting initiators as well as participants in the seed re-networking movement. I was aware that the main theme running through this entire research was that of a change in resource allotment, change in production methods of the said resource and very importantly the dimension of environmental (in)justice that is being done in the context of indigenous seeds and their networks in India. So rather than limiting the analysis of the situation to a single theoretical framework, I decided to use a combination of the Political Ecology (PE) approach along with that of Environmental Justice (EJ).

PE has been a dominant factor in the analysis as compared to EJ as the report since it has “(...) roots in peasant and development studies, social movements theory as well as studies of indigenous knowledge and symbolic and discursive struggles over resources” (Walker 2005, 364). Based on Martinez Alier’s (2002) definition of PE as the study of ecological distribution conflicts and Escobar’s (2006) interrelated rubrics pertaining to the

economic, ecological and cultural aspects of environmental conflicts, the overarching themes that form the basis of this theoretical framework are:

- (1) The change in the control and access to resources,
- (2) The power relations that have come to define the negotiation and transformation of environmental practices in the country
- (3) The marginality in access to resources (in this case, indigenous seeds), as a policy induced construct, rather than a random social phenomenon or the effect of gradual environmental change.

In my view, Political Ecology (PE) and EJ are a continuation of each other and the issue of seed politics in India can be approached via either. Politics of any kind is based on power relations between members of a community. So political ecology, which deals with relations in the human society in the context of “(...) its bio-cultural-political complexity” (Greenberg and Park 1994, 1) provides a succinct framework to begin the analysis especially since the issue is linked to both, the political economy aspect that is concerned with power and production and the ecological aspect which investigates the human-environmental relations – both important for long term sustainability of the environment. The human-environment dimension also brings forth the issue of the cultural context of sustainability which may perhaps not fit in the model of development proposed on the basis of technological and economic variables (Escobar 2006). The cultural context in case of India in particular is described by Williams and Mawdsley (2006, 662) as “(...) articulating a cultural opposition to the economistic understandings of the environment though the maintenance of indigenous values of holism and the respect for nature” in their study of postcolonial governance and EJ movements in India.

EJ literature is rooted in the EJ Movement in the US in the 1980s which came “(...) as a challenge to established environmentalism and to practices which it was claimed imposed

toxic and polluting facilities in ethnic minority and poor communities to a disproportionate degree” (Walker 2010, 312). It shares with the PE framework concerns pertaining to access and control of environmental resources, participation in decision making processes, equality in and justice of current environmental conditions on account of the aforementioned and most importantly policy outcomes in the context of social groups from different social strata (Walker 2010). It has thus provided the tools required to analyse the situation further from the viewpoint of farmers who have experienced chronic environmental degradation on account of usage of High Yielding Varieties (HYVs), a premeditated structural change introduced by the administration. The issue of deliberate implementation of policies aimed at increase in the use of hybrid HYV seeds (that has directly and/ or indirectly resulted in the disruption of traditional seed networking and thence may have hampered empowerment of farmers and agriculturists) has also been analyzed using both the PE as well as EJ as reference points.

Seed politics are one of the most important environmental conflicts in India at present mainly because, unlike the comparative local specificity of other environmental conflicts over resource and extraction industries such as mining, nuclear energy, dam construction etc., changes in the environment caused on account of seeds (and the change/ contamination therein) have the potential to affect the agrobiodiversity of the entire region or even the country (albeit, in different ways). And as Smith *et al* (2011, 2) have stated, “If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering”. Therefore it would be wise not only to maintain, but encourage the traditional system of seed exchange and networking as effects of the HYVs introduced extensively nationwide during the GR have caused damage to and erosion of the local agrobiodiversity affecting farmers on the whole, but particularly small and marginal ones with a hand-to-mouth existence (Dasgupta 1977; Shiva 1991).

The traditional agrarian society that has been affected thus is the first component of Rostow's (1960) linear pattern of (economic) growth (also called the Rostovian take-off model) in the modernization theory. The idea of functionalism at the base of Rostow's (1960) model is rooted in Émile Durkheim's perception that social and cultural unity and economic progress is fostered through the interdependence and interaction between social systems and institutions (Jones 1986). In this theory, Rostow (1960) posits that a traditional agrarian/hunter-gatherer society, through linearly and through multiple stages, reaches economic maturity and indulges in mass consumption. Of the five stages of economic growth³, at present India seems to be hovering in the 'take-off' stage where there is rapid growth in the economic, political as well as technological spheres and society begins to shed tradition for furthering economic and technological interests. In an ideal setting, such advancement would afford people increased control over their environments and thence foster social progress, but in the Indian agrarian communities, on account of uninformed, unfair legislation(s) and unsynchronized policies (described in Chapter 2.3), it is doing exactly the opposite (Sainath 2009, Shiva and Crompton 1998).

Agrarian policies and legislations of the past two decades have made it so that the means of production of the fundamental resource, seeds, is gradually being transferred to public and private sector seed producers. This has challenged the economic and resource autonomy of farmers – especially the small and marginal ones (Pionetti 2005; Chaudhari pers. comm. 2012; Kango pers. comm. 2012). Pionetti (2005) and Chaudhari (pers. comm. 2012) have both observed that lack of the aforementioned autonomy has resulted in exacerbation of pre-existent marginalization of farmers so much so that in places where there is a complete dependence on commercial seeds, farmers are not even assured of being able to sow their fields in time – an effect of the modern development model encouraged by the

³ The five stages of economic growth in this model are traditional society, preconditions for take-off, take off, drive to maturity and age of high consumption. These may last for varying time periods in different countries (Rostow 1960).

government in the throes of Rostow's 'take-off' stage. Such deprivation and extreme marginalization is then surely a form of "development-induced scarcity" (Yapa 1993, 254) caused due to the process of development applied to the area.

On the basis of a review of gray literature and visual media such as the documentary 'Nero's Guests' (Sainath 2009), it is quite evident that in most parts of the country where the so-called 'backward' traditional sectors come into contact with modern capitalist sectors they are increasingly isolated. The seed market, wherein the primary stakeholders (the farmers) operate from the agricultural sector, is considered to be extremely backward in common perception due to its predominantly non-mechanized, non-industrial, low-profit image when compared to other 'modern' sectors with financial bubbles like those created by the IT Sector, the medical sector, the energy sector etc. These become even more differentiated when they come in touch with corporates that dominate the private seed sector. This contact and dependency on corporates (and other public sector distributors) is not symbiotic, but based on a one-sided exploitation of the fragmented, traditional, agricultural sector mainly through unfair policy implementation and can be related to PE and EJ archetypes outlined by Martinez Alier (2002), Walker (2005), Escobar (2006) and Walker (2010).

Traditionally, the rural society in India in general and Maharashtra in particular had been relatively small scale, locally based, ruled by the local self governing bodies like the Gram Panchayat⁴, and fostered a stable and symbiotic relationship with the surrounding ecosystem. This relationship, similar to the indigenous peoples of the Aguarico region (Little 1999) had afforded them a certain level of political, social, ecological and economic autonomy as they were self sufficient, fulfilling their needs. Watts and Peet (2004) have classified such autonomous communities as being differing fields of power within themselves, sustaining varied complex socio-political and economic customs and relations

⁴ A Gram Panchayat, the very basic unit of the local self governing bodies, can be set up in an individual village with at least 300 inhabitants or then a cluster of a number of villages that altogether have at least an approximate 300 inhabitants.

wherein it is essential to overcome pre-existent ideas and social and political forms of resource use and conservation. Fields of power sustaining such varied and complex customs and relations afforded rural agrarian society in Maharashtra (limited) social, political and economic autonomy wherein one of the basic currencies used to deal with disparities and differences was the seed, made possible by seed saving and exchange through the medium of seed networks (Pionetti 2005; Chaudhari pers. comm. 2012).

Exploring the finer details of the process of the onset of commercialization of seed production that resulted in farmers losing this autonomy through loss of control over one of their basic resources and their present struggle to regain it [which is one of the basic PE and EJ paradigms (Martinez Alier 2002; Watts and Peet 2004; Pionetti 2005; Escobar 2006)] is a primary aim of this study. Exploring inherent tension in the society on account of the different needs of social actors engaged in the issues with varied contexts such as the environmental, the cultural, the political and the economic (Katz 1998) which may be caused due to a loss of symbiosis with surrounding ecosystems leading to degeneration of social relations and a transformation of the surrounding agrobiodiversity is also an allied aim.

It must be understood that local needs and participation along with community rights are at stake within the aegis of the environmental protection and biodiversity conservation issue here (Utting 1994). This is mainly due to the complexities of “exposure, risk and vulnerability” (Williams and Mawdsley 2006) and the issue of EJ that these communities face. This only goes on to validate the important PE archetype of marginality as a policy induced construct which has been mentioned earlier. Legislations such as The Seeds Act (2004) and the NBRAI Act (2011) are (fully or partially) a result of the pre-existent idea of nature as “an entity outside of the human realm to be extracted and used as a tradable commodity in variable quantity (Swyngedouw 2011) which is also reiterated by Escobar (2006, 9). It is perhaps the change in the way nature on the whole and (in the context of this

research) seeds in particular are perceived today that seem to have changed the way they are regarded by the Indian society too – traditionally it was an entity unto itself, not outside of the human realm as Swyngedouw (2011) has suggested and hence the relationship with nature was far deeper than it is today. Due to scientific research in the field of improving germplasm in the seed sector “through an epistemology of ahistorical, subject-specific disciplines and paradigms” (Yapa 1993, 255) and the “marketization of nature” (Castree 2011, 5) through questionable formulation and corrupt implementation of governmental policies, there is a visible disconnect between farmers (producers) and consumers (who are largely urban based). This is perhaps one of the major reasons behind the dual apathy shown by the Government as well as consumers towards the situation of Indian farmers as producers, primary stakeholders in the seed industry as well as conservers of heirloom seeds.

Foucault’s (1961) reasoning about the progression of the idea of insanity and development of the field of psychiatry seems to fit apt in this context in of the process of development (being) implemented in seed sector in India. It may be stated the language of development is a monologue by reason about underdevelopment and could only have come into existence in *such* silence⁵. This ‘silence’ mentioned here is quite pervasive and multi-contextual. It is multi contextual in the sense that it can be attributed to the marginalized section of the society – a silence of weakness, as well as to commercial and political “phantasmagoric social actors” (Giddens 1990, 140) – a silence of power. So long as neither of the weak nor the strong sections break through this barrier, environmental justice will be a distant dream mired in the nightmare of underdevelopment – because ‘underdevelopment’, along with being a physical reality is a collective state of mind of an entire part of the populace marginalized by an other more developed fraction of the whole. It is this that is imposed upon the former by the latter through systematic, structured (environmental) racism

⁵ The original statement is: “The language of psychiatry, which is a monologue by reason about madness, could only have come into existence in such silence” (Foucault 1961)

and other forms of (environmental) injustice and is the reason to what Martinez Alier (2002) terms as “the environmentalism of the poor” where externalities are not even acknowledged (leave alone internalized).

1.6 Limitations to/ of research

Although I spent almost three months in India researching and writing, I still felt the need for longer on-field time. Connecting with stakeholders (especially the tribal communities working with FIRI) could have been much easier had I been able to spend more time with them – perhaps they would have opened up even further and granted me even more insight. A major hurdle was the length of time required to traverse even the closest distances – and then at times having to return empty-handed despite the time, effort and money invested.

Despite having contacted all the interviewees (by phone or email), the dates were erratic and so I could not arrange them in a systematic fashion I had decided on earlier. This led to extra time being required to synthesize information. I also came across bureaucratic hurdles in getting access to administrators and politicians who were not keen to be connected to the topic of ‘seed issues’ after the Bt Cotton and Bt Brinjal debacles in the country on the whole and the State of Maharashtra in particular. Surprisingly, the warmest response I received was from the very grassroots level (activists, farmers) and then the highest echelons of the government (union minister Aravind Sastri).

1.7 Outline of chapters

Every chapter in this paper has been included so as to give the reader a better all-round view of seed politics in India, and the progression has been designed keeping this in mind. Chapter 1 introduces the topic and expounds on the scope of study, the methodology and research questions before describing the geographical area focussed upon in the paper. It also describes the approach to the topic as well as the theoretical framework used and points out some of the limitations to/ of the research. Chapter 2 briefly explains the importance of the GR in the way it shaped agricultural practices, beliefs and agricultural policies in the

country. It also summarizes the seed sector in India and details informal as well as formal seed sectors in the country. It ends with a separate section on seed legislations in the country. Chapter 3 gives a comprehensive yet concise account of case studies selected for the purpose of this research while Chapter 4 analyses these case studies in the context of the theoretical framework outlined in Chapter 1 adding to the literature review to contextualize the present research in a the wider picture. Chapter 5 is a concise overview of seed rituals in Maharashtra. It also introduces an altogether new concept of the *Wari* (a spiritual pilgrimage) undertaken by millions of small and marginal farmers which is an integral part of the spiritual fabric of the state of Maharashtra. This is done in the context of suggesting a way to combat narrow, exclusive, partial and therefore unjust seed politics of the future. Chapter 6 will sieve the information presented in the paper and tie together loose ends to present a conclusion.

2. The Post Colonial Agricultural Sector: Re-colonizing An Ancient Way of Life

2.1 *The Green Revolution (GR) and its aftermath*

In order to understand the present form of the seed sector today, it is important to briefly touch upon the policy decision that shaped it – the advent of the GR. In the mid-sixties, post the devastating drought of 1962, the Indian economy was at its lowest with increasing unemployment, severe recession, and dependence for food supply (mainly on imports from the USA). This was also the period when Western experts and politicians started to observe conditions in Asia, Africa and Latin America as being problematic due to excessive poverty and backwardness and planned to rectify these through “(...) systematic, detailed and comprehensive interventions” (Escobar 1995, 6). This compounded with the uncertainty of food supply from western countries made India desperate for a quick fix solution for self-sufficiency in food production (Dasgupta 1977). For this purpose specially developed High Yielding Variety (HYV) seeds were imported from Mexico and the Philippines with the funding of the Northern Research Aid, the World Bank and the technical know-how provided by the Food and Agriculture Organization (FAO) to substitute indigenous seeds following testing by the IRRI and IARI (Alvares 1986; Khor 1993).

The introduction of HYVs did improve the employment percentages thus decreasing recession and dependence of food supply on the US (Dasgupta 1977; Ketkar pers. comm. 2012). It was however a short term solution with very far reaching and long term effects. Shiva (1991, 58) has firmly asserted that “The term ‘high yielding varieties’ is a misnomer, because it implies that the new seeds are high yielding in themselves. (...) they are highly responsive to certain key inputs such as fertilizers and irrigation water”. Unlike indigenous

seeds that responded to the predominantly organic fertilizers used by Indian farmers, the new HYVs responded only to chemical fertilizers which embedded the NPK (Nitrogen-Phosphorous-Potassium) fertilizer system in India. So it is evident that GR techniques were basically a change in range of primary agricultural inputs of the country that led to a number of problems. Khor (1993, 1, Briefing no. 2), on the basis of his own research as well as inputs from the then assistant director-general and regional representative for Asia and the Pacific of the FAO, Mr. Omaidullah Khan, has noted that “(...) few seed varieties underpinning the GR have displaced a large number of traditional seeds, thus resulting in the erosion of crop biodiversity (...), increasing soil infertility, chemical pollution of land water resources, pesticide poisoning and pest infestation caused by growing pest immunity to pesticides”. It also changed cropping patterns from multi-cropping and intercropping (the backbone of Indian agriculture) to large tracts of monocropping dependant on the aforementioned HYVs (Shiva *et al* 2002).

The various Indian legislations that have been passed by the Indian Government during and immediately post the GR like the various Seed Acts (starting from 1964 to the most recent one in 2004), the legislations that liberalized the seed sector during the 1990s like the New Economic Plan (NEP), the PPVFR (2001) and most recently the incumbent formation of the NBRAI can all be seen to have roots in the policies set into motion during the GR – none of them encouraging the informal seed sector mainly dependent on indigenous seeds. As Shiva *et al* (2002, 132) state, “The GR did engender a form of food security; however, this form of food security, which was driven by centralized control over agriculture, its resources, credit and food distribution, was not based on ecological security and livelihood security (in the long term)”. The present structure of the seed sector, of which the formal section has developed mainly on the basis of the GR, will be described in the following sections

2.2 Brief overview of the Indian seed sector

The seed sector in India can be said to have been an ambiguous term prior to the GR that completely changed the input requirement as well as the output of Indian agriculture. Earlier, due to the absence of hybrids, almost the entire sector comprised only of seeds selected, saved and exchanged by farmers. The onset of the GR was pivotal in changing this system – so much so that today, the formal seed sector which comprises of government run public organizations as well as private firms is growing at the rate of 15% p/a. and the total availability of seeds has increased from 86.27 lac quintals (2000-01) to 321.36 lac (2010-11) quintals (NSC 2011b). Fernandez-Cornejo (2004), Venugopal (2004) and Murugkar *et al* (2006) have estimated the value of the commercial seed market to be approximately \$ 1 billion which puts it in league with the top-ten seed markets in the world. This increase in usage of hybrids and neglect of indigenous varieties that are far more resilient to climate change and other vagaries of nature than artificially designed seeds showcases that India too has been a victim of the common misconception that development of the seed industry can be equated to progress and modernization of agriculture and points towards Escobar's (1995) statement that the concept of 'development' as defined by the West is alien to developing countries.

Shiva *et al* (2002, 26) have astutely observed that the government has been strengthening Seed Act of 2004 by amendments to other acts like the 3rd Patent (amendment) act that now has the power to grant patents for seeds, plants, microorganisms and GMOs to name a few. Such bolstering of the Seed Act 2004, whose primary aim is replacing farmer saved seeds with those from private seed companies is extremely harmful to seed networks that have been able to weather misery meted by various foreign invasions – starting from the Mughals to the British. However, the present tug of war between the public and the private

sector to take control of a market with the potential of rising to USD 7.5 billion⁶ wherein almost no protection is provided to farmers in case of seed failure⁷ and farmers are considered the last and least important stakeholders is administrative apathy of the highest order .

Although the formal as well as the informal seed sectors basically comprise of very similar principal components – breeding, production of seeds and distribution/ sale (Almekinders *et al* 1994) – their output as well as the functions that they serve (socially, environmentally and economically) are absolutely different. In order to understand and analyze these functions it is essential to understand the composition and working of both these sectors which is what the following subsections elaborate on.

2.2.1 Formal Seed Sector

Most of the formal seed sectors around the world are characterized by a vertically top-down production system with seed companies at the apex and farmers at the bottom (Douglas 1980). It has been observed worldwide that the share of the formal sector (mainly in developing countries that are also predominantly agrarian economies) is usually limited to 10% (and sometimes even 5% in Southern African nations according to Navdanya (2009) of the total seed supply for most staple crops (Heisey 1990; Almekinders *et al* 1994). This has also been observed in India by researchers starting from Agrawal (1997) and Pray and Ramaswamy (2001) to Pionetti (2005). In India, the formal seed sector which has been dominated by public sector institutions now shares revenues with private sector organizations too.

⁶ USD 7.5 Billion is the approximate assessed value of the Indian seed industry if all Indian farmers are forced into the market every year (Shiva *et al*, 2002: 35)

⁷ Refer to section 39.2 of the PPVFR Act of 2001.

2.2.1.1 Public Sector Organizations

India has a historical tradition of extensive governmental intervention into seed markets, right from the British colonial period. The formal seed sector of independent India (post 1947) can be said to have been established only in the 1960s to meet the sudden demand for seed caused by the GR (Agrawal 1997). Alkeminders *et al* (1994) have observed that most formal seed sectors in developing countries are based on a ‘western’ model of seed production and India was no different. The Indian model was a public sector undertaking for more than three decades immediately after independence. It was during this period that the GR stamped its indelible mark on the Indian economy and agricultural practice with the first Seed Act of India passed in 1966. This Act is now in its fourth incarnation with the most recent amendment being in 2011 after six years of research and deliberation in both Houses (Sastri pers. comm.). The present form of the Bill seems more ‘farmer-friendly’ with more regulatory measures in place like certification⁸ (instead of just registration) of the seeds to be introduced, being made mandatory.

Public sector seed undertakings started with the establishment of the National Seeds Corporation (NSC) under the Indian Council of Agricultural Research (ICAR) in 1963 with 13 seed corporations and 19 state seed certification agencies under its control – the latter two established with a loan from the World Bank (Agrawal 1997). The ICAR was established in 1929 and was known as the Imperial Council of Agricultural Research during the British colonial period (ICAR 2010). The NSC was initially established to carry out production of foundation and certified seeds during the GR period (NSC 2011a). Despite it having been conceived as an autonomous apex body for agricultural research, there has been a constant re-organization of the administrative set-up. After much shuttling, all the central government research institutions have now been put under the control of the ICAR so that it now operates

⁸ Certification is the process of field evaluation of crops – something that community seed banks usually carry out in the course of activities in the process of seed selection during harvest

coordinated crop improvement projects, national research centers, regional research institutes and project directorates (Agrawal 1997; ICAR 2010). Since then, a variety of acts including the Plants of Plant Varieties and Farmers' Rights (PPVFR) Act (2001) have been passed that have shaped the seed sector on the whole and the intricacies of the formal seed system in particular⁹.

So, the public section of the formal seed sector is a vertical hierarchy with increasing research decentralization top-down. State seed corporations like the MAHYCO (Maharashtra Hybrid Seeds Company Limited)¹⁰ are at the apex of seed production activity at the state-level (MAHYCO serving the purpose in Maharashtra). Most of the seed distributed by such organizations is grown by thousands of small and marginal farmers using foundation seeds provided by governmental agencies in the respective state, while some is produced on few large government farms (Pray and Ramaswamy 2001). Due to the dominance of the public sector seed producing institutions in the GR and post-GR scenario, rampant corruption in the country, and interests of officials and politicians vested in the private seed sector, the Government is a veiled yet active stakeholder in the proceedings of the sector which due to a conflict of interest(s) and its fragmented nature often contributes to the various problems outlined above rather than offering a solution. The Government is a physical presence in the form of the entire public sector seed manufacturers and breeders¹¹; a social presence in the form of the policies that it implements which mould the sector and affect the lives of the millions of people dependent on it; and an economic presence in the form of the turnover of

⁹ I say this because in the course of my research, I have realized that the informal system followed and shaped by a largely illiterate farmer population cannot follow governmental norms that it does not know exist. Also, as Mangesh (Chaudhari pers. comm.) told me, "Law is not pervasive. There is no way the law can be implemented in all the remote corners of this vast land – but agriculture has been pervasive and will always be an indivisible part of the entire population no matter where they are located".

¹⁰ It is important to draw attention to the fact that a government institution such as MAHYCO has the word "hybrid" right in its name. There is no mention of indigenous seed varieties or organic agriculture anywhere in any sort of literature online or in pamphlets that I have read. It is as if the government is trying to neglect both organic agriculture as well as indigenous seed varieties. It's not killing it directly as it will surely face a lot of criticism and perhaps even violent revolt. It is, however, fracturing the system through conscious, policy induced decisions (evidence of which is provided in later chapters).

¹¹ mainly small and medium scale farmers

the industry which has an immediate and allied effect on the national agricultural sector (*cf* Little 1999, 8).

2.2.1.2 Private Sector Organizations

The private seed sector in India is mainly comprised of private seed companies that vary in size and research/ production capacity, the estimated number of firms being anywhere between 200 to 500 (Murugkar *et al* 2006). Economic liberalization of the late 1980s and 1990s led to a change in the hierarchy of the seed sector of the country, in that laws pertaining to origin, ownership, size, and structure of core industries allowed to manufacture seeds for India have been modified. This has been a trend in many developing countries as has been observed by Morris (2002).

The three key reforms that have been credited by Pray and Ramaswamy (2001) in the mid 1980s with reducing the barriers to opening public sector seed enterprise to private companies were:

1. In 1986, the list of core industries regulated by the Government of India was made to include seed and biotechnology industries that made it possible for foreign-owned firms as well as Indian conglomerates to enter the field. Prior to this, due to excess regulations, core industries could only be owned by public sector enterprises.
2. Changes were made in import laws for commercial foreign seeds (coarse grains and oilseeds for 2 years) as well as germplasm for research purposes in 1988. In the course of the same reforms, the quota system was abolished for almost all seed types, especially vegetable seeds.
3. Liberalization took life in 1991 with reduction of regulations on foreign investment and technology transfer.

Although the National Economic Plan (NEP) of the 1990s brought liberalization to India, it is yet to penetrate the market of cereal and vegetable crops enough to make a dent on the structure. However, liberalization through the NEP did bring about a certain level of globalization to the sector and personified the UNDP's observation that haves and have-nots are getting dangerously polarized with risks and threats magnified on account of the lack of a regulatory structure to counter them (Watts and Peet 2004).

According to Murugkar *et al* (2006), there is an inherent difference in the way the private and the public sector functions – mainly because the public sector (run by the government) conducts R&D on crops regardless of their market viability whereas private firms mainly conduct R&D in seeds for products that have proven to have market value (Ketkar pers.comm.). So private firms focus their R&D mainly on cross-pollinated crop varieties like maize rather than development of hybrids for naturally self pollinated crops like rice and wheat which are relatively harder to develop (Murugkar *et al* 2006; Ketkar pers. comm. 2012). The hybrid seed developed and marketed by the private sector is thus mainly the aforementioned cross pollinated crop seeds and cash crop seeds (crops grown for the sole purpose of profit such as cotton, sugarcane etc). Presently, the private sector is dominated by Indian seed companies such as J.K. Industries, SPIC (Southern Petrochemical Industries Corporation, Khatau-Junker Ltd; companies partially or wholly owned by foreign multinationals like Hindustan Lever Ltd, ITC, Sandoz, Monsanto, Cargill, Syngenta DeKalb etc; and other small local seed companies (Pray and Ramaswamy 2001)

All these companies were allowed entry into the market based on the simple premise that competition would nurture and encourage excellence. The importance of fostering competition in the seed industry through strengthening the private sector was reiterated during my interview with a union minister Aravind Sastri. However, the minister also noted the need to do so cautiously. He stated that the unfair market domination that the introduction

of the Bt Brinjal seed would give Monsanto (almost 100%) was one of the chief reasons it was rejected by the government (Sastri pers. comm.). This said, private industries are now estimated to control about 60% of the economic value of the Indian seed market despite its shares in volume of seeds sold not being as high. This is mainly attributed to its sale of high value hybrids (Shiva and Crompton 1998; Murugkar *et al* 2006)¹².

2.2.2 Informal Seed Sector

The informal seed sector is still the primary source of seed for most crops worldwide (Almekinders *et al* 1994; Pray and Ramaswamy 2001; Pionetti 2005). Prior to the GR, the Indian seed sector was almost completely reliant on farmers' varieties and seeds saved by them despite the nominal presence of public sector institutions. Seminal efforts towards maintaining this sector held together by a diverse yet interwoven seed system were made by Dr. Redheylal Richaria [also known as "The Rice Man of India" (Alvares, 1986)] who was the Director of the Central Rice Research Institute (CRRI), the apex body for rice preservation¹³. It still forms the backbone of the farming as practiced by the small/ marginal Indian farmer, controlling up to 90% seeds used (Pereira 1993; Pray and Ramaswami 2001; Pionetti 2006) in a country where 2/3rd of the population is engaged in agriculture (Venkatramani 1999). Similar to its counterparts in other countries, the informal seed system in India is comprised of seeds saved, bred, exchanged and traded by farmers and is a "(...) a complex and dynamic system of interrelated activities (...)" (Alkeminders *et al* 1994, 207). In India, this sector has traditionally been characterized by *in-situ* as well as *ex-situ* conservation of seeds with community seed banks having been part of the rural agro-economy for centuries (Chaudhari pers.comm.). However, as seeds saved using *ex-situ*

¹² Also refer to Malone (2008) and Shiva (2009) for further research in this area regarding prices of Bt Cotton seed which were found to be 1000% more than non GM ones.

¹³ For further information regarding Dr. Richaria's work and the injustice meted out to him for standing up for the ordinary Indian farmer, refer to Alvares (1986).

conservation methods have a shorter shelf life, most of them are repeatedly regenerated every season. This has been key in the development of an informal seed system with a high percentage of *in-situ* seed regeneration. These systems can function at a very basic level – i.e. community/ intra-village/ inter-village level and hence form an integral part of the rural agrarian society. It is clusters of such local systems that come together to form the myriad organization of an informal seed sector.

In India, seed keeping has traditionally been the domain of women who are known to have a different and far more varied set of parameters like taste, aroma, nutritional and aesthetic value, cooking time etc. for seed saving as compared to men who value quantity and profit over the aforementioned and select accordingly (Pionetti 2005; Maheshwar pers. comm. 2012; Chaudhari pers. comm. 2012). Navdanya (2009) points out another important parameter used by farmers (men and women alike) to select seeds as being that of high straw yields along with high grain yields. This is mainly because of their capacity to “(...) help further increase soil fertility as well as its capacity for retaining moisture, either as green manure, or as fodder for cattle, which in turn produce manure for the soil” (Navdanya 2009, 7). In India, especially in Maharashtra, most agriculture is still rain-fed and hence the risk factor increases considerably (Pionetti, 2005). In the face of unpredictable conditions meted out in semi-arid Maharashtra, local seed systems fostered by farmers primarily emphasize on “resilience and risk adverse qualities” (Navdanya 2009, 38) that are absolute essentials for survival (of crops as well as farmers).

Unlike the formal seed sector which is a rigid top down hierarchy, the informal seed sector is spread sideways, connecting farmers who are also primary producers of seeds and hence recipients of profits from sale/ exchange of the seeds. Barter exchange forms the foundation of the non-monetized system that gives small and marginal farmers the ability to sow their fields on time. Pionetti (2005) has also detailed other important parts of the agro-

economy which include systems like seed loans. Surprisingly, small and marginal farmers are considered better seed keepers than medium and large farmers. Both Pionetti (2005) and Kango (pers. comm. 2012) state that this is because rather than seed-keeping for the sake of social status (as is the case with large farmers) small and marginal farmers depend on it as a means of livelihood (through barter etc). Mostly such lending overcomes caste barriers (as has now been reinstated by Kananlakshmi) but Pionetti (2005) outlines cases wherein there has still been a religious divide amongst seed lenders. Seeds have to be returned to the lender with an interest (in the form of extra seeds) within the stipulated time, failure of which could result even in loss of land. It is to avoid such confrontation for return of seeds which could lead to religious and communal tension that inter-religious seed loans are often avoided – especially where minorities like the Muslims are lenders (Pionetti 2005, 150).

All these intricate dealings within the farming community were mainly carried out using heirloom seeds. After the GR, however, they have been contaminated by hybrid seeds in the form of second generation hybrids that reduce yield (Singh and Morris 1997; Pray and Ramaswami 2001). Although Murugkar (2006) has stated that the yields of hybrids are designed to decline over two seasons of replanting (maximum), Kartik Nene did mention that some hybrid mutations like the rice varieties of *Indrayani* and *Ambemohor* in Maharashtra have been saved and reproduced by farmers over the past three decades without reported decline in yield (Nene pers. comm. 2012). It is occurrences like this that have the potential to change the definition of this sector itself that has made the informal seed system far more complex and interdependent than the seemingly straightforward top-down, structured formal sector.

2.3 Criminal Seeds – Seed legislations for the marginalized illiterate

Various legislations have been passed so as to control and streamline seeds used in the country. There are, however, certain benchmark bills passed by the Indian legislature that must be summarized to give an idea of both, the formal as well as informal seed sectors in India.

The ‘Seed Act’ which was passed in 1966 at the onset of the GR was the first legislation brought into force to update and formally restructure the Indian seed sector and was followed by the ‘Notification of Seed Rules’ in 1968. It was under this Act and its consequent amendments (the latest one in 2004 as ‘The Seeds Bill’) that public sector seed production was initiated and propagated, the latest version mainly including new clauses regarding the import-export and sale of quality seeds. However all this has only been made possible through the Seed Control Order of 1983 whereby seeds were deemed ‘essential commodities’. This made it compulsory to obtain a license in order to trade in seeds. The Seed Control Order (1983) was a precursor to the notification and certification (notification to the GOI of new varieties to be introduced to the market and certification by the GOI of the same) clause included in the Seeds Bill (2004) as well as the PPVFR Act (2001) (Ramanna 2003). Despite the Seeds Bill (2004) (the latest version having been introduced and rejected by the Parliament in 2010) being the foundation of the present seed legislation in India, taking into account the pervasive reach and effect of the PPVFR Act (2001), this section will give a succinct overview of the latter.

The PPVFR Act, is a multi-pivotal bill to safeguard breeders’ as well as farmers’ interests (Ramanna 2003; Bala Ravi 2004). The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) that India has signed in order to become party to the General Agreement on Trade and Tariffs (GATT) (1994) of the World Trade Organization (WTO) does not make it compulsory for India to follow any particular pre-existing varietal

protection system such as the UPOV (Bala Ravi 2004; Ketkar pers. comm. 2012). So following the suggestion of the ICAR (Indian Council of Agricultural Research) and the FAO (Food and Agriculture Organization) (which itself guarantees farmers' rights in its International Treaty on Plant Genetic Resources and Farmers' Rights), Farmers' Rights were also included along with Plant Breeders' Rights (PBRs) in the PPVFR Act (2001). Due to its unique model, in addition to allowing farmers to save, exchange and sell (within limits) their farm-saved seeds, The PPVFR Act (2001) also provides protection to farmers who may have innocently, unknowingly violated PBRs (Bala Ravi 2004; Andersen and Winge 2008). It is one of the main legislations to regulate the sale and usage of seeds in India and has been designed to balance PBRs as well as Farmers' Rights and Andersen and Winge (2008) state that it is the only law that establishes and secures the latter to such an extent.

The PPVFR model is unlike the UPOV model, which grants comprehensive rights exclusively to plant breeders completely prohibiting exchange and sale of seeds between farmers (Andersen and Winge 2008). This in itself is a step forward into asserting a degree of autonomy by constructing social and political models customized for the Indian socio-economic system rather than accepting the those designed by what Escobar (1995, 7) calls "(...) Western episteme and historicity". The PPVFR Act decrees that there must be benefit sharing based on plant parentage and portrays a visible flexibility in the interpretation of the *sui generis* system (meaning 'generated by self' or of 'unique kind') of varietal protection that is meant to avoid detriment to farmers. This flexibility could however be easily turned and used to strangulate justice (environmental or otherwise) and exploit agrarian communities. For example, although exchange and sale of seeds by farmers is not banned, sale is allowed (above the 'local' level) only after certifying the said seeds – and certification of a variety is not an easy procedure in India. Not only is it lengthy and expensive, but as Andersen and Winge (2008, 5) have observed "(...) traditional varieties are normally not

genetically homogenous enough to meet the requirements for certification, (and hence) these varieties are then excluded from the market”. Whether or not these are unintended consequences of what may, in an ideal situation, be a socially and environmentally just legislation is still being debated due to the might of the seed lobby and the bureaucratic support that they evidently enjoy (Shiva *et al* 2002)

In India, under the guise of a need to increase competition in the formal seed sector or to protect farmers (especially small and marginal ones) from the consequences of using seeds (produced by them for the most part) that may not be as ‘safe for production’ according to the authorities (may lack yield, or not be tolerant to pests that HYVs are etc.), legislations that are overwhelmingly limiting to the system of traditional seed saving and networking like the NBRAI Bill and the Seed Bill (2011) (both pending Parliamentary vote) are being designed and may soon be implemented. This is could be attributed to the fact that the Government, due to its interest in the seed sector as a public entity and also in the private sector on account of rampant corruption and/ or the lucrateness of even supporting for benefits from “official” lobbying in the administration/ Parliament, is a stakeholder in the proceeds rather than a benefactor of the marginalized population. For example, in the introduction of the NBRAI Bill it is stated that the Authority is being introduced so as to ‘promote safe use of modern biotechnology’ rather than question the need of introducing the same. According to the constitution of India, agriculture (like health) is to be administered by the state authority rather than the national authority, but the NBRAI Bill overrules the very Constitution of the country by stating that “(...) it is expedient in the public interest that the Union take under its control the regulation of organisms, products and processes of modern biotechnology” (NBRAI 2011, 2). The Authority also has the right to withhold information (of any sort) from the public if it considers it of public interest to do so. Due to a perceived lack of accredited labs for Biosafety assessments, the Authority gives permission to non-accredited labs to

assess public safety and is almost completely non-accountable for any detrimental decision made by the Authority itself or any officer it authorizes (Greenpeace n.a.; NBRAI 2008).

Although unlike the UPOV system, the PPVFR Act does not completely criminalize the sale of seeds by farmers, it does limit the sale by stating that farmers may not sell seeds as a 'brand'. It is all aimed at what the MD of ITC Zeneca means to put forth by stating that allowing farmers to save, use and exchange seed (commercially, even) is acceptable, but it is imperative to prohibit them from becoming entrepreneurs by selling the same (Weidlich 1996). Also, after granting farmers all these rights, the Seeds Bill of 2004 is ambiguous and contradictory in itself and also to the PPVFR Act. For example, Section 13(1) prevents the sale and purchase of unregistered seed and Section 21(1) stipulates that a farmer must be State-registered in order to be a producer of seeds while Section 43 states that "Nothing in this Act shall restrict the right of the farmer to save, use, exchange, share or sell his farm seeds and plant material, except that he shall not sell such seed or planting material under a brand name or which does not conform to the minimum limit of germination, physical purity, genetic purity prescribed under Clause (a) or Clause (b) of Section 6" (GOI 2004, 29; Zaidi 2005). This combined with the complete abolishment of the earlier provision (by the PPVFR Act) of farmers being able to approach the suitable Authority for redress in case of crop failure (making seed producers answerable for their product), dilutes the effect of the PPVFR Act almost completely.

Hence despite constant assurance by various government officials during interviews stating that the government understood the functions of indigenous seed saving and exchange and the resultant seed networking especially in encouraging autonomy, the pro-privatization, pro-'modernization' and pro-'scientific' legislations and policies of the government (state as well as central) speak otherwise. In this context, it is interesting to note that not only has Deputy Chairman of the Planning Commission of India, Mr. Montek Singh Ahluwalia spent

the early part of his career in the service of the World Bank, but the Chairman of the Steering Committee on “Agriculture and Allied Sectors” for the twelfth Five-year Plan of the Planning Commission of India, Professor Abhijit Sen has also worked with the Asia Development Bank (ADB), FAO, the OECD Development Center and other such organizations connected to international finance and development (PCGOI 2009; PCGOI 2012). Many, if not most policy makers on the panel have a technocratic academic background, having been removed from ‘local/ regional ground reality’ for a better part of their career. Duffy (2010) describes an administrative process on similar lines riddled with governmental apathy and bureaucratic malaise which she feels is due to the administration being controlled by “knowledge brokers or epistemic communities” (Duffy 2010, 48). According to her, despite the evident lack of local and regional know-how of conditions in the affected areas, there is an automatic assumption about these communities being politically neutral in gathering/ dissemination of information as well as the conception and implementation of policies based on the same (Duffy 2010).

In 2004, the previous incarnation of the present Government proposed the induction of the WB directly into the Planning Commission of India which was scrapped after a huge public outcry led by many activist leaders like Medha Patkar of the *Narmada Bachao Andolan* (NAPM 2011). There have already been various insinuations of government bias towards policies that are profitable for international monetary organizations and other corporate entities with their stake in the opening of the agricultural sector rather than the wellbeing and stability of the farmers involved (PTI 2012). All this along with the aforementioned composition of the Steering Committee on “Agriculture and Allied Sectors” for the twelfth Five-year Plan of the Planning Commission of India seems to imply that the government is keen on providing the WB with a gratis trial space (an entire country, in this context) where they will be free to take risks, improvise, experiment, fail and then perhaps

start anew (*cf* McNamara in Escobar 1995, 160 and 161). There have been other examples of World Bank policies and recommendations partially or completely disrupting the well-oiled machinery of a pre-existent (agrarian) system as in the case of Malawi, where World Bank diktats caused almost a complete collapse of the economy through unwarranted intrusion in the agricultural policy(s) of the government (Harrigan 2003). However why a nation which is part of the G20 and considered one of the emerging global superpowers (economically and otherwise) would follow suite is quite vexing.

Policy implementation is just as important a part of policy making as the conception and formulation of the policy. Formulating namesake idealistic policies that will never be translated to actual implementation at the grassroots levels with actual policies for implementation hidden in the fine print has long been a ploy of policy makers and bureaucrats in India (Goldsmith 1988).

3. Seed Chronicles – Stories from the hinterlands

Given the social and cultural status accorded to them, seeds of all shapes, sizes, colors and nativities have always spawned stories that thread the fabric of traditional myths all over India. In the face of the fact that over 1500 *ex situ* gene banks globally are failing to conserve crop diversity around the world (GRAIN 2008), *in-situ* preservation centers like the ones narrated below gain tremendous importance. So I have chosen three such modern-day seed-Samaritans to portray the way seed initiatives are paving a way to re-initiate seed bonds and re-ignite seed networks in the state.

3.1 Mangesh's Story

Mangesh Chaudhari, a wiry young man of a slight frame, may not perhaps strike one immediately as a 'savior'. He has, however, been the voice uniting the wisdom of the past to face the vagaries of the future for 11 villages in Maharashtra – so much so that he has been named the 'Carver of Maharashtra' (after American agricultural scientist George Washington Carver). He works with the Foundation of Indian Rural Industry in the north-eastern part of the State of Maharashtra. Trained in chemical technology, Mangesh joined FIRI in the year 2005 and by 2007, had streamlined his work to the area of community building through fostering seed banks and seed exchange. His principle aim through his job as the chief co-ordinator of FIRI's Indigenous Varieties Preservation Program for the past seven years has been the "(...) conservation, revival and sustainable use of crop genetic resources through people's participation" (Chaudhari pers. comm. 2012).

3.1.1 Topography and climatic conditions

Topographically, the area is hilly with marginally fertile soil. The soil structure, however, is such that it has very poor water retention capacity. This is exacerbated by

excessive presence of boulders, gravel, stone and suchlike (Deshpande n.a.; Chaure pers. comm. 2012). So despite the fact that the area average for rainfall is high (2000 cms to 3000 cms p/a), severe water scarcity is experienced post December. Mostly dryland farming is therefore practiced with cultivation limited to the *Kharif* season (Deshpande n.a.; Chaudhari pers. comm. 2012; Chaure pers. comm. 2012). According to the Union Census of India (2001), this part of the Thane district has a much higher average literacy rate (male: 77% and female: 66%) than the national average (59.5%) (MoHA 2001). Surprisingly, this literacy rate is recorded in an area that has been classified as being constituted a 100% by tribal population (Deshpande n.a.).

3.1.2. Seed history

Seed saving and seed exchange did exist in all eleven villages during the post-independence and pre-GR period. Seeds were not collected and saved at a community level at that time. They were, however, saved by individual farmers and exchanged within/ between the family (there were large joint families spread over the village or multiple villages), within/ between communities and thus between villages. The area covered by these exchanges was quite flexible – exchange at the village level was supplemented by exchanges carried out between relatives/ friends visiting from other villages in the State or even other parts of the country. Seeds were also carried as dowry by brides to their in-laws place (Chaure pers. comm. 2012; Chavan pers. comm. 2012; Reddy 2007). Seeds were bartered and traded in weekly *bazaars* in villages and also at the *taluka* level. Women were the primary seed-keepers in the communities and villages and played a vital role in seed selection and seed storage. Although the farmer did select seeds to improve the quality and quantity of the yield, agrobiodiversity was protected and enhanced mainly by the selection criteria used by

women¹⁴ (Chaudhari pers. comm. 2012; Pionetti 2005). All this fostered great diversity in the landraces in use in the area.

3.1.3 Towards new seed bonds

An area forgotten by time and relegated to the fringes of what is commonly understood as civilization, 95% of the production of the *taluka* is agricultural carried out mainly to fulfill personal nutritional needs. Monetary gain is marginal as agricultural production does not meet market demand due to a terrain hostile to farming. Bhanaji Chaure, a tribal organic farmer, observes that despite this, there has not been a single case of farmer suicide in the tight knit communities within these villages (Chaure pers. comm. 2012). This could have to do with the ancient seed bonds that the tribals have continued to nurture and which have been given a new lease of life in an increasingly industrialized agrarian map dotted by mono-cropping. Mangesh's intervention to the gradual and seemingly inevitable transition towards chemical farming was very timely indeed.

Due to the remoteness of location, some indigenous varieties were present till as late as 1993-94 (Chaudhari pers. comm. 2012). However, planting of specially created dwarf varieties for higher yields of grains had already begun in the region and loss of indigenous varieties of paddy and other crops was evident when Mangesh arrived on the scene. This had begun to change the ecosystem make-up of the area and there was an immediate need to map the existent indigenous landraces in order to conserve them. Putting in extreme physical efforts and mental strain, the FIRI team achieved this and followed it by on-site conservation and then characterization and evaluation. A central seed bank was established at the FIRI center where seeds selected through the process were stored. Fig. 3 below illustrates the procedure followed.

¹⁴ Including taste, time required for cooking, cooking quality, aesthetic and aromatic quality

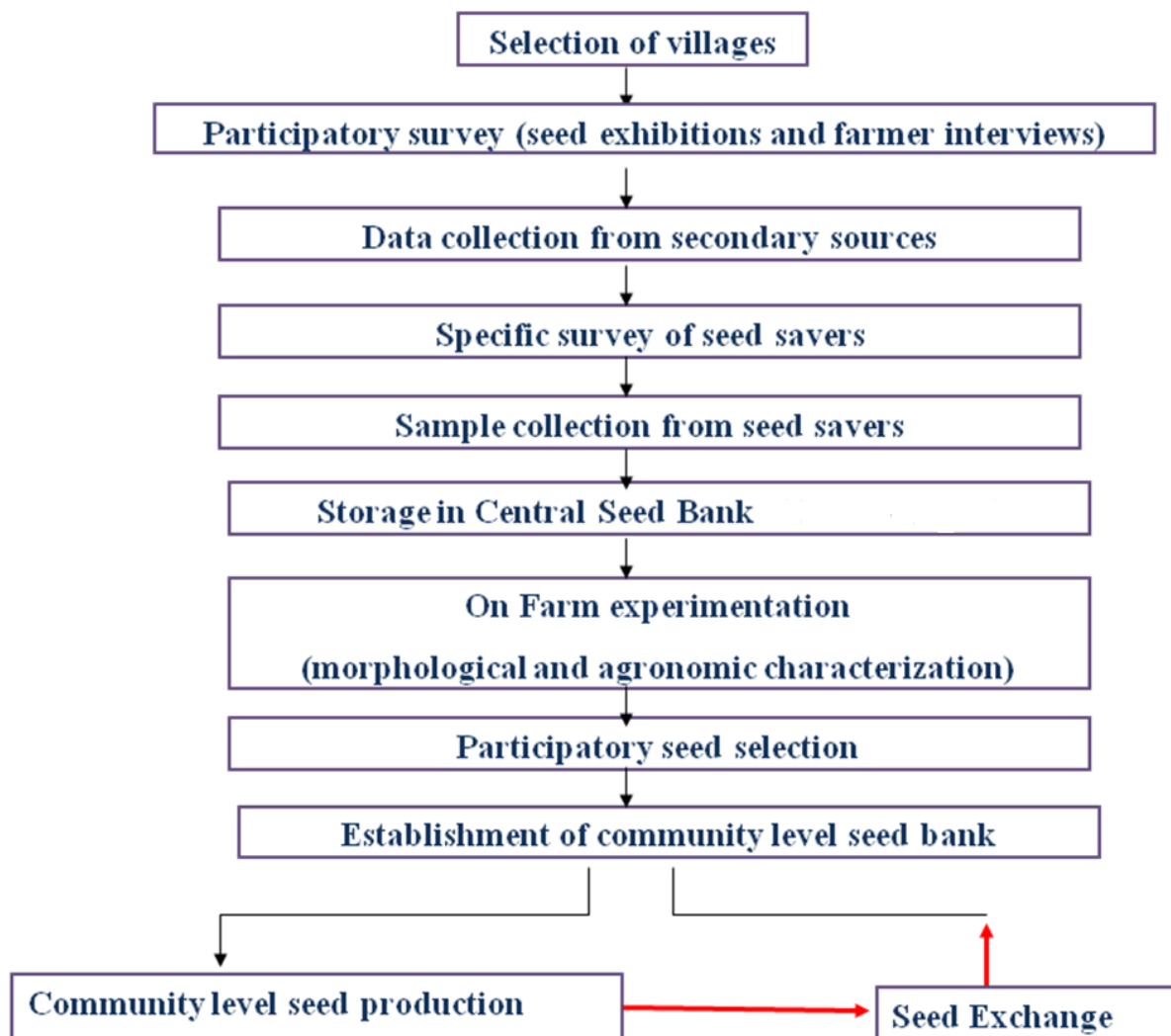


Fig. 5. Seed selection and storage procedure
Source: (Chaudhari pers. comm. 2012)

In order to revive earlier seed bonds, Mangesh and his small team primarily collected data through participatory discussions (at seed exhibitions and seed *melas*) mainly with farmers over the age of 60 (who were practicing in the pre-GR era of Indian agriculture) and women, classified as the primary seed savers of the community (Chaudhari pers. comm.). At meetings, Mangesh would mostly use reverse psychology and induce farmers to speak regarding the seeds they were using then by praising hybrids¹⁵. The meetings would then erupt in dissenting opinions, usually led by strong women who had very firm opinions who had been continuing the activity of seed saving despite a social bent towards usage of

¹⁵ Although this could seem like a risky proposition, based on my experience in rural India, I believe it to be a good way of inciting the shy rural Indian to speak up.

hybrids. On such occasions, Mangesh would just raise points in the course of the discussion and leave it to the gathering to draw conclusions on their own. This activity was followed up with specific data and sample collection from known seed savers as well as during the harvest season. All data was collected by a select group of youths from the villages trained by the FIRI team. A central seed bank was established wherein the accessed germplasm was cataloged and then used for characterization and upgrading.

In situ germplasm centers were established at multiple locations. At every stage, not just the FIRI team but the local community also played an active role thus introducing new scientific knowledge to better harness ancient wisdom. This furthered Mangesh's allied objective of capacity building and community empowerment through seed networking. Seeds of chosen indigenous landraces were then supplied to a group of farmers with prior know-how for scientific seed selection. The three components of the last two stages in this process illustrated in Figure 3 above form a closed loop that nurtures the activity carried out in the steps preceding them and creates a basis for a self-sustaining indigenous seed network in the area.

Today the seed network has yet again become such an integral part of the 11 villages that the inhabitants have formed a seed savers' committee. This committee looks after the working of the central seed bank and is the authorized supplier of seeds to the community. It is also responsible for seed exchange activities within the group and between the villages too. Within the span of only five years, 410 landraces of different types of crops like paddy, pulses, millets, tubers and vegetables have been characterized and stored in the bank while nutritional characterization of 14 paddy landraces has also been carried out. Crop demonstration centers maintained by FIRI and members of the seed network to showcase their achievements has also played a vital role in garnering support for the initiative. The reach of this seed network has increased manifold through seed *melas* and exhibitions, farmer

training sessions and crop demonstration centers maintained by FIRI and members of the seed network to showcase their achievements. It is through these and other such activities that approximately 2540 farmers are now connected to the core seed savers' community and each other through the medium of this initiative.

3.1.4 Religion, caste, bio-piracy and other wedges

Unlike other areas where religion as well as the caste system still plays a very important role in the socio-cultural fabric of the community and the power of food production may be concentrated in the hands of a few belonging to high castes (eg: the region where the Kananlakshmi initiative described in Chapter 3.3 is based) (Maheshwar pers. comm. 2012), sharing of knowledge and exchange of seeds does not have boundaries in the tribal communities of Thane district. According to Bhanaji Chaure, one of the farmers I interviewed whose view was also corroborated by Mangesh (Chaudhari pers. comm. 2012), this could be linked to the fact that these 11 villages are a 100% tribal and tribals are mainly animists. Every society, however has elites and commoners, but even these delineations do not come into play in this particular context according to Mangesh (Chaudhari pers. comm. 2012). Chaure further went on to state that although religion and caste may not have had an impact on the seed networks of the area in the past, he does foresee intervention through allegiance to political parties and their leaders – “(...) one who owns the seeds will own (rule) the area and its diversity” (Chaure pers. comm. 2012). As of now however, seed bonds and the relations they have borne have provided a marginalized area populated wholly by scheduled tribes with an egalitarian, open and dynamic platform of social interaction and socio-economic progress.

FIRI's primary role now is that of a mediator between various communities and villages and a facilitator of dialogue between the farmers themselves and research organizations. Mangesh and his team, on behalf of FIRI, also provide the technical support

that is essential to justify the efforts of the farming community in the eleven villages. One of the major duties they perform is the upkeep of awareness and knowledge in view of the need of selection and nurturing of climate resilient landraces. They keep the community in tune with the latest developments and needs of the hour, which also gives further impetus to the strengthening of the network. Mangesh is very staunch in his belief that as this is an initiative of the community, not an external intervention in the form of a 'FIRI Seed Program', it has and will continue to prove to be sustainable.

Unlike many other commercial seed banks, the motives of which have been questioned time and again (Navdanya 2009), this community initiative is not riddled with doubts about bio-piracy or the ilk as the seeds that are collected at the central seed bank belong to the community, not the institution. FIRI is the primary catalyst, not a stakeholder with any vested interests in the phenomenon it has initiated. Mangesh notes that due to this kind of networking that reaches out to the very foundation of agriculture – seeds – farmers have started reasserting knowledge that modern industrial/ chemical farming practices had made them question. He has observed that over the years, farmers have reached back into a shared communal memory to revive varietal selection and are now willing to maintain crop diversity in their own fields and villages (Chaudhari pers. comm. 2012).

3.2 Kartik's story

In a country that worships its doctors and engineers, agriculture is an unusual choice of a career for an urban youth. But Kartik Nene went against the tide and trained in the field of agriculture at both, undergraduate as well as postgraduate levels. It is important to understand his case in the context of the present research because seeds and their networks thrive mainly on account of farmers who are willing to plant them and take on the risks

involved; and in this context the trials and tribulations faced by Kartik's own farm as well as the initiative he has designed, implemented and nurtured are very important to this study.

3.2.1 Background

Kartik's studies in India as well as the US were centred on conventional methods of agriculture. It was during his final thesis for the postgraduate course in agriculture in the US that he encountered a problem with his experiment of producing strawberries in soil-less media to avoid using Methyl Bromide (an O₃ depleting substance). No amount of chemical application helped solve it. The more he read, the further he got convinced that chemical agriculture was not the way to go – there had to be a better, more sustainable way of doing things. This, alongwith a foray into the agricultural sector in Spain for two years after his graduation, proved pivotal in his decision to head towards a fully organic way of growing crops rather than the conventional chemical intensive process. He decided to start a small scale organic farm with his own marketing network on return to India. However, he did not stop at this. Joining hands with an NGO which was very active in watershed development in the Mulshi area of Pune district, Kartik initiated DIRU (Deccan Institute for Rural Upkeep) in 2009. DIRU is a co-operative project that provides sustainable and economically viable options to farmers. It is based on the Community Supported Agriculture (CSA) model that consists of “(...) a community of individuals who pledge support to a farm operation so that the farmland becomes, either legally or spiritually, the community's farm, with the growers and consumers providing mutual support and sharing the risks and benefits of food production” (USDA 2009). To start off, the activity was incubated by the parent NGO for a period of the first 1.5 year. It has now, however, become a completely self-sustaining enterprise.

3.2.2 Topography

The part of the Mulshi *taluka* where DIRU is located covers an area of around 17 villages, lies in a cushy rainfed region of the Sahyadri mountain range that defines the western geological face of Maharashtra (refer to Fig. 5 on Page 44) (Dhawale and Ullagaddi 2012). The mean average rainfall of the area is approximately 1707 mm and the area has plateaus to the west, the north and the south to offset the primarily hilly topography present otherwise (Kulkarni *et al* 2005). According to Kulkarni *et al* (2005), this characterizes it as a prime agricultural area for rice and sugarcane farming and around 60% of the population of the valley is involved in crop cultivation.

3.2.3 DIRU

DIRU is a collective of around 20 farmers in the Mulshi *taluka* that is co-ordinated by Kartik. Although the group started out with more members, it is now down to 20 because, “eventually the farmers who stuck with the group were the ones who not only recognized the economic potential of this but also a growth path in terms of more (economic) stability in terms of their farming” (Nene pers. comm. 2012).

Presently DIRU cultivates food crops using organic techniques and supplies them to a consumer base of over 500 households in Pune city. None of the farmers involved were organic farmers before. They were conventional farmers who mixed organic and chemical inputs to chiefly grow sugarcane and rice. There was however a small vegetable garden adjoining their houses that was kept chemical free for personal consumption produce and it is here that most farmers started growing vegetables for DIRU. There was, therefore, was no visible change in their methods of cultivation or their produce despite their connection to the group.

Three years ago, when the group was initiated, Kartik tried very hard to find a good source of organic, untreated seeds. The seeds procured were from multiple sources – seed banks and seed savers networks in India as well as seeds carried back to India from abroad. Seeds that were open pollinated and/ or saved by farmers’ groups to be made available in the frugal organic seeds market in India were all experimented with. However they did not deliver the expected yield. Experience taught him that “(...) it’s nice to say that we want to use indigenous seeds, untreated seeds, organic seeds – but if it doesn’t translate into some saleable yield or product, then you are in danger of having an infant mortality (of your fledgling enterprise)... everybody loses hope, loses faith, and it doesn’t take off” (Nene pers. comm. 2012). The lack of seed savers and the resultant lack of seed networks in the communities in the valley made it very hard for DIRU to get indigenous/ heirloom vegetable seeds that gave a consistent performance (80% consistency in size, shape, colour and taste).

So the group had to go back to commercial hybrids for certain vegetables like cauliflower, cabbage and tomato as they offered a stable yield that was much needed at the beginning. Thus the seeds used would be commercial hybrids, but the method of cultivation was organic. It was an unfortunate yet calculated trade-off in the first year. From the second year onwards, seeds that were used were completely organic – they might not have been indigenous, but they were untreated.

Even today, seed saving of indigenous vegetable crop varieties is almost non-existent in the Kolvan valley in particular and the state of Maharashtra at large. Kartik feels that this is mainly due to the fact that vegetable crops are very sensitive to the vagaries of nature and hence it is safer for farmers to choose hybrid seeds that are available in corner shops – “(...) it’s just like how we’d rather buy bread than make it despite the fact that we know that factory-made bread is full of preservatives – because its available, and it’s convenient.” (Nene pers. comm. 2012).

Availability of only hybrid seed varieties in agricultural shops is mainly on account of the fact that the Seeds Bill (2004) bans the production or sale of untreated seeds for commercial purposes. The Bill requires seed manufacturers to treat seeds (mostly with Thiram) in order to protect the interests of the farmer so that his crop is effectively protected against pests and pathogens in the first couple of weeks of germination (GOI 2004, 5). On the one hand, this is beneficial for farmers at large to have a government policy in place that will protect their interests. However it limits the options available to an organic farmer in the country because there are no commercial companies who have good varieties of their own who are willing to supply untreated seeds. Thus, the aforementioned recommendation by the government sounds a death knell for organic farming as well and in turn networks of indigenous networks.

After all the hardship that it went through during the initial stages, today DIRU saves seeds for all leafy vegetables – amaranth, spinach, dill, coriander, *bok choy*, lettuce and also mustard and radish. These are mainly vegetables that seed profusely and are so are comparatively easy to save. Farmers who have prior experience in seed saving are encouraged to save seeds. However, seed saving of vegetable crops requires training that grain crops can discount (Nene, pers. comm. 2012; Chaudhari, pers. comm. 2012).

The idea that quality is not an accident, but something that needs to be designed and nurtured is at the root of all seed saving activity and farmers usually have to depend on traditional seed saving knowledge passed down through generations rather than scientific seed saving techniques imparted at universities or training centres. The absence of traditional seed saving knowledge, lost due to disruption of seed networks, is now hampering the seed saving activity at DIRU so much so that only two out of the twenty farmers in the group are able to save quality seeds. So, most of the seeds are saved by Kartik at the DIRU packing house.

3.2.4 A co-operative way ahead?

Co-operative efforts to empower marginalized sections of the society are not novel to India, home to one of the biggest global co-operative successes in the world – Operation Flood. Operation Flood was a co-operative dairy program launched by the National Dairy Development Board of India in 1970. It was aimed at connecting milk producers in rural areas (mainly in the state of Gujarat) to each other thus empowering them to control the resources they created. It used dairy as an instrument of progress to link milk producers and consumers nationally, thereby reducing price fluctuations caused by seasonal and regional changes keeping the pricing mechanism regular, fair and transparent (NDDDB 2012).

A unique co-operative organic movement such as DIRU could perhaps build a more encompassing model based on that of Operation Flood. Kartik, however, envisions a different future for the co-operative organic farming model that he has designed. To suit local needs, he wants to develop the initiative to a point where it attains a respectable scale of operation whereby it is taken seriously by the public. Once that is accomplished with an upgrade in the efficiency and the effectiveness he wants to see the model replicated at a small or medium level in multiple locations nationally and globally. He feels that in order to for the model to succeed, it must keep view of the basic tenet of organic farming that lays emphasis on the size of the operation. It must also keep the producer in the picture and connect them to the consumers, one of the underlying aims of DIRU. As he puts it, “The minute we grow into a huge company, we’ll cut corners – we’ll say okay, we’ll twist the law or take shortcuts to reduce our costs, pay the farmers less, charge consumers more. So we’ll start doing exactly the same – so then what’s wrong with the existing market? Why go through this trouble and punish ourselves unnecessarily? Because we have to safeguard certain ideals, certain principles and certain traditions that are invaluable.” (Nene pers. comm. 2012)

3.3 Maitreyee's story

It might come as a sweeping statement, but on the basis of my experiences as a woman in various countries, cultures and continents, I believe that as a global society, we are increasingly 'gender-influenced', if not highly 'gender-biased'. In developing countries where the rural-urban divide is ever increasing, this is even more evident. And that is why Maitreyee's story intrigued me. Maitreyee Kango is a trained ecologist who initiated the NGO 'Kananlakshmi' in Karnataka, a state adjoining Maharashtra. 'Kananlakshmi' is a collective of women farmers in the forest gardens of the southern part of the Western *ghats*. The fact that this collective is run completely by and for women in a predominantly male-centric society and a male-dominated occupation is one of the primary reasons that despite lying just outside the geographical boundary set for this research (albeit within the same eco-zone as the two previous case studies – the Western *ghats*), it has been included as a case study.

3.3.1 Topography and Climate

The area that Kananlakshmi operates in is a hilly forested region of the southern part of the Western *ghats* with an annual rainfall average in the range of 1000 to 3800 mm and a humid climate (Ramachandra and Kamakshi 2005). Being a contiguous part of the Western *ghats*, the region is very rich in biodiversity with a high number of floral and faunal species endemic to the area. It is populated by 'forest gardens' (patches of agriculture within forest areas), a regional customized version of forest farming (Pailoor 2007; Kango pers. comm. 2012).

3.3.2 Of town mice and country mice

Maitreyee was always deeply attached to the physical activity that connects man to land. She was involved in the Environmental Response Base in Maharashtra, a very strong national voice in environmental awareness creation and sustainability safeguarding. She shifted to Karnataka in 2001 after realizing the importance of and urgent need to document and conserve the floral biodiversity in the area for which she decided to lay emphasis on creating ecologically sensitive livelihoods for women farmers there. It was her contention that complementing pre-existent livelihoods with such ecologically sensitive ones would make conservation an informed and sustainable choice (Acharya 2007).

Biodiversity conservation was aimed at by encouraging revival of seed saving. It was just “*Haley beru, hosa chiguru*” (Kango pers. comm. 2012) which means ‘old roots, new shoots’ – seed saving was already a tradition in the area, it just needed an infusion of impetus for its revival. With women farmers as the target group, Maitreyee was grappling with a number of issues at the same time. In India, women are not accepted socially or legally as farmers (Sainath 2009 & 2011; Pionetti 2005). As Sainath (2009 & 2011) has observed, they can be farmer’s wives but not farmers themselves – the very idea is not considered valid. This said, they have traditionally been the primary seed savers (Pionetti 2005); Maheshwar pers. comm. 2012; Chaudhari pers. comm. 2012). In choosing varieties to be saved, male farmers may lay emphasis on yield and diversity. However, Howard (2003) and Pionetti (2005) have observed, through specialized ethno-botanical knowledge that women possess on account of their varied roles as cultivators, cooks, gardeners and healers, they select and preserve varieties different from the ones chosen by men. Therefore, Maitreyee made a careful and deliberate decision in choosing to work with women farmers to revive the art of seed saving and the ancient seed networks in the area.

3.3.3 Renewing broken bonds, reviving fractured communes

Starting in 2001 with a fistful of seeds from a friend called Kasturi Bhat, Maitreyee has now developed a network of around 15 villages and 12 self-help groups that are directly involved in the initiative and approximately 50 more which are indirectly connected to it (Pailoor 2007). Efforts of over 150 women have been harnessed to empower themselves as well as their families and communities by means of biodiversity revival and conservation through seed saving and seed exchange. The seed collective began as a network of seed saving groups focused on preserving and endorsing biodiversity. It was formally registered as a trust in 2008 taking Maitreyee's conviction that "A few small seeds have the power within them to feed a family; a fistful of seeds, the whole community. One seed will mean one plant which produces so many vegetables and fruits – our future depends on saving the traditional diversity of seeds around us" (Kango pers. comm. 2012;) and is now one step closer to being vindicated through public acceptance.

Throughout the Western *ghats*, grain crop seeds are widely saved, while vegetable crop varieties, due to the intricacies involved at all stages, are preserved in a mere few pockets (Nene pers. comm. 2012; Chaudhari pers. comm. 2012; Kango pers. comm. 2012). In Maharashtra, there are individual efforts by people like Hari Gule and Umesh Pangarkar (in the suicide ridden north eastern part of Vidarbha), Sadanand Walke (in the central-western Wada district) etc. However these are, to a large extent, individual efforts with little documentation. On the other hand, Kananlakshmi, through targeting a focused stakeholder group (that of women farmers) and making seed saving and thence biodiversity conservation a part of efforts towards sustainable livelihoods to augment pre-existent incomes, managed to achieve a far greater success. Till date, the collective has documented 120 vegetable crop and 60 flower varieties along with the distribution of over 3000 packets of organic, open pollinated seeds. It has organized 10 biodiversity *melas* where there is exchange of seeds

within the 15 villages that are part of the network, but also over 500 home gardeners from varied communal, religious and economic strata who are connected to the collective through participant exchange groups.

3.3.4 Allied benefits

Along with biodiversity conservation, there are other benefits that have come of having such a collective. That of empowerment of women of the area is most evident. Pailoor (2007) has also observed cases wherein involvement in the seed movement has brought families closer. However, other obstacles that are specific to the Indian social structure also need to be overcome while developing a community initiative such as Kananlakshmi – and the most important amongst these are religion and caste. Both, Maitreyee and Anand Maheshwar (founder-member of the NGO that Maitreyee worked with prior to initiating Kananlakshmi that helped Kananlakshmi get started before it was completely independent) stated in separate formal interviews that Kananlakshmi had to face even more complex obstacles because most of the diversity in the area was in the possession of members of higher castes of the area like Brahmins who have traditionally been very talented horticulturists. Their areca orchards are abound with diversity (Maheshwar pers. comm. 2012; Kango pers. comm. 2012). Getting them to connect to Dalits and other lower castes has been an activity unto itself. Therefore, developing an egalitarian community structure has been one of the allied outcomes of the work carried out by the collective. So it can be observed that through resuscitation of seed networks in the area, Maitreyee is trying to break down not just one, but multiple barricades to equality of access to non-monetized agricultural inputs that will in turn help build social capital in rural communities.

All this has not gone unnoticed by the local and state governments. Vishweshwar Hegde, the present Minister for Primary and Secondary Education for the State of Karnataka has been a keen follower of the movement and a supporter of its efforts. Although Maitreyee

and her colleagues can continue to save and exchange seeds as long as they are not branded, Vishweshwar Hegde feels that the Seeds Bill (2004) can seriously impede activities such as these and limit their networking potential despite the fact that they serve multiple purposes (Acharya 2007). However, even just with government cognizance and without formal support Kananlakshmi has come a long way within a decade of its inception. With training programs, reinvention of present techniques, constant documentation, seed *melas*, national and international internships and continuous dynamic activity, Kananlakshmi on the whole and Maitreyee in particular are a breath of fresh air in an otherwise indifferent society and stagnant system.

So, following Dahl and Rabo's observation in Escobar (1995, 13) regarding a village in Papua New Guinea or communities in Kenyan or Ethiopian small towns formulating their own versions of development and modernity, perhaps with stories such as the ones in this chapter as well as others that have been mentioned in this paper like Beeja Sukara or DDS or the *Beej Bachao Andolan* (Save Seeds Campaign), rural agrarian India is finally raising a hopeful voice resonating new definitions of development and modernity based on local socio-cultural practices.

4. Answering questions, questioning answers

As is evident from the preceding chapter, the three initiatives that have successfully entrenched themselves in the local social agro-economic milieu are located in three different areas along the same eco-zone – the Western *ghats*. Through my interaction with the initiators as well as participant farmers, I realized that although they are all aware of the work being done by the others, they are not connected to each other – for example, DIRU does not necessarily use seeds saved by Kananlakshmi or the FIRI community seed bank. So the symbiosis in activity required for a parallel system to the pre-established one seems to be lacking. Through my interviews I learnt that this is not the case only for these three initiatives, but for most part, throughout the country¹⁶. Perhaps this is on account of the fact that most projects throughout the country are not run by prodigal sons or daughters returning to their ancestral areas to initiate such work, but through external intervention usually in the form of (urban) environmentally conscious individuals/ NGOs well aware of the Environmental Justice (EJ) movement taking root (albeit in various issues) throughout the country.

Most of the farmers involved in the activity of seed saving at DIRU as well as the two seed banks that have been used as case studies in this research are aware of the environmental effects modern industrial and GR techniques have had on their farmlands and on surrounding ecosystems. So the motivation behind both, seed saving as well as changing to organic farming has been primarily the reduction of environmental/ biodiversity degradation rather than only monetary profit. As Kartik pointed out, “(...) money cannot be your only

¹⁶ I attended a ‘Seed Festival’ held over five days that was aimed at increasing awareness among farmers as well as common populace regarding seed politics and the need to curb them. Around 70 farmers and seed savers from around India (including initiators of groups such as *Beeja Sukara*) participated in the various activities including seminars about seed legislations, bio-piracy, latest techniques in seed conservation and organic farming. There seemed a symbiosis in knowledge and information sharing as well as activism, but a reticence towards seed exchange between initiatives.

A “Seed Declaration” was passed during one of the discussion panels at the Festival and is attached in Appendix I.

motivating factor to be part of such a group – you need to have some kind of consideration for the environment...” (Nene pers. comm. 2012). However, money is not the last priority – it is essential to be able to provide financial incentive along with the promise of the upkeep of agricultural land (which most Indian farmers consider to be their ‘mother’). As Maitreyee stated – “Farming is a hard life – getting burnt in the sun, getting bitten, getting poked” – the hardships need to be validated by something (Kango pers. comm. 2012) other than only reduction of environmental degradation which in itself is a negative externality of the way the sector has been designed and developed post independence from the British in 1947 rather than inherent change in traditional agrarian practices.

The awareness towards seed conservation does stem from a variety of concerns of which social concerns based on empirical knowledge (through primary or secondary sources) like the upliftment of women in their role as primary seed keepers, providing an egalitarian platform for connectivity across gender, caste, social status etc cannot be discounted. It is however economic and environmental concerns (far more than social ones) that have brought down caste barriers. Financial gain (however limited) and increasing awareness regarding environmental degradation on account of pervasive usage of HYVs since the GR has been a great leveler – barren, infertile lands and a hungry stomach mean the same to the Brahmin as they do to the Dalit¹⁷. In her interview, Maitreyee (Kango pers. comm. 2012) mentioned that immediately after inception, some of the Brahmin members of Kananlakshmi behaved in a markedly highhanded manner with their lower caste counterparts. But after realizing that there were landraces that these same lower caste women could procure that would strengthen the group financially and aid their orchards environmentally, the atmosphere relaxed and everyone started interacting on a common, open platform. Although there has always been a bias in favor of women in the context of seed saving activities, the commercialization of the

¹⁷ Brahmins are the highest caste while Dalits are amongst the lowest (the Untouchables) according to the Hindu caste system.

seed sector from the onset of the GR as well as more recent gradual privatization of the sector has been detrimental to their position in the social hierarchy (Maheshwar pers. comm. 2012; Chaudhari pers. comm.; Pionetti 2005; Kango pers. comm. 2012). So despite seed banks not sharing an actively symbiotic relationship with each other in the form of seed exchange, the very existence of many such endeavors has begun empowering women in pockets around the state. With mediators in the form of projects like DIRU, it doesn't seem like it will be too long before an active exchange network throughout the state is re-ignited through small nodal points in the form of co-operative seed saver initiatives.

Based on my field work I have observed that many farmers are not aware of legislations that are being passed by the state as well as the central government(s). The dialogue with stakeholders that is an important prerequisite of drawing up a legislation in a democracy is almost absent at the grassroots level. Dialogue is only evident in the higher echelons of the hierarchy – with academics, activists and known voices like Ms. Vandana Shiva, Ms. Suman Sahai, Mr. Anand Maheshwar etc. As stakeholder members from the other end of the spectrum with immense financial clout, representatives of the public and private sector seed producers are of course part of the dialogue¹⁸. So, the primary stakeholders i.e. the farmers themselves have been left out of most dialogues. An exception to this is the most recent controversy regarding introduction of the Bt Brinjal seed into the open market where Mr. Jairam Ramesh, then the Union Minister of Environment and Forests, held public meetings with farmers (in which a cross section of approximately 8000 people across the country participated) so as to understand their point of view and incorporate it in his ruling on the matter¹⁹ (Nanda, 2012).

During my fieldwork, I observed that farmers connected to seed saving initiatives were far more aware of the legislations than those not connected to them. They were aware of

¹⁸ At the Indian Seed Congress (a national level assembly of the “Indian Seed Industry”) held in Pune (Maharashtra) on February 10 and 11 (2012), indigenous seed initiatives were not represented at all.

¹⁹ The Bt Brinjal was finally placed under indefinite moratorium.

EJ issues that were affecting them and had begun raising awareness in their communities regarding the same. Prime examples of these were Bhanaji Chaure and Amrish Kosambi, both from extremely marginalized communities, albeit with different social and educational backgrounds²⁰. The case of Amrish Kosambi who works in re-initiation of traditional forms of organic farming and seed networking in the Vidarbha Amravati region of Maharashtra²¹ stands out in this context. He told me that he could “(...) see the veins of villages around him drying out with the drying out of the indigenous seed networks” (Kosambi pers. comm. 2012). His greatest regret was that he could not convince his fellow villagers to abandon this “slitting of their own veins” (Kosambi pers. comm. 2012) by signing up for hybrid and GMO seeds and stopping the saving and exchange of indigenous seeds. Had there been even a single policy or awareness campaign/ seed saving initiative inducing farmers to understand the importance and necessity of indigenous seeds chosen and filtered over decades to face the vagaries of the surrounding environment, he was sure that things would have been different (Kosambi pers. comm. 2012). However, things have gradually been changing and awareness networking has led to increased seed saving activity around the state. Progressing beyond this, farmers like Umesh Pangarkar, Hari Gule and others are joining hands with NGOs like Navdanya, donating their own land and putting in unpaid efforts to re-initiate ancient seed pathways (Navdanya, 2011).

²⁰ Please refer to the “Personal Communication” section of the references for further information regarding the interviewees

²¹ This area has also been the focus of the suicide epidemic raging through the state for more than a decade.

5. Rites of passage – Seed rituals in India

Seeds are not only indivisible factors of the micro as well as macro eco-systems of India, but are also inherently linked to cultural and religious rituals. They are symbolic of abundance and considered prerequisites to life in general and civilization in particular. No matter how one divides India – on the grounds of present political delineations or then the pre-existent linguistic/ religious/ geographical or historical differences – seeds are a part of the most basic rituals in every context. They are given the highest honor of being part of the traditional ‘altar of the Gods’ and are attributed with good luck as being symbols of fertility and virility and being carriers of blessings at ceremonies of importance such as thread ceremonies (similar to Baptism in Christianity – a rite of passage wherein *Brahmin* children of the male sex are formally initiated into the *Hindu* religion) and weddings countrywide. They are worshipped by all farmers in harvest festivals all over the country by different linguistic communities, no matter where they are based – *Baisakhi* in Punjab is celebrated by speakers of the Punjabi language worldwide as is *Gudhi Padwa* in Maharashtra celebrated by the Marathi speaking diasporas, *Onam* in Kerala celebrated by the Malayali diasporas and *Pongal* in Tamil Nadu celebrated by the Tamil diasporas globally to name a few.

Traditionally, seeds are saved by individual farmers and communities at large, and exchanged using communal platforms such as seed *melas* or seed festivals. In a country that subsists on rice and pulses more than it does on vegetables, saving seeds of grain crops is of paramount importance (Alvares 1986). So far, this has mostly be achieved by means of seed festivals where as many as 20000 farmers come together and throw a handful of seeds from their own farms/ collections into a huge mixing pot (Pionetti 2005; Chaudhari pers. comm. 2012). All the seeds are then churned and mixed together and while leaving the *mela*, each farmer is allowed to take with him a handful of seeds from the pot. Despite the limitation of

this technique in the context of selection and saving of vegetable crop seeds, it has been a very important factor in the upkeep of grain seed and genetic diversity and thence crop resilience as well as restoration of seed networks between villages.

Both Chaudhari and Nene mentioned during their interviews that after the onset of the GR, hybrids started contaminating extant indigenous varieties. Completely new varieties such as *Ambemohor* and *Indrayani* rice strains were thus produced by selecting the right traits. The various legislations and international agreements such as TRIPS etc. have changed this to a large extent. Although it is not completely against the law to save and exchange indigenous, *sui generis* crop varieties, it is becoming increasingly hard through laws such as the Seeds Bill (2004), the Patent (Amendment) Act and the impending launch of the NBRAI Bill. It is in this context that a seed pilgrimage comes into the picture – a pilgrimage that could, perhaps, breathe life into a floundering, marginalized populace and give it the platform it requires to make its voice heard in the cacophony of billions of others.

5.1 The Pandharpur Wari – Setting off on a Seed Pilgrimage

5.1.1 The Warkaris : A Historical Perspective

The *Warkari* (pilgrim) sect of India (Maharashtra and North Karnataka mainly) is said to have been originated from *Sant* (Saint) Pundalik at Pandharpur sometime in the early 13th Century (Deleury 1960). It is a classless, casteless, irreligious sect based on simple values and the concept of equality amongst all living beings. It has always strived for progress in the society despite the changes in regimes (from local kings to the Mughal emperors to the British and then the post-independence Indian government), with seemingly no common thread to hold together the massive sea of believers except a belief in the teachings of the many *Sants* who have led by example and through their vast literature (Bandiwadekar n.a.). Even today, literally millions of devotees from around Maharashtra and northern Karnataka

walk from Alandi, a small town in Western Maharashtra to Pandharpur a prime pilgrimage center in southern Maharashtra (close to Karnataka) to pay homage to the various *Sants* that they follow and to their deity Lord Vitthal (Dehukar and More 1995; Gosavi pers. comm. 2012) (Refer to Fig. 7 below for details).

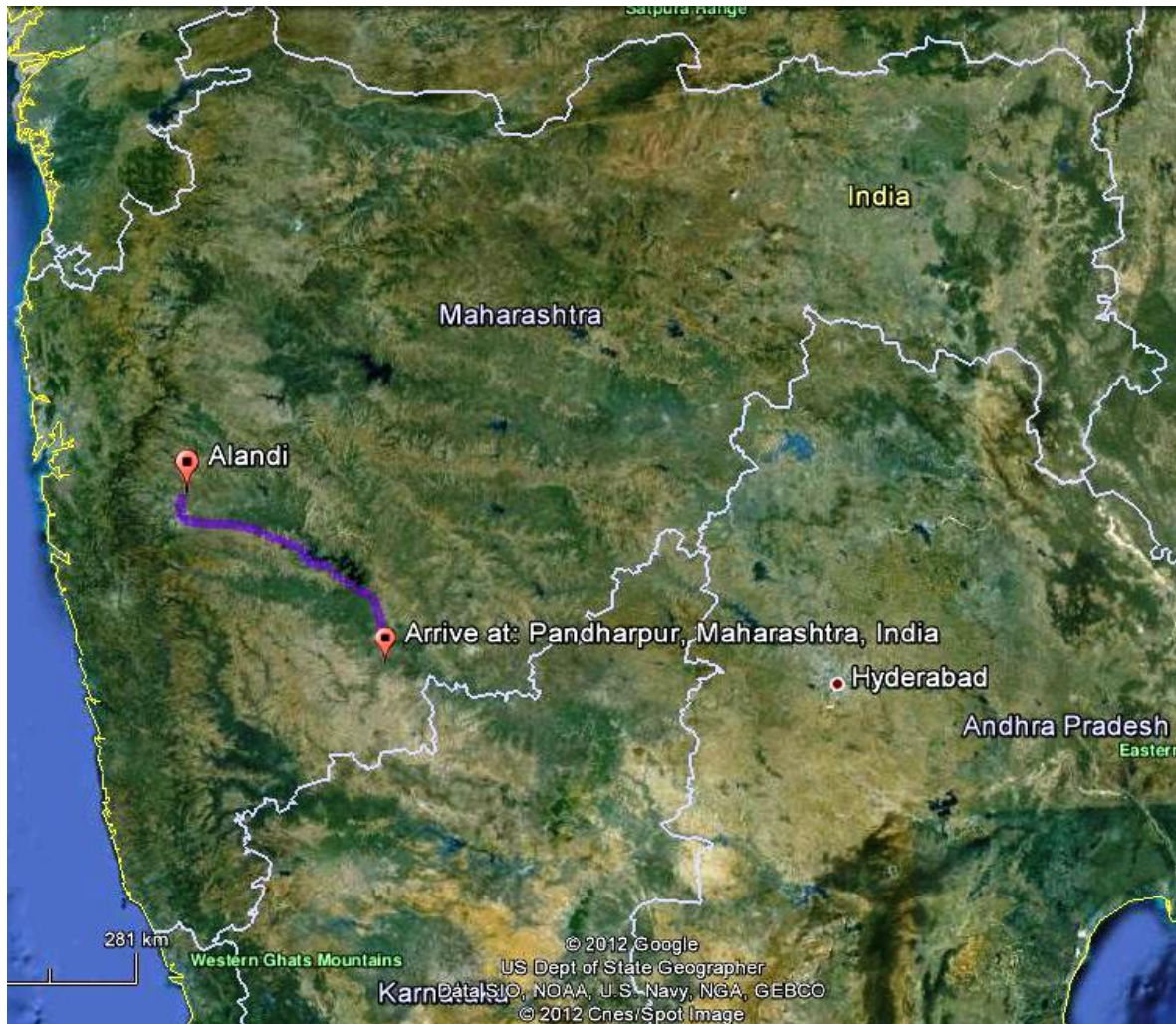


Fig. 6. Route from Alandi to Pandharpur
Source: (Google Earth)

The most important aspect of this sect is that traditionally (and even presently), the *Warkaris* are mainly small and marginal farmers who are on a ‘spiritual vacation’ after the sowing season in June (Gosavi pers. comm. 2012; Chandawarkar 2005). A peaceful collaboration of millions of devotees, there had never been a single violent incident in the history of the tradition (Bandiwadekar n.a; Gosavi pers. comm. 2012).

Until 2008, when they tested their unity and tasted victory for the first time.

5.1.2 Warrior *Warkaris*

In 2008, the Dow Chemical Company which had bought UCC (Union Carbide Corporation: The company accused of mass negligence and resultant death of over 3700 people in the Bhopal Gas Tragedy of 1984) began preparations of erecting a massive R&D center on a 100 acre plot by investing around INR 4000 Million (TNN 2008). However, citing reasons of public safety, the potential pollution of the River Krishna and the possible degradation of the environment on account of the questionable reputation of Dow (previously UCC) in India, the *Warkaris*, a marginalized population of farmers, farmhands and other allied occupations, for the first time in their 800 year old history took up arms against an administration that refused to take their voice into consideration (TNN 2008; More pers. comm. 2012). They ransacked the facility and brought the company and the state administration to their knees, so much so that the company decided to change the location of the R&D facility (TNN 2010; Gadgil 2012). This was an environmentally positive action that could not have been possible without the might of the entire *Warkari* sect, the collective memory(s) of a philosophical and social renaissance and the resultant socio-political upliftment of the lowermost classes connected to it. This only goes on to validate Tucker's (1976) observation that resistance movements (and nationalist ideologies) in Maharashtra have been religious long before being political.

5.1.3 Such a long journey: Towards seed reform

The resistance to the Dow facility is important to illustrate the beginnings of unity for a cause considered socially/ politically/ environmentally just by the sect and the ability of the millions of *Warkaris* (predominantly connected to agriculture in some way) to raise a voice and get a reaction from the government. The fact that they had the unity and conviction to rise up against one of the biggest producers of plastics and chemicals in the world along with

the administrative machinery of the largest global democracy and stop the activity is an achievement in the EJ movement of the country. All this gains importance in the light of the fact that a number of activists that I informally interacted with as well as Mr. Mangesh Chaudhari, who I interviewed formally were in agreement with me when I raised the question of whether this (the *Warkaris* and their annual pilgrimage to Pandharpur) could be used a platform for the renaissance of seed networks in the state of Maharashtra and northern Karnataka (where the Kananlakshmi initiative described in Chapter 3 is based). Although it affects most of the farmers directly, other than nominal awareness regarding the ‘ills’ of GMOs (mainly due to the aforementioned Bt Brinjal debate) and the names of the main producers of good quality HYVs, farmers are not aware of the power that lies within their reach if only they were to rise up as one. By taking the means of production out of the hands of farmers to assist in structuring a free market economy in the country, the government has rendered them helpless. Although the chief aim of a spiritual holiday tradition of around 800 years is hard to change, as has been made evident earlier through the DOW case, once convinced of an injustice being meted out to the farming community, the entire sect (irrespective of caste, creed, religion and gender) rises as one. And the respect that is compulsorily accorded to them in the social structure of Maharashtra makes it impossible for the government to ignore their voices. Following Tucker’s (1976) observation, perhaps the seed resistance needs a religious (or in this case sectarian) connotation to create the sort of awareness that is necessary and not provided for by the administration for reasons based more on profiteering under the guise of scientific agro-development.

For this purpose, I will be joining Mr. Chaudhari to observe his efforts to create such awareness, and test this hypothesis – whether ancient wisdom about seeds and the social, economic and environmental benefits of using their indigenous varieties is not dead, just buried under the debris of a recent past entrenched in the myths of a Revolution – Green yet

parched. This hypothesis is also supported by Eaton's (2005, 153) observation that, "(...) from its very beginnings, that (*Warkari*) movement was concerned not with revolution (...) but with reform" and it is exactly such reform – seed reform – that Mr. Chaudhari proposes undertaking through this stream of collective consciousness that has ascribed progressive thought and a strong pervasive philosophical foundation to the edifice that present day Maharashtra claims to be.

I will be undertaking the journey with the *Warkaris* from Alandi to Pandharpur (approximately 224 kms) on foot this year as well as the next for authentic documentation of our efforts and also documenting the various activities we undertake in between towards this end. Exploring the potential of this activity is important because it is essential to make dynamic extant traditional pathways to reach out to a population. It is essential to create awareness within this community regarding the root to social, political and economic marginalization which lies in their resources having been snatched from them through structural changes in policy and legislation. It is also imperative to create awareness regarding the dormant social and political power that the sect already possesses through their 800 year unity in thought and action so as to help its members overcome this marginalization because economic distribution is as much a matter of social and political power as of environmental justice (Escobar 2006). So perhaps the future seed renaissance in Maharashtra will begin with age-old networks providing seeds for men and for women with a dream of two meals a day and a shade to rest in.

6. Conclusion

There are a number of issues that this research has touched. Information in the preceding chapters is intended to reveal definite links between local/ regional/ national power relations, institutions with the power to regulate environmental concerns and their consequential social and ecological outcomes. The thesis has reflected upon the interconnectedness of social processes put into motion by the agrarian legislations implemented by the Government. The Government has focused on introducing and fostering the use of non-indigenous varieties including HYVs as well as GM varieties like Bt Cotton. On the background of the tragedy of farmers' suicides in the state, it was the aim of this report to counterbalance the consequences of the aforementioned with the rise in the number of seed banks around the state. After having spoken to people from most of the stakeholder groups (concentrating on the one with the largest base – farmers), it is evident that awareness regarding the need to conserve heirloom seeds and indigenous landraces is seeping through social, political and economic strata.

This awareness is acting as a leveller (as was evident in all three case-studies) and breaking caste barriers and gender stereotypes firmly entrenched in the collective psyche of the rural Indian society. There may be varied and multiple reasons behind wanting to save biodiversity and nurture agriculture – but presently, on account of increasing awareness regarding the importance of both, farmers have begun re-initiating seed saving and exchange and fostering women's empowerment, economic/ resource autonomy and, most importantly, a steady disintegration of caste barriers in the process.

So, the period when despite being a collective property, heirloom seeds were relegated to being orphans during the GR and post-GR era with no test tube their germplasm belonged to or a brand name to advertise their worth is past. Today, efforts being put in by

the likes of FIRI, Kananlakshmi, Seed Campaign, Navdanya, the DDS, DIRU etc. (albeit singular for the most part), are re-focusing public attention on them to prevent loss by negligence as well as theft by germplasm-pirates. In order to achieve this, it is essential to understand the political nature of the issue and question neutrality of legislations and policies being implemented. In the exigencies of charting out the manner of development of the sector, the dynamic nature of the resource at hand must also be considered.

Taking into account the way the Indian population is growing at the moment, it might not be a sound decision to completely depend on indigenous seed varieties. Perhaps the answer lies in what Pionetti (2005, 8) terms as an “integrated seed supply” that assesses the values and limits of both, the formal as well as informal seed systems and creates a new, balanced middle path which will allow retaining the best of both the sectors with a peppering of better policy structuring, more interaction between communities and the government, more R&D about indigenous seed networks and their *raison d'être* and most importantly make public as well as private sector seed manufacturers legally answerable for defects in/ after effects of the seeds that they introduce in the market.

However, seed networks don't just encourage the use of indigenous seeds. They perform the far more important task of upkeep of diversity in crop varieties. Provision of the aforementioned facilities along with increased funding, scientific know-how and technical support to programs such as those run by Mangesh Chaudhari or Maitreyee Kango, will definitely enable farmers (through *in-situ* selection, saving and exchange) to develop varieties more suited and compatible to local conditions and biodiversity than the options provided by the formal seed sector at present. Simultaneously, this would also help in rebuilding fractured rural Indian economies.

The restoration of economic and social ties through such networking gains added importance as communities (or population collectives with a shared identity) are rarely

isolated and seldom corporate and so fields of power are not only constantly expanding but are also connected to larger entities than just local ones (economically, politically as well as socially) (Watts and Peet 2004). This shows the tremendous potential a network of such communities can have in terms of forging a collective political and social identity for its members using pre-existent social memory and tradition through the medium of an intrinsic a resource such as seeds.

Perhaps it is now time to have laws to regulate the seed industry – the formal seed sector producers – rather than the farmers who have little or no interest in becoming entrepreneurs or commercial producers as the MD of ITC Zeneca was afraid of (Weidlich 1996). In view of the fact that farmers' livelihoods and the wellbeing of their families depend on the patch of land that they till, sow and reap for minimal profit, their intentions towards long term sustainability should not be questioned. Illiterate ignorance and blind faith in governmental policies and scientific solutions to problems that are social and economic along with being ecological in nature has brought the Indian farmer to a nadir he has never experienced before. So now, whatever else the government endeavors (economic gains, political leverage, social stability), one of its primary aims must be long term sustainability of the seed sector through sustainable use of the resources. It must realize that farmers are not mere numbers to be juggled around during election periods – they are actual people, with futures and livelihoods, families and fears. It is now essential to introduce innovation: proper policies and considerate subsidies to guide both, stakeholder and consumer preferences. It is pertinent to use this power wisely with the support of points mentioned above, especially in the near future, because the precarious balance in which hang the lives of millions of farmers not only state but countrywide can be upset by even the mere whisper of a nudge.

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- Kango, Maitreyee. Founder – Kananlakshmi. Formal interview (Telephonic communication). May 24, 2012.
- Ketkar, Abhinav Agri-policy researcher, journalist, author, and academician. Formal interview. Nashik, March 6, 2012.
- Kosambi Amrish, Organic farmer and activist. Formal interview. Mumbai, February 21, 2012.
- Lakshmi Narayan, S. Director, Beeja Sukara. Informal interview. Pune, February 22, 2012.
- Maheshwar, Anand. Pioneering environmental activist India. Formal interview. Pune, March 22, 2012.
- Nene, Kartik. Organic farmer, initiator and co-ordinator of Deccan Institute for Rural Upkeep (DIRU). Formal interview. Mulshi *Taluka*, April 4, 2012.
- Sastri, Aravind. Union Minister of India. Formal interview. New Delhi, May 2, 2012.

APPENDIX I

List of Interviewees (Surname, Name)

Agarwal, Raviraj

Raviraj Agarwal is an officer in the administrative services of India. He has previously served as the administrative head of various districts in Maharashtra and in other elite positions in ministries including agriculture. Recently he served in the drought prone Amravati District of north-eastern Maharashtra, also the epicentre of the “suicide epidemic” of farmers in the state.

Chavan, Vikas

Vikas Chavan is a marginal farmer whose family has faced ups and downs of agricultural policy changes in the country. Despite being a mere slip above the poverty line, he travelled hundreds of long kilometres from his village in the Konkan region to visit the Seed Festival, hoping to find new varieties that could be planted in his fields akin to the indigenous seeds that his forefathers swore by. Since seed networks are all but dead in the area, getting new seeds basically amounts to buying treated seeds from shops.

Chaudhari, Mangesh

Mangesh Chaudhari has almost single-handedly initiated and co-ordinated FIRI's Indigenous Varieties Preservation Program for a better part of the past decade. The project claims to connect eleven villages and over five hundred farmers to revive seed networks that existed in the area prior to the GR for the conservation of agro-biodiversity as well as community empowerment. Currently he provides training in organic farming and seed saving techniques to farmers not only in Maharashtra but also other states.

Chaure, Bhanaji

Bhanaji Chaure is a tribal youth who chose to be an organic farmer despite the trials and tribulations that the profession entailed – especially due to the terrain that his farmland is located in. He is part of FIRI's seed network and has been trained by Mangesh Chaudhari in the scientific technique of seed saving of grain crops. Alongwith being an organic farmer, he is also a trainer of organic farming and seed saving techniques in his community and village and in neighbouring villages and *talukas* as well.

On account of his genuine interest and efforts towards the abovementioned, currently he is also a resource person for the FIRI Indigenous Varieties Preservation Program .

Deshpande Girish

Girish Deshpande works with the Association of Organic Agriculture (AOA), a state level network of farmers and NGOs, promoting sustainable agriculture among smallholders.

Gosavi, Vittalpanta

Vittalpanta Gosavi is an academician and scholar of the Warkari sect. He is widely published and is considered an international authority on the subject.

Kango, Maitreyee

Maitreyee Kango is a trained environmental scientist and runs her own NGO called Kananlakshmi, exclusively a women's seed saving initiative.

Ketkar, Abhinav

Abhinav Ketkar is a policy researcher and a columnist for The Express Group. He is also an activist focusing on development in Maharashtra. He works to build bridges between grassroots citizen groups and farmers affected by state, national and international economic and trade policies. Among his many publications are reports from the 5th and 6th WTO ministerials.

Kosambi, Amrish

Amrish Kosambi is an organic farmer by choice in the drought prone Amravati district. A graduate of the College of Agriculture (Amravati), he had partaken in the first socialist call to arms in the country under the guidance of Shri Jayprakash Narayan (renowned national social and political activist). He started farming at his ancestral farm in the 1980s and today is an activist farmer struggling for farmers' rights.

Maheshwar, Anand

Anand Maheshwar is a founder-member of a pioneering environmental research and action group and has worked tirelessly in the field for over four decades. He has served on the boards of various NGOS and IGOs and is the author/ editor of numerous books and articles.

Nene, Kartik

Kartik is trained in conventional agricultural technology in India and abroad. He is the initiator and principle co-ordinator of the DIRU project. The project is a collective of 20 organic farmers in peri-urban areas with a consumer base of around 500 households in the adjoining urban area.

Sastri, Aravind

Aravind Sastri is an academician and politician. He has served as union minister in the Government of India the past.

APPENDIX II

SEED DECLARATION, INDIA, 2012

The seed is the first link in the food chain. It is a sacred code of evolution, an embodiment of life and memory, a latent world waiting to unfold. The seed gives itself to earth – warm soil, air and moisture – and comes alive. Drawing energy from the sun, it grows and multiplies manifold. Each seed and plant is unique.

Like the earth and the sky, the immense biodiversity of seeds is our collective heritage. Gifted by nature, and the cumulative innovations, adaptations and selections of many generations of farming communities, these seeds belong to all. They are our most vital wealth, essential for survival. They cannot be seen as mere commodities, to be bought and sold at will.

Allowing any variety of seed or plant to become a proprietary resource is a violation of natural justice, and a great suicidal blunder of modern economic civilization.

An estimated 80,000 plant species, and many varieties of each species, have been used as human food, though barely 150 species have been cultivated on a significant scale. But less than 30 crops now account for more than 95% of the human diet, and just 8 crops (of very few varieties) provide three-quarters of all human food.

India is a global centre of origin and diversity of rice. Over 60,000 distinct rice seed varieties have been collected by Indian agricultural research centres. Many more yet grew in farmers' fields, adapted to diverse conditions. About 19,000 rice varieties were collected by Dr Richharia from just Chattisgarh and Madhya Pradesh, of which 1600 varieties were found to be high-yielding. We have a rich diversity too of wheat, millets, pulses, coarse grains,

oilseeds, vegetables, tubers, fruits, spices, and medicinal plants. About 25,000 Indian varieties of dry-land crops are held by ICRISAT alone.

But with the mono-cultural spread of a few dwarf exotic varieties of wheat and rice, and hybrid sorghum and corn, under the onslaught of the so-called ‘Green Revolution’, much of our immense agro-biodiversity is now eroded or severely threatened in their original croplands. Only a fraction of such diversity yet survives, mainly in some areas populated by indigenous peoples.

Much of our crop seed wealth has ended up in distant gene banks – like the IRRI in Philippines, CIMMYT in Mexico, or Fort Collins in USA – far from its rightful owners and the cultures in which they were rooted. This wealth represents the collective bio-cultural heritage – including biodiversity, food culture, ecological knowledge and value systems – of local communities that freely shared and passed them down from generation to generation. It is also the most vital resource that must be reclaimed by them to safeguard their future livelihood options and the people they feed, especially in a scenario of climate change and increased farm vulnerability to erratic weather conditions.

With the inevitable growing scarcity and mounting prices of non-renewable fossil fuels and chemical fertilizers, as well as rising water shortages, the HIV (High Input Variety) seeds supplied by agro-industry – tailored to optimal conditions – are sure to face a sharp decline in yield. Unless our farmers are able to adopt bio-diverse agro-ecological agriculture with their own traditional, locally adapted seeds, severe food scarcity looms ahead.

Today, the danger to our priceless heritage of agro-biodiversity – from proprietary commercial hybrid seeds and GM (genetically modified) crops – is graver than ever. The GM crops threaten severe contamination of our local crop varieties through cross-pollination, as seen in the case of corn (maize) in Mexico. The aggressive marketing of GM crops also

drives local varieties out of circulation, as witnessed by the near total erosion of traditional cotton varieties in India.

The creation of ‘Intellectual Property Rights’ (IPRs) of plant breeders over seeds and plants, especially under the ‘Trade Related Intellectual Properties’ (TRIPs) provisions of the World Trade Organization, combined with restrictions on unregistered traditional seed varieties, is an assault on our agro-biodiversity and its free, unhindered use. Such criminalizing of the natural rights of farmers and farming communities, whose ancestors nurtured such diversity in the first place, is a mockery of natural justice. Together with the sanctioning of genetically polluting GM crops, this represents a concerted thrust by agribusiness to wipe out our rich heritage of agro-biodiversity. All legislations and treaties that abet the biodiversity privatization of our collective genetic heritage, carving out proprietary spheres for exclusive use, must be discarded into the dustbin of history. Our failure to do so will ultimately destroy our agriculture and many millions of agricultural livelihoods, and the food and nutritional security of *all*.

We thus hereby adopt the following seed declaration:

- 1) We assert the farming communities’ and indigenous peoples’ sovereign rights over their collective bio-cultural heritage, including the right to freely plant, use, reproduce, select, improve, adapt, save, share, exchange or sell seeds, without restriction or hindrance, as they have done for past millennia.
- 2) We reject the validity of any private or corporate proprietary claim of ownership over any variety of seed, crop, plant or life form, and particularly any variety rooted in our natural heritage, cultural history and identity.
- 3) We demand a ban on GM seeds and species, and strict enforcement of corporate liability for any contamination of seeds/plants, and any damage to the health of farmers, consumers, animals, croplands and eco-systems from the illegal use/release of GM seeds and species.
- 4) We urge our government to partner with our farmers, gardeners and civil society organizations in systematically and transparently recording and documenting in a freely accessible database our genetic wealth, particularly the diversity of our crops and crop varieties, originating in or found in various regions and cultures of India.
- 5) We demand that our government facilitate and simplify farmers’ and cultivators’ access to our heritage seed varieties from national and international germplasm

collections, and support their decentralized conservation in the croplands and regions of origin.

- 6) We assert our unconditional right to pass on our collective bio-cultural heritage and the health of our croplands and eco-systems to future generations.
- 7) We demand that our government fulfill its responsibility of safeguarding and regenerating our collective bio-cultural heritage and the health of our croplands and eco-systems.
- 8) We call upon our government to pro-actively promote and support bio-diverse and holistic ecological agriculture to meet our basic, priority needs in a sustainable manner.

Name

Email ID

Signature