PhD Dissertation

Green Enterprise Workers' Participation in Social Change induced by Climate Discourses: Institutionalization of the global policy clubs' green discourses at the local level

by PhD candidate Jamilia I. Jeenbaeva,
from Bishkek, Kyrgyz Republic

Doctoral School in Social Sciences, XXV cycle, programme in Local Development and Global Dynamics
University of Trento, Italy

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Supervisers:

Dr Ermanno Tortia (University of Trento)
Professor Harald Rohracher (Linköping University)

PhD Committee:

Professor Giuseppe Folloni (University of Trento)
Professor Silvia Gherardi (University of Trento)
Professor Gunter Getzinger (Alpen-Adria University of Klagenfurt)

Final examination:

Professor Carlo Ruzza (University of Trento)
Professor Sandro Montresor (Universita degli Studi di Enna “Kore”)
Dr. Roberto Antonietti (University of Padova)

Contact: jamilia.jeenbaeva@unitn.it

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Contact: jamilia.jeenbaeva@unitn.it

DEDICATION

To my mother Jeenbaeva Raihan Isakovna, my sister Sani-Saikal, my niece Aliman and grandmother Saliika Daniyarova who have been practical warriors in keeping me from drowning in the vast sea of the mindwork imprinted on tonnes of journal papers and books. Having endured with me the ups and downs of this wild ride they reminded me to keep the head above wild waters, while I learned to dive and surf the science.

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Abstract

This dissertation explores the development of a human capital concept that is here referred to as "green footprint competence" among workers and members of organizations that position themselves as "green", "organic", or "environmental solutions providers". The research contributes to the studies of social and environmental change by analysing three aspects of this change: a) the institutionalisation of the global green and low-carbon discourses as values, norms, and discursive practices within organizations in Kyrgyzstan and China; b) the emergence of the green organizational identity; c) and the development of the new competences for the climate change adaptation and mitigation along with the "green identity" of workers and members of greening organizations.

The key argument formed as a result of this research is that the development of standards for measuring and reporting of the Personal and Organizational consumption of Earth Resources (i.e.,. personal and organizational carbon and/or ecological footprints), requires a more democratic and inherently more participative approach through developing green competences of organizations' workers. Would the democratization of the carbon emissions MRV (measurement, reporting, and verification) make the emissions figures (reported and used in investment and trade decisions) more reliable and grounded? Does not the tendency of organizations to advance performative interpretations of their environmental and social responsibilities in the quest of staying competitive and enact greenness actually prevent environmental conduct that reduces carbon? Often the organizational infrastructure and incentives are set in such a way that it discourages the pursuit of de-carbonization. Instead "being green" becomes a negotiable and a transient state, in which reported greenness is a result of a multitude of interpretations and data bending in order to fit in the new green economy club or to become if not the leader of de-carbonization then at least a member of a supply chain of a "green" industry leader. The genuine belief in the virtues of being green and acting green becomes negligible in value as company leaders face the large suppliers or partners in the value chain. The large members of value chains had negotiated their "greenness" through an enactment of the environmental conduct in Corporate Social Responsibility Reporting and Carbon compliance reporting to fit the bill of the global financial communities. While at the top of this "green" pyramid are the global development and investment banks that are in a rush to reap the benefits of the emerging green economy trough formulating "green" or "sustainable" requirements and regulation, within their global "business and economy clubs".

Contact: jamilia.jeenbaeva@unitn.it

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Chapter 1. Introduction

1.1. Motivation (Problem Introduction)

Private enterprises and non-governmental organizations are believed to be the driving force in the mitigations and adaptations to the changing climate. Especially it is true about organised business as it can be regulated, thus providing a kind of stabilisation of actors and actions within uncertain and risky scenarios of global social transition in view of the climate change consequences. In the early 1990s in his influential book *The Ecology of Commerce: A Declaration of Sustainability* Paul Hawken highlighted the role for business enterprises in the eminent transition as follows, „the rational for business playing the leading role is that business alone possesses the power, resources, expertise, and access needed to begin to reverse global environmental and social problems“ (Forbes and Jermier 2010, p.466).

Thus, a stage was set for a discourse on the leading role of business enterprises in the global "green" politics. This belief was based on the leading role of small and medium enterprises, entrepreneurial initiatives rooted in the communities, nurtured by communities. While multinational corporations have stepped “into those shoes”, and scholars have since been wary of the new developments in the ideological and systemic take-over for norm and rule setting and embedding of practices of the so-called New Corporate Environmentalism. Forbes and Jermier (2010) remind of “one of the most debated environmental questions of our time: How far can we go with green capitalism? Hawken sets his sights on ending industrialism as we know it and on developing a restorative economy based on technological innovation, sweeping structural reform, and radical process redesign”.

There are several historical accounts to the emergence of discourses that place business in a central guiding position when it comes to nature and environment, and regulation of the anthropogenic activity, which is often referred to as voluntary greening. Jermier et al refer to discourses on voluntary greening as „rhetoric concerning the central role of business in achieving both economic and ecological rationality and as a guide for management that emphasizes voluntary, proactive control of environmental impacts in ways that exceed or go beyond environmental laws and regulatory compliance“. (Jermier et al, 2006, p.618)

The focus of this dissertation’s research is on the organizational institutionalization (specifically, legitimisation) of the global discourses, policies and norms related to climate

change mitigation and adaptation through "greening" and decarbonisation of production, trade, supply chains, infrastructures, everyday conduct, lifestyles. The ultimate result of such institutionalisation is the progress in de-carbonisation of the planet through de-carbonisation of personal and organizational ecological footprints. It is argued that green and low-carbon institutionalisation can be found in organizational policy and in the managers, workers, members' awarenesses and perceptions of green values and norms, that can become translated into green discursive practices and green competences[i] (see EndNote1) of members of organizations or, as often has been the case, can become hijacked as a concept and interpreted in a way which is far from environmentally aware and/or carbon-reducing conduct.

1.2. Research Questions

The dissertation is structured around three research questions. Throughout the dissertation all three questions are addressed at various degrees, and in more detail as follows. The first traces the sources of climate change framework of action to the global green discourses promoted at multinational business clubs and multilateral policy circles, i.e., global corporations and international and supra-governmental organizations. The pathways of the global green discourse institutionalization in organizational norm and policy are important for understanding how organizational policy is articulated.

Research Question 1: What are the green and carbon discourses and how are they implicated in the policy articulations and norm legitimisation of organizational (i.e., corporate) emissions reduction and green supply chain management?

In Chapters 2, 3 and 4 especially the answers to this question can be followed up that provide us with a field and typology of macro-discourses influencing the norm and policy formation for a low-carbon economy regulatory and business environment. The ontology of the macro-discourse of "Footprint accounting" is explained, which leads us into the second research question.

Which is specifically about the environmental management discourse that prevails in the green norms and green discursive practices of organizations and to what extent the organizations' workers' and members' awareness of their organizations' greenness and decarbonisation efforts linked to the science & technology of emissions' reduction or to their

personal habits and/or personal carbon awareness. The routine practices of organizational consumption in the organizations that are members of "green" and "organic" local communities of practice are still far from the discursive theoretical optima of improvements in emissions reduction and corporate environmental conduct. However, the declared values are reflected in norms and discursive practices of large actors in the field.

Research Question 2: What are the implications of the environmental management discourses of Carbon Footprint legitimised in organizations in relation to the workers' and members' habits or awarenesses of the emissions MRV, social and environmental accounting, and actual engaging of the workers and members of organizations in the practice of a more conscious consumption of Earth resources?

The answers to question 2 can be mostly followed in the Chapter 2 and 3 (the theoretical and literature review chapters), as well as in the case studies (Chapter 5, 6, 7) and the survey (Chapter 8).

Once we answer questions 1 and 2, we can compare the theoretical optima with the situations of green competence and green footprint identity development in organizations in Kyrgyzstan and China.

Research Question 3: How do the "green" and "low-carbon" values, norms, policies legitimised at the organizational level actually contribute to the shaping of the workers' personal and professional "green" and "low-carbon" competencies?

The answers to the final research question can be found in the case studies (Chapters 5, 6, 7), the survey chapter (Chapter 8), and in the concluding discussion (Chapter 9).

1.3. Limitations of this research

Among the limitations of this dissertation is the lack of uniformity of selected organizations, the survey data was collected from organizations that agreed to accommodate my research, give me time, and access to workers and members of organizations. Thus, the survey compares three very different organizations, an engineering company in China, a food production company in Kyrgyzstan, and an association of farmers and agricultural producers pursuing the goals of organic and low-carbon quality. The survey data collected was low in numbers, thus it was not possible to make strong statistical statements about the hypotheses

under study. However, besides the survey the tools of discourse analysis, case study analysis and semi-structured interviews allow for the conclusions to be made on the nature of, connection between, and the direction of some of the phenomena and measurements made within the framework of this research. It would have helped this research to be much more anthropological with the focus on practice theory methods, as ultimately the day-to-day patterns, engagement into practices that are personally, organizationally, environmentally and socially harmful in various combinations is what needs to be measured and articulated to make a difference in the decarbonisation processes.

1.4. The Structure of the Dissertation

Chapter 1. This is an introductory chapter that sets the motivation and introduces the problem under study. The research questions and research boundaries are indicated. The structure of the dissertation is presented for the reader to follow.

Chapter 2. Theoretical grounding and the methods are laid out through sub-chapters introducing discourses and discursive practices, green regulation, and the associated calculations and qualculations as the existing practice and as a potential discipline to be re-vised by a broader set of actors. Also, in this chapter the methods, units of analysis, and research techniques are detailed.

Chapter 3. This is a Literature Review chapter that discusses the academic nuances of seeing discourses on Climate Change phenomenon. Namely, the juxtaposition of the Ecological economics and Social and Environmental Accounting to the prevailing neo-liberal approaches. Introducing the practice theory and science and technology studies as possibly more successful approaches to analyze the green and low-carbon transformations.

Chapter 4. In this chapter the method of discourse analysis is presented as a translation of the Climate Change risks into consequences that are understood within the local context. The method combines institutionalization of the global climate discourses at organizational level with the science and technology studies approaches. The process of "Green" discourses legitimization and the construction of a "Green" Organization and "Green Supply Chain" are

traced, and the projected green identities of two members of one product life-cycle network (supply chain) are analyzed.

Chapter 5. This is a Case Study on the RPQ managers in China constructing green company identity through energy-efficiency competence.

Chapter 6. This is a Case Study of The House of Confectionary "KLSKY", the construction of the Kyrgyzstan's leading green corporate family of companies and its unintended green innovation.

Chapter 7. This is a Case Study of the FOAM BKG in the Value Chain of IFOAM: Case Study of the Organic Movement in Kyrgyzstan as a "learning organization" drawing on experiences of green movements of EU, Bhutan, China, and Kazakhstan

Chapter 8. This is the report on the Survey of Workers' Participation in Green Footprint Competence Construction and Organizational Green Identity Development

Chapter 9. The concluding discussion on green organizations' workers' and members' participation in social change induced by the Climate Discourses through the summary of case studies, the survey findings, and the contextualizing of the research findings with the existing literature.

Chapter 2. Theoretical and Methodological Considerations

The theoretical framework for the emergence of the "green or organic footprint competence" presented in this dissertation is drawn on the concept of organizational discourses disciplining the members of an organization to identify with its greening and organic values and norms through a direct participation in green or low-carbon accounting, green job routines, and green job co-design.

One of the central hypotheses is that the problematic of organizational discursive learning and the "green footprint competence" development is linked to the paths of institutionalization of green values and norms in companies within a green supply chain. While the extent of the green organizations' members commitment to environmental conduct is linked to them knowing and practicing environmental and social accounting, which they can co-design and to which they can contribute through their own personal environmental and green footprint competence.

In this dissertation the methodological and theoretical framework of Green Footprint Competence in organizations seek to contribute to the fields of institutional theory, science and technology studies, organization studies, political economy of international sustainable development. Within these fields the competence and identity have been considered before; however the connection between social and environmental accounting in companies and the associated job competences development and workers' wellbeing and identification with their companies have not been studied.

The theoretical base of this research is grounded in discourse theory, institutional theories, science and technology studies, organization studies, post-structuralist, and constructivist approaches. A critique of the Ecological Modernisation and Industrial ecology approaches was attempted from the perspective of their omission of social systems analysis to engender social change through participative footprint accounting standards development and the associated work routines and disciplining.

2.1. Theorising on global discourses translated into discursive practices at the local level

This dissertation will demonstrate how the prevailing discourse exists in parallel with the discourses of "greening identities", low-carbon disciplines and green jobs (i.e., associated routines) emerging among the workers of the studied organizations. Yet often the organizations' ideas of greenness and de-carbonization are not synchronized with the ideas and behaviours of the working personnel and the members of organizations. The escape from business-as-usual (BAU) scenarios in various countries is the first step in the direction of more decarbonisation. The BAU represent only the incremental change proposed by the international business policy clubs for the transition towards a green economy, which is not enough for the challenge presented by climate change as Naomi Klein, David Suzuki, Lester Brown and many others have been writing and campaigning about. The growing Earth humanity and climate movement across the world represents a more fundamental social change that is being induced by climate discourses. And this dissertation will demonstrate that the climate discourses are bringing various sectors closer and creating interwoven space, an assemblage that requires much more concerted and definitive role of the competent actor at the individual and personal level, who can influence and create waves of change to reverse the material and economic damage of climate change.

In China, the BAU scenario was formulated on the basis of The 10th Five-Year Plan (2001-05) (period of rapid industrialization and urbanization). China has committed to reduce the intensity of its carbon dioxide emissions per unit of GDP by 40-45 per cent by 2020 compared with the 2005 level in Copenhagen in 2009 (Ma Xin et al 2009).

While in Kyrgyzstan, although there are not many laws and regulations adopted specifically for Climate Change action, the central line is set by the National Strategy for Sustainable Development of Kyrgyzstan until 2017 and a few other acts that were adopted in light of this strategy.

In actuality whether the activities of any "green" organization really reduce carbon or keep the footprint within its manageable size remains unresolved or unknown for the decision-makers even within these organizations as well as at the governmental level. It also remains a black box outside of the accounting books, financial reporting and actual enterprise's image making. The only people who know some of the pieces of this puzzle are those employees who collect data and define it, in terms often contested and not always shared even within the team collecting data into the EMS (environmental management system). These very actors within organizations need more inter-connection into a community of green or low-carbon practice. It needs to become professionalised and associative in order to share the know-how of carbon, to hone the skills of capturing and reporting on carbon, to develop the green and low-carbon competencies within organizations and within larger communities of practice. These individual and collective "carbon connoisseurs" or "carbon practitioners" are those who can help prevent the silencing of the voice of "the carbon" or substituting it with others (i.e., "enacting low-carbon footprint and greenwashing it, for example, as it was presented in the study of Lippert (2012).

Thus far "carbon" means many things to many people, while there is a great contest to ground the term and lock it into a "translatable", "tamed" concept that can be understood and shared as a basic metric when it comes to climate change, environmental conduct, and competences in reducing the consumption of Earth resources. The emergence of a new metric of a footprint, no matter if it is ecological footprint, carbon footprint, or water footprint or any other, demonstrates the necessity in centering all actors on one point of focus – the urgent need to share a new metric value that would allow all legislators, policy makers, accountants, householders, managers, decision-makers of any level, private and public, individuals and

families, organizations and communities, for all to recognize the fundamental decline or lack thereof of renewability of some of the Earth's precious resources such as breathing air, clean drinking water, clean and productive soil, forests, marshlands, lakes and rivers, animals, plants, insects, mushrooms and fungi, all the living organisms. When these precious resources are consumed, a metric has to be applied that demonstrates the declining stock and the cost of replenishing it not in terms of money and figures that are abstract or documented. Instead, there has to be a metric that demonstrates the consumption of a resource and its replenishment value in terms of the number and volume of other resources that will be used in order to replenish the declining stock of whatever is measured. This new accounting has yet to be formulated, but the only way to formulate it is by bringing in the "carbon practitioners" from local places and from organizations' operations and management departments to inventorize resources and understand how they are interlinked with each other within the value chains and within the supply chain. These competencies need to be developed to demonstrate in-depth understanding of the carbon and ways of taming it and integrating it into all operations of organizations that position themselves green or low-carbon.

The social change induced by the climate discourses is underway. In fact, it is at a junction: the global and local societies have a chance to become more pluralistic and better organised, which can be achieved with the help of green footprint capabilities and competences at organizational and at individual level. Alternatively, the social change that is brought about by the climate and green economy discourses can be usurped and turned into a new "calculative device"[ii] (as in Michel Callon, see EndNote 2) that may turn out to serve only the already plentiful, disregarding the fragility of resources and Earth eco-systems' balance, and over-consuming and over-indulging themselves in a business-as-usual scenarios that do not benefit the majority of the population, and directly threaten the chances of the future populations by mis-naming and mis-placing the real problems, and hiding the truth of a growing concern of a carbon unmeasured, untamed and voiceless. The qualculation (qualitative calculations) is what is needed to set a discipline of greening practice rather than existing calculative devices of accounting that ignores nature and society, and then a shift from control towards self-discipline is possible.

Thus, the thesis builds on the critical theoretical views that the narrowly managerial and technical vision of "greening" is a phenomena with three inherent problems: 1) instead of enforcing norms and policies based on de-carbonization discourses the construction of a

problematic of managing "nature" and "human induced climate and weather events" prevails, i.e., its roots and its "meaning making" is firmly set in the neo-liberal capitalist logic; 2) the spontaneously emerging and the deliberately selected "values" and "norms" of dealing with the constructed problem of "the need and want of environmental management" become institutionalised; and 3) the organizational and corporate "sense-making" and standardisation methods prevail over the "ideal type" practices and the emerging job routines and workers' identifications, yet they the sense-making must become more quality orientated versus quantity centred.

There is an organized hegemony (as in Lippert 2012) under a prevailing ideology that has a system of disciplining, through incentives and sanctions (neo-institutional framework), thus infiltrating and proliferating an "identity" that is better aligned with the corporate interests, yet does not necessarily make the workers into competent mitigators and adaptors to eminent climate change risks and catastrophes.

From the perspective of political economy, i.e., post-structuralist critical theory perspectives I would like to draw the similarities between the systemic disciplining of the capitalist mode of production and consumption. This disciplining is dictated by the capital over the available repertoire of practices, norms, and values for labour and land (i.e., natural resources). It is exercised partly through the accounting methods and the economic valuation rules. It is a system that is constructed as something natural and aggregate, that self-regulates and has a metaphysical quality of unbiased equilibration towards an unknown, yet one that is perceived perfect balance in the economic, social, and environmental spheres. This equilibrium is much too often treated as sacred and mystical.

Instead, it perhaps makes much more sense to follow the schools that propose to look at less abstract and more pragmatic, practical, everyday things such as those linked to linguistic turn, material turn, and practice-based studies. Thus, at the macro-level I propose to look at the social change linked to the climate change as at a transition process between constantly interchanging and moving discourses that become selected by key actors in the transition process through re-naming/re-designing into material pass-par-tout (Gherardi 1998) and recognizable norms for the subsequent institionalisation or embedding (integration) of these discourses as organizational values, norms, and routines (i.e., jobs) by local production and services organizations. The actors at the local level are not yet geared towards mitigating and

adapting to the changing local material conditions in response to the changing global conceptual apparatus. While the local business enterprises and non-commercial organizations still become inserted into the global discursive business practices within the greening economy context to have a better chance of becoming more valuable to the largest partners within the desired supply chains with the multinational corporations, the small and local supply chain partners learn to speak the language, dictated and disciplined by the prevailing and selected discourses of the big and global. That is the prevailing logic of the global capitalist economy, and the green economy is by no means an exclusion from the rules.

However, what the hegemonic discourses do to those who are not involved in the communicative fields where such discourses are promoted, practiced, perceived advantageous, remains a question of relevance to the directions the social change may take and is perhaps a subject for future research.

2.2. Theorising on Green Regulation's diffusion to the Organizations' Calculation (i.e., Compliance) of Routines and Discipline

At the macro-level, the greening economy and society transformations are driven by the climate risks and planetary survival discourses. At the inter-governmental, national, multinational corporate and scientific environmentalist community level the so-called macro-level questions (i.e., intergenerational and inter-species justice, Finite Planet, Ecological Footprint of Nations, etc,) are pertinent, and become the formative elements of the greening economy and society.

For example, in China national regulations and policies are guided by international discourses on finite Planet and population growth, resource efficiency especially in energy saving, air and water pollution monitoring, as well as enterprise environmental performance monitoring compliance, which have been integrated into some of the most advanced companies' strategies and action plans that guide their environmental and sustainability performance and reporting. And yet at the local level, which for the purposes of this research are used as a shortkey for an organizational (but not excluding municipal, local council, business, etc.) those are the discourses of green entrepreneurship as social entrepreneurship, where the routines and practices are geared towards a) harmonious, b) circular; and c) lean or frugal.

In China, the concept of circular economy (CE) was proposed in 1998, and was subsequently accepted by the Chinese government as an official development strategy in 2002 (Yuan et al, 2006, cited in Zhu et al., 2011). The Chinese CE promotion law was subsequently enacted and became effective on January 1, 2009, making China a pioneer in the implementation of CE-orientated legislation (Zhu et al, 2011). The concept of CE promotes continuous economic development without generation of significant environmental and resource challenges. It advocates that economic systems can and should operate according to the materials and energy cycling principles that sustain natural systems. CE also emphasizes the recycling of essential materials and energy as well as the capacity for one entity's wastes to be used as a resource by another entity through self-organization capacities. Generally, CE can be categorized at three levels: 1) eco-regions at the macro-level; 2) eco-industrial parks (Geng et al, 2009) at the meso-level, and 3) eco-enterprises at the micro-level (Zhu et al, 2011).

Some of the ideas from the green circular economy can be useful for Kyrgyzstan as well, especially in the context of organic farming and organic food production. The circular green economy according to researcher from the UK's Institute of Science in Society, Dr Mae-Wan Ho has a lot to offer in agricultural sector for emissions reduction. Dr Ho wrote,

"*in the context of the truly green economy, the obvious link and synergy between food and energy can be maximised in the local production and consumption of both. Small integrated and biodiverse farms with off-grid renewable energies operating in accordance with nature's circular economy may be the perfect solution to the food and financial crisis while mitigating and adapting to climate change. Many proponents of renewable energies have long recognized that decentralised distributed generation is the key, given the modular nature of solar PV and wind power generation (see Green Energies - 100% Renewable by 2050, ISIS/TWN Report). This has proven so successful in just a few years that it is now forcing a major transformation of the electricity supply grid from a centralized inflexible structure into a dynamic, flexible and organic network with local power generation and energy storage at different levels (see Renewable Ousting Fossil Energy, SiS 60). These farms located close to urban centres and businesses could provide food and energy generated for the inhabitants, while municipal food and biological wastes can be recycled directly onto the farms (Surviving Global Warming, Localized Food & Energy Systems in Natures Circular Economy, SiS 60).*" (Ho 2014).

While in Kyrgyzstan the national regulation and policies are still rather blind to business and organizational transformations in and for the green economy, yet the efforts from bottom-up is represented mostly by agricultural sector, farmers who see a growing value in organic food production and green principles in organizing production, distribution, and trading with exporting priorities. Also there are private enterprises where charismatic leadership has been able to stir the organization in the direction of what makes the most business sense in the changing economy that is no longer about scarcity but about responsibility to avoid scarcity in the present and future climates.

Besides, the environmental economists have looked into issues such as "under which circumstances it makes sense from a business standpoint for firms to invest in environmental performance" (Reinhardt 1999). The answer proposed by Reinhardt (1999) is "when firms take advantage of positive externalities of existing oligopoly competition and asymmetric information "(Ibid.). "A number of firms, especially in Europe and North American, assert that they are pursuing beyond compliance environmental policies, providing environmental public goods to a greater degree than that required by law" (ibid.) and at least three explanations have been advanced. First, environmental policies increase the expected value of the firm (reduced costs, or revenue increases, see Reinhardt 1999, p 11). Secondly, the "beyond compliance" policies exist because they are appropriate for the management of business risk. Thirdly, such policies serve some objective besides shareholder values creation and risk management (i.e., reputation, personal and social codes of ethics, etc.).

Also the growing interdependence of actors in the green economy blurs the inter-organizational boundaries, as the emissions of one company inevitably include the emissions of other organizations in the value chain. In turn their accounting and actual treatment and reporting becomes a question of organization's values, norms, discipline, designs, as well as reflexia of the key actors involved in the production of these emissions (suppliers and the company's operations teams and workers) and their inclusion or exclusion within the company system as particular items, elements, parameters, or agent (human and non-human). The so-called "calculative devices" or the calculative agency[iii] (see EndNote 3) within the greening and low-carbonisation processes inside and outside of the companies, that ultimately define the company's boundaries, the inter-relations with its partners and suppliers, and accounting of the emissions within one or another's footprint become the defining and cornerstone "bacteria" (as in Latour 1993) to make one type of organization or another, i.e.,

green or greenwashing, environmentally conscious and reflexive or enacting environments through attempts of managing environment. The ultimate equilibrium is under question, how will the scaling up of the environmental awareness and footprint conceptualisation be achieved and not only in the organizational normatively and work place behaviour, but also through a green and low-carbon lifestyle contagion among the workers and members of the organizations.

Corporations and their supply partners are conceptualised here as the product, service, and/or process life-cycle networks in which resource consuming agents interact, and through which the realisation and organizing of consumption of finite Planet is made visible, quantifiable, and material. However, the linking of materiality of resource consumption and shifting of the consumption towards more sustainable through discourse of Finite Planet, Footprint, and Emissions Management is done through discursive co-construction of a green and low-carbon company's reality, corporate green and low-carbon image and brand construction as well as through companies win-win scenarios of reducing consumption of energy and water, reducing costs, adopting long-term resource caring strategies, and involving wider labour force.

2.3. Theorising on green competencies as organizational learning of qualculation discipline

It is proposed to theorise of the workers' and managers' "green" and "decarbonisation" competencies as part of organizational learning[iv] (see EndNote 4) that represent the development of "green" and "low-carbon" competencies of the entire organization through a) the awarenesses of the "ideal type green practices" advertised by the multinational partner of the supply chain network, b) the workers' perceptions, and the level of identification of company's employees with their greening organization and other "green" practitioner companies within and outside of the company's practice community (the practice community is drawn along the line of entities practicing "emissions accounting" within the life-cycle of company's products, services, and processes). The "competence" is studied as the characteristic of "getting a job done and being able to transfer own know-how of getting job done to another member of the organization", that is the "competence" is linked to the capabilities of workers to conduct certain types of routines that are deemed valuable and normalised across the organization and its network of suppliers. Or rather, as defined by Silvia Gherardi, "competence as the ability to solve problems, to interpret problems, to devise

alternatives, to choose among them, to exercise discretion and therefore responsibility" (Gherardi 1998:376-77).

In China, the private companies tend to be committed to their clients first of all, and secondly, to their employees (as it is seen from the RPQ interviews in Chapter 5). Thus, it is posited that a company committed to contributing to a sustainable and socially responsible growth ought to take the perspectives of its workers into account as they are recognized as the company's "stakeholders" in the "greening" company's claims and discursive values. Whether the "greening" is also reflected in "green" norms and actually enforcement of the norms in the company among the workers and managers, as well as within the community of "green and decarbonisation" practice is analysed through availability of the "Footprint or SEA accounting" as a capability among the workers' and managers' (if these concepts have been identified and committed to). In this dissertation the focus is on a specific capability development, the Green Footprint Competence, at the workers' level and at the organizational level.

The differences in the workers' commitment to building a "green footprint competence" for stabilising their own "personal footprint" are considered, which often is not the same kind of competence that the company promotes through measuring, reporting, and verification (MRV) of its carbon footprint. It can be seen in some of the writings by Lippert (Lippert 2012) that the "agents of ecological modernisation" have mis-guided interpretations while "constructing the emissions" of their companies. The existing accounting practices remain non-conducive for detecting the over-consumption and pollution, and thus reporting may remain opaque and far from contributing to a sustainable environmental conduct.

The question still remains whether the workers of the "green" companies share their "green" identities with their companies, and if their perceptions, awareness, material and non-material gains received from their greening organizations are actually translated into wellbeing from the workers' perspective. At least this is what one of the multilateral "clubs" of green policy setting the ILO envisions in terms of "green jobs".

The construction of an identity and the interwoven construction of the workers' competences is the very process that demonstrates where exactly the negotiation nods (gains and losses, benefits and disadvantages) are in the workers' perceptions of organizational greening and the boundaries between organization's green identity and the workers' green identity.

Thus, the perspective of company's "green footprint identity" and the worker's "green footprint competence" in this dissertation are presented as the phenomena emerging often not in synchronised nor in mutually conducive way within the so-called "learning organization". The concept of "learning organization"[v] (see EndNote 5) was presented by Silvia Gherardi (Gherardi 1998).

The green company's "competence" that contributes to its Green Identity and stabilises the "green economy's agent of ecological modernisation" discursive practice are studied through artefacts of online statements, visuals, texts produced by various managers of studied organizations. Its capacity to be distributed across the existing organizational networks of life-cycle of products, services and processes, and through the self-promoting "green" practice communities will be demonstrated through discursive "green" practices recognition by the workers of the Chinese environmental solutions provider and the natural products cake maker in Kyrgyzstan and the organic movement of Kyrgyzstan.

It is argued here that what emerges as a result of organizational learning is a "green" stakeholder with many role identities, i.e., that of a householder, a consumer, a resident of a municipality, a citizen of a nation, and thus representing the reflexivity of a generation facing climate change, and learning to deal with unthinkable uncertainties (Urry 2010), while remaining competent and performing within the established and emerging practical sequences in their everyday life and work. Such "learning organization" could be the prototype form of an emerging greening organization (the organizational form that pays less attention to problems of efficiency, order, and stability, and more attention to the reliability of its performance, to adaptive change, and to flexibility (Gherardi 1998). More on this and the origin of the term qualculation is in the next chapter's subsection "Calculative collective devices vs. SEA: from control to discipline, from calculations to qualculations" (page 44).

2.4. Methods

Analytically and empirically, the following concepts have been useful in this research:

- Social and environmental accounting (SEA), ISO 14001, LCA, Carbon Footprint
- Competences, identity, workers' participation
- Discourses and discursive practices as constructivist framing
- Norm institutionalization, norm entrepreneurship as constructivist framing

- Post-structuralist perspectives on discipline and knowledge, constructivist approaches
- Science and technology studies, practice theory, translations, heterogeneous engineering
- Organizational identification, stakeholders.

The following methods and approaches were used to collect and analyse data for this research:

1) survey questionnaire of the workers and members of the studied organizations;
2) semi-structured interviews of the management and key expert personnel in the studied organizations;
3) case studies of each organization framed through discourse analysis, statements from the semi-structured interviews, comparative analysis, and stabilization/institutionalization analysis method developed in the framework of this dissertation research (see Chapter 4 of this dissertation).
4) hypotheses testing and constructivist research questions framing.

2.4.1. Units of Analysis

The emerging green and low-carbon **discursive practices, competencies and identity** of organizations and their members through institutionalised **green values and norms** are the primary units of analysis. Their institutionalisation in companies through organizational learning and identification of "how **to do green and low-carbon**" (values, norms, discursive practices) and "how **to be an actor in a green or low-carbon economy**" (competencies and identity) represent some aspects of a stabilisation of a product and service life-cycle logic in a network of organizations that are members of the same value chain. Undergoing "greening" and "de-carbonisation" aimed at a globally proclaimed objective of "mitigating and adapting for climate change" such organizations become part of the various life-cycle streams that eventually may bring them to sustainability.

2.4.2. Case studies

The case study method used in this research seeks to demonstrate the development of green competencies in a business organization in China, in a private enterprises in Kyrgyzstan and in a federation of organic farmers in Kyrgyzstan. The cases also represent snapshots of how

the two countries are entering the global green economy, i.e. China in a very rapid inorganic way through construction engineering, energy efficiency technology and industrial production, while Kyrgyzstan - through organic, small family and agicultural producers and nature awareness and slow growth. I will discuss how global green policy discourses in both countries become localised through local organizations, and will demonstrate if and how the green competencies develop in those organizations. The case study format allows for integration of the findings from semi-structured interviews conducted with managers and decision-makers of the organizations.

2.4.3. The Survey

The survey of the workforce of the Environmental Solutions Provider in China and the same survey in the food businesses and in a federation of organic farmers in Kyrgyzstan investigates the workers' and the members' attitudes, perceptions, the level of awareness and reflexivity about green and low-carbon transformations in their organizations and within the larger practice community. The survey demonstrates how the green discourses' institutionalisation in organizations takes root in specific values, norms, discursive practices, disciplining and competences. The workers' and members' Green Footprint Competence will be tested against their perceptions and attitudes towards saving resources at home, at work and elsewhere, their awareness of their organizational effort to save resources, capacity-wise and action-wise, their evaluation of their organization's greenness as something of value, and their own identification with their organization if at all linked to the organization's greenness.

Empirically, I started with a multinational company and its Chinese counterpart that position themselves as "best green brand" , "carbon disclosure leader" and as environmental solutions providing businesses. The two companies are linked into a network, where their products, services, and processes are co-dependent from the perspective of the associated products, services, and processes' life-cycle analysis (LCA), which have implications to these companies' Green House Gas emissions accounting and reporting systems.

Next was the survey of the natural product company making cakes and pastry in Kyrgyzstan, its case is presented from the perspective of organizational culture that promotes greening and green jobs, without realising it.

Further the non-commercial and non-governmental organization in Kyrgyzstan is studied as an example of a unified movement of farmers, agricultural products and services providers, food production quality certificators, social entrepreneurs, conscious business people, and active citizens who unified to create a Federation of organic agriculture movement of Kyrgyzstan, the BKG. Indeed, the case is also about the experience of growing organically as an organization with green and low-carbon qualities and a focus on organic and natural products' supporters of Kyrgyzstan and those who would like to support domestic business enterprises, the "made in Kyrgyzstan or KG" ethos in opposition to the cheap and low-quality food imports that flooded the Kyrgyz market during the last 20 years from China, Iran, Turkey, Arab Emirates.

The common trait in these organizations from such diverse sectors is that the organizational greening and de-carbonisation envisioned by the leaders and managers of these organizations is conceptually rooted in the Ecological Modernisation and Industrial Ecology perspectives. These are discourses bridging the neoliberal rationalist conceptualising of the economy and the natural scientists' techno scientific, yet socially limited view of the environment. However, the global discourses' translation is happening at the level of the studied organizations, as the federation of organic farmers claims to be rooting in a very old local tradition, while the cake-maker claims to be practicing some of the spiritual traditions from across the world, as it will be demonstrated in case studies.

The organizations' members and workers' understanding of low-carbon and de-carbonisation were prompted from the perspective of personal and organizational emissions. Their awareness and perceptions of values and norms related to Footprint accounting were studied. The level of involvement and interest (or lack thereof) were indicators to what extent the workers may get involved in Footprint accounting practice, in the co-construction of the Green Footprint Competence in their organizations. To what extent the actual workers' perceptions and motivations for resource saving and sharing, reduction of emissions on company's behalf as well as within the workers' everyday life and work routines are linked to their organizations' de-carbonization.

The following hypotheses were proposed to test through the survey:

H1. The legitimisation of global climate discourses through local organizations engenders the awareness and acceptance of the footprint accounting methods among the members of the greening organizations.

H2. The likelihood of more green and low-carbon jobs created within organizations increases as they brand themselves as green and/or low-carbon or environmentally and socially responsible.

H3. The likelihood of workers and members of green and low-carbon organizations behaving "green" and "low-carbon" is higher, the more they exhibit environmental knowledge (i.e., the knowledge of Footprint accounting and its constructed nature, green discourses and discursive practices, norms, and values) such as energy saving, finding and eliminating wasteful and harmful activity in the organization's production, low-carbon lifestyle changes pursued.

H4. The likelihood of workers being more committed and supportive of their company's greening is higher, the more they are involved in the co-constructing and co-design of decarbonisation job routines.

Due to low quantity of survey responses no statistical analysis were undertaken, nevertheless, that was not the focus of this dissertation research. Instead, the hypothese were interpreted qualitatively from the answers to the survey, semi-structured interviews, and case studies constructions. The interpretations of the hypotheses are presented in each of the cases studies, in the survey analysis, as well as in the concluding discussion.

Chapter 3. Literature Review on Academic Nuances of Seeing Discourses of Climate Change Concerns' Frameworks, Perceived Solutions of Green Economy and Science&Technology Fixes

3.1. Ecological Economics and SEA as a counterweight to Ecological Modernization and Environmental Management

3.1.1. Ecological Economics

The Ecological Economists argue that the Earth's tipping point, de-growth, and transforming of the economic and accounting valuation systems are required in order to integrate the thermodynamic and material aspects of current production and consumption systems within the required emissions and pollution reduction targets deemed effective for climate change mitigation. In the longer-term perspective, the new valuation systems would require a different sequencing and design of products, services, and processes in companies and the infrastructures that they depend on (physical and ideational). To enable such systemic design and sequencing the work routines and competencies are changing to reflect the challenges of the climate change mitigation and adaptation.

Corporate transformations towards more sustainability and greening do not only result from economic calculation, nor is it a mere compliance with the environmental regulation. It is often the result of ongoing technological and social innovations, in organizational production and business models, structural design, and growing know-how about finite nature of resources, the physical economy and its scale, as well as the growing awareness of distributive intergenerational justice (Daly, 2006).

While "most environmental economics focuses on normative (i.e., prescriptive) public policy matters, such as the selection of efficient regulatory tools and the appropriate methods for the valuation of environmental benefits" (Reinhardt, 1999) like most neo-classical economists do, it is the ecological economists who are re-inventing the discipline of economics with more social and human traits. Herman Daly explains that "Ecological economics is mainly about three issues: allocation of resources, distribution of income, and scale of economy relative to the ecosystem. The third issue of "scale", by which is meant the physical size of the economy relative to the containing ecosystem, is not recognized in standard economics, and has therefore become the differentiating focus of ecological economics" (Daly and Farley, 2004,

cited in Daly 2006). Daly suggests "Ecological economists advocate the same treatment for scale as for distribution. The metric is the value of justice in the case of distribution; it is ecological sustainability, including intergenerational and interspecies justice, in the case of scale. These are collective values, not individual marginal utilities per dollar equated among different exchangeable goods bought and sold in order to maximize satisfaction of individual preferences. If we persist in reducing all value to the level of aggregate subjective personal taste, then we will not be able to capture or bring to bear on the market the real weight of objective social values, such as distributive justice and ecological sustainability" (Daly 2006).

3.1.2. Ecological modernization

The problematisation of emissions curbing at the global and national levels has been wrapped into a discourse of ecological modernization theory, which can be summed up in the cures that technological innovation can bring to the unhealthy resource practices, while keeping "all else equal" (economic ceteris paribus). The interventions only make sense in the new institutionalist vein of thinking, with incentives and sanctions for emissions controls, which would discipline the society in a new kind of way, making everyone more frugal or lean, more efficient, and climate-smart in a way more resource aware and "resource savvy and resource saving". Yet, "how" and "with what means" questions remain open as the prevailing discourses and policies overlook the everyday practice approach, and embededdness of certain institutions, mythologies, legacies of old infrastructures and physical environments, as well as the human and non-human actant distribution (as in actor-network theorising), the directed dynamics, and the power and knowledge within these interconnected networks that effect the sense- making, the translation, and the deep structures.

There are tendencies among the climate policy-makers to rely mostly on discourses and models of thinking that pre-date the realisation of a possibility of global weather induced catastrophes, the reflexivity about the dimensions of climate related risks, and the consequent social change the dimensions of which had been unimaginable before the climate problematisation. Thus, the old ways of accounting on growth and waste, labour and land, capital and money, externalities and prices are no longer helpful in conceiving of responses to the challenges foreseen and in some places already experienced (i.e., oils spills, hurricanes, tsunami, and heat waves are among some of the ecological and weather catastrophes of global scale).

There are voices of dissent, and among them is one of Ingmar Lippert (2011b) who amplifies the issues that the critical social science takes on with economistic and managerial modes of thinking. For example, according to Lippert, ecological modernization represents a managerial view of dealing with environment and the changing climate. Lippert considers the sustainable development discourse as being hegemonic and its central notion is that of management. Lippert says, "Environments are to be managed sustainably, i.e., reconciling ecological, social and, above all, economic interests. Since the 1990s the notion of environmental management thrives. By now it is partially contained in the notion of sustainability management or, in the case of businesses, Corporate Social Responsibility (CSR) (Lippert 2011). Thus Lippert's primary interest in studying carbon management in corporations is from the perspective of understanding the limits of environmental management (Lippert 2011b):

"While the proponents of EMT (Ecological Modernisation Theory), like Janicke (2008), Huber (2008) and Mol (2010), seem to continue claiming that environmental reform is happening and Western societies are on the way to green themselves (they just need to optimise their instruments and draw on the proposals of EMT), others (including myself) tend to see limits to the idea that environments can actually be managed sustainably (as a strong reading of sustainability). Thus, we set out to describe in empirical detail the *limits to managing the environment* (original italics) as a practical and/or discursive engagement between humans and natures: While in the 1970s environmentalists critically questioned the cause of environmental crises and located them in industrial and/or capitalist modes of production, the Earth Summit at Rio in 1992 marked how the environment discourse has been merged with modernist discourses promising ecologically modernised industrial and capitalist development globally".

3.1.3. Environmental Management in Greening Multinationals

Although, traditionally, "emissions" are dealt with as spillovers, externalities that are not accounted for in economic models the system's blindness to the physical and material limits of human labour, fertile land, and self-renewable nature is criticized by the ecological economists and by the critical social scientists on the account of too little material basis of economic models and the omissions of the laws of thermodynamics (i.e., Ilya Prigogine's theories that are basis of the Ecological Footprint perspectives). One source of the blindness of existing economic models has been identified in the prevailing methods of accounting that

are derived from capitalist mode of valuations in production and consumption. In this research, one of the objects of study is a company that is part of a network of production and consumption. Increasingly such company's perspective is shifting towards understanding its value chains and supply chains, and as the standards are changing towards including emissions associated with the products, services, and processes' life-cycles from "cradle to grave" (LCA methods from ISO 14001) the perspective at the organization boundaries and what becomes included and excluded in its accounting systems are changing.

Among the solutions at the intergovernmental level (IPCC) the climate talks of the past decade call to global carbon emissions reduction (i.e., the demand is that developing countries should cut 15-30 per cent under their Business-As-Usual (BAU) scenarios by 2020). The local dilemma (at country, city, organizational, household, and individual levels) of engaging as stakeholders in reducing emissions amidst acute shortage of climate mitigation and adaptation competences remains mired in the ideological competition among the existing institutions of constructing realities through discourses, and setting and enforcing standards through institutionalisation and embedding of norms and values that contradict in the most fundamental level the prioritisation of profit-maximisation, individual utility prioritisation, and individual rationality as the primary mode of decision-making and acting in the human business, social, and governmental collectives.

The prevailing economistic view is visible in The Stern Review (2006) that frames the immediate action necessary to mitigate and adapt to the looming climatic changes within the next 5-10 years, as the laying of a track for the pathway for urgent sequences of actions today. Despite being by and large, the "state of the arts" economic analysis of the climate change polices, the Stern Review has a tiny room for the social. Yet, what is does it calls to action and inclusion of the participation from the current living generation of people.

The Stern Review is not unsimilar to the claims made earlier at the Earth Social Summits of Rio and Johannesburgh, and the Climate Change UN meetings at the highest governmental level. And even earlier than that Paul Hawken formulated the earliest call to the "men and women in their small businesses and grass-roots organizations to join the global social movement of a generation of people and communities prepared for living in a world full of weather uncertainty, constant risk, and flux of environmental, economic, social transformations" (Hawken). The need for this new generation to acquire a new stabilising

competence to survive in uncertain natural, economic and social climates has been prioritised in unprecedented manner. However, the translation of the high level global discourses into the conceptual language of local people and organizations, communities and societies have not been as clear.

The new kind of reflexivity and awareness is being called upon when it comes to personal consumption behaviour. Also the re-prioritising of interdependence and cooperation in sustainability related decisions has been articulated not only as a wish or preference, but as an immediate demand and pre-requisite for the next steps in imagining and designing the system of production and consumption that is harmless and resilient in the face of the Earth limits and "newly unveiled Gaia" like temperaments and natural catastrophes (James Lovelock's The Revenge of Gaia, and Isabelle Stenger lecture on Cosmopolitan philosophy).

3.1.4. Social and Environmental Accounting: Re-evaluation of the Economic modeling and Accounting practices

The Stern Review of 2006, titled The Economics of Climate Change explains the foundations of a "Low-carbon economy" that focused on the "economics of risk and uncertainty" that characterise the climate change problematization and associated solutions proposed. The biggest concern is that "the economic risks of inaction in the face of climate change are very severe". As it stands (in 2006 reality at least) the Stern Review posits that "The stabilisation of greenhouse gas concentrations in the atmosphere is feasible, at significant but manageable costs. The policy tools exist to create the incentives required to change investment patterns and move the global economy onto a low-carbon path". "The Review estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP and more. In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year."

The key discourse of climate change is that of a global warming and the risks the rising temperatures bring about to the humanity, planet Earth, natural and human geography. The rise in global average temperatures could be of over 2-5 degrees Celsius from 2035 and indefinitely, "it is equivalent to the change in average temperatures from the last ice age to

today[...]. Climate change will have serious impacts on world output, on human life, and on the environment".

Stern reports warns and re-iterates the target understandable to in the business speak "The risks of the worst impacts of climate change can be substantially reduced if greenhouse gas levels in the atmosphere can be stabilised between 450 and 550ppm CO2 equivalent (CO2e). The current level is 430ppm CO2e today, and it is rising at more than 2ppm each year. Stabilisation in this range would require emissions to be at least 25% below current levels by 2050, and perhaps much more. Ultimately, stabilisation – at whatever level – requires that annual emissions be brought down to more than 80% below current levels. Central estimates of the annual costs of achieving stabilisation between 500 and 550ppm CO2e are around 1% global GDP, if we start to take strong action now." This opportunity may slip away if actions not taken during the next 10 years.

The globalised community of stakeholders of climate change mitigations and adaptations requires fair and just accounting which is capable of representing materially the inputs and outputs, exchange and use value, and externalities, i.e., with built in red flags and warning signals for overconsumption and overproduction that near the "tipping point in Earth consumption", allowing for just and supportive distribution/sharing of the Earth among the present actants (member of the socio-technical networks and assemblages) and those projected by the powers and skills of today's science, technology, critical social sciences to be in the future.

The notions of relating to labour, land, and money (in Polanyian terms) as not to commodities but as shared social resources is overdue. With the growing emphasis on stakeholders of an organization, activity, actions there is a chance that the stakeholders of a Footprint accounting may also put claims in the development of its methodology and performance. With the notion of uncertain future due to rapidly depleted resources on a "Finite Planet" (nef, ecological economics) and the growing populations becoming rapidly integrated into the urban and high emission and consumption cultures, the importance of how things are counted, what counts "in" and "out", and what counts as "needs" and "wants" (as in Schumpeter) is a strong premise to claim the participation in accounting transformation discourses, especially with the shift from mere "needs" to "wants".

3.1.5. Accounting system and infrastructure that are blind to climate change imperatives

It has been argued elsewhere that the ongoing re-designing or establishment of the social and environmental accounting are being done within the system that is blind to practices that recruit unsustainable patterns and consumption (as in Shove 2010) and prevents practices that are low-carbon, and a system that is capable of sanctioning the behaviour that is ignorant of low-carbon, and practices that increases emissions, or maintains a status quo that sustains harmful emissions, permits unsustainable footprints, or even worse, does "greenwashing" or obstructs the reporting and monitoring of emissions and footprints.

The proponents of the Social and Environmental Accounting (SEA) such as Bebbington and Gray (Gray 1995) demonstrate awareness of the way accounting has traditionally silenced the "environmental conduct" and prevented the red flags and warning signals from being appropriately invoked.

Gray says, "As well as generating consequences which may be interpreted as largely 'positive', accounting is also implicated in many of the 'negative' aspects of organisational life. For example, environmental damage can be shown to be inevitable given current accounting orthodoxy. There is a false perception both within and outside the profession that accounting norms are somehow fixed, objective, and non-negotiable: that accounting simply describes the situation within organisations".

Gray claims that there is a trend of growing interest in re-statements and re-evaluations of accounting methods in organisations to include the interactions with society and the environment in a more transparent way from the perspective of organizations consuming nature (Gray 1995):

> *"Social and environmental accounting are therefore experiencing a (long overdue) resurgence as academics examine the consequences of current accounting practice and look for new ways of providing accounts of organisational life. Increasingly sustainability is seen as the key issue and both social and environmental accounting are experiencing a new vitality in their attempts to help articulate sustainability at the organisational level".*

Gray recognises that in the past "accounting and environment did not go well together!", and with the advancement of Social and Environmental Accounting something would change. Let us consider, what kind of changes Gray and Bebbington envision.

According to them, "social accounting is broadly concerned with three avenues of enquiry: examination of the social effects of current accounting practice and how they arise; investigation of how some of the adverse effects of current practice might be ameliorated; and study of other possible ways of providing accounts of organisational activity. *Social* in this context, is usually taken to embrace: local and international communities; workforce issues; product safety and consumer welfare matters; plus, increasingly, environmental questions arising from organisational behaviour."

Gray acknowledges the influence of broader discourses and practices related to events (perhaps even such as Bruntland, Rio summits, and Climate Change negotiations) as being the precursors for the change that the accounting professions and accounting thinking is undergoing. Gray says,

> *"It was not until environmental concern became more widely* respectable *that either the academic or practitioner communities in accounting seemed willing to acknowledge that this represented an issue of relevant concern to the profession, (see, for example, Gray, 1990). It was in this climate that the more recent and more widely embraced investigation of* environmental accounting *was born"*.

Most importantly for this thesis, Gray recognises that accounting is a construct, and more so is the "social and environmental accounting that is "a conceptual apparatus". Gray says:

"There is no such a thing as neutral accounting, accounting is situated and environmental accounting is even more so. There is a widespread misconception about the essential nature of accounting - a misconception held, sadly, by many accountants. Despite appearances to the contrary, accounting is not a socially neutral technology whose reports can be accepted as objective. We might like to accept certain of the basic activities in which accounting is involved as largely uncontentious - notably the recording of cash transactions and the associated basic bookkeeping, but even this is not as simple as it might seem."

Thus, it is important to link the realist and the critical theoretical perspectives here, where they agree, that accounting is aggregation and represents an apparatus for "re-arrangements"

of transactions that have taken place or are perceived to take place in the future. Thus, Gray (realist) and Lippert (critical theorist) agree, accounting is an art of aggregation, re-arrangement, and translation.

For example, Gray says, "however, the real art of the accountant lies in the aggregation and rearrangement of these basic transactions. Each aggregation and rearrangement is based on a combination of judgement and extant rules of procedure which are, in turn, socially and politically determined. As a consequence, any reporting of asset *values*, estimates of liabilities, announcements of profits, estimates of costs or assessment of the financial desirability of alternative investment options, whilst they may be *right* in a procedural sense, can never be *right* in any absolute sense. "The judgements and rules on which the procedures are based involve choice and that choice, in turn, leads to economic, social and environmental consequences."

The argument that accounting is the ABC to an established ways of decision-making, the institutionalised, the embedded practice that precedes any business decision making, especially so in investments, pre-disposes accounting to be the very field of power struggle and contestation.

Gray says, "Research in recent years has convincingly demonstrated that accounting is closely implicated in matters as diverse as investment in research and development, plant closure decisions, performance evaluation of employees and management, collective bargaining, control of multinational corporations and the extraction of surplus value from developing countries, and, increasingly, the language and control of *efficiency* in public sector organisations. But perhaps most significantly, accounting is the principal determinant of what constitutes *success* in commercial organisations through the measurement and disclosure of *profit.*

Gray's argumentation goes on to valuation and the way certain aspects of business and managerial thinking are tied to business performance, i.e., profit and growth. Gray's understanding of these valuations compares new institutional thinking of rules of the game being available, and players following or not following them with the critical theorist's invocation of the hidden structures, the "social context" and the power struggles in establishing one set of rules vs. another.

Gray points out to the essentially neo-liberal logic behind the prevailing accounting rules:

> "*As profit has no absolute meaning (other than in very restricted and abstracted economic income theory) its only meaning lies in the mechanisms used to calculate it. As considerable judgement must be exercised in the applications of these mechanisms, profit itself must be a result of judgement. Thus, to employ a somewhat crude footballing analogy, accountants determine the shape and size of the pitch on which the game is to be played, determine the rules of the game, have virtually complete control over the size and sitting of the goalposts and act as referee and scorekeeper. As profit is central to the functioning of the capitalist system it should, therefore come as no surprise to learn that accountants play a crucial role in how that system operates. But it goes further than this. First, it is increasingly recognised that accounting practice reflects its social context".*

The calculative devices re-thinking and making the process of re-thinking and re-statement more democratic is important for the very reason that the modern accounting serves the predatory practices of the capitalist system, instead of creating incentives for a balanced and fair system of engaging labour, land, and money. As Gray has demonstrated, reporting of financial statements by companies reflects the essentially capitalist nature of these organisations. Gray says, "Accounting control systems and budgeting inside organisations can usually be interpreted as reflecting the power distribution and culture within that organisation. Second, and more significantly, there is a growing awareness that accounting, reflexively, also helps to construct the social reality. That is, the very essence of an organisation and its defining boundaries are increasingly synonymous with the accounting system; the way in which organisations are viewed and their success judged is through accounting. Thus society's discourse over what is and what is not *an organisation*, what is and what is not *successful* and what is and what is not *rational*, *efficient*, *desirable* owes much to accounting practice. Third, and finally, accounting is, in essence, the application of traditional neo-classical economics. It carries the baggage of the *dismal science* and puts it into practice. So most, if not all, of the limitations of conventional economics apply with equal force to conventional accounting. Both are only interested in property rights exchanged for money; both are informed by a narrow and limited conception of morality and both are motivated by an exceptionally narrow view of efficiency; both ignore the social and environmental consequences of actions to the extent that they are not priced; and both are immensely powerful in modern society."

Thus, at this turning point, Gray calls to gaining a new understanding of the prevailing discourse of financial and managerial accountants, which must be understood by the social and environmental accountants and for alternative methods to the existing "orthodoxy" to be found and put into practice:

"In simple accounting profit terms, a successful organisation is one which maximises its throughput, turning an increasing volume of inputs into an increasing volume of outputs - as long as the financial margin between inputs and outputs remains *favourable* in accounting terms. Within the *real economy* all those inputs were drawn from the biosphere and all the outputs return there as waste, emissions, and end-of-life products.

"Sustainability has provided a new theoretical challenge within which to re-configure social and environmental accounting. Using Hawken's (1993) identification of eco-efficiency and eco-justice as the components of sustainability, environmental accounting and reporting can attempt to address the eco-efficiency element whilst social accounting and reporting attempt to address the eco-justice issues." This should be the qualculation proposed by Callon (see Endnotes on Collective calculative devices), the collective devices of accounting on quality instead of quantity, accounting on things that matter to the nature and the society, not only to the economy.

3.1.6. Life-Cycle Analysis of a Value Chain of De-carbonizing Organizations

Research demonstrates that organizations advancing the idea of carbon accounting face two twin problems: 1) the methodology development and acceptance among the widest stakeholders of such accounting is not being done locally, most methodologies are adapted from ISOs, thus global discourses may remain global and never localise; and 2) the competence development not only at managerial and financial reporting areas, but also at the level of employees as "stakeholders" or workers' realising their interest, their stake in the ongoing social transition associated with the climate change is not well understood, and thus remains unaddressed and omitted from company's strategising in terms of its growth, product and service provision, and keeping up with the unprecedented rapid growth of the green sector in China, yet patchy and jumpy growth of the green sector in Kyrgyzstan.

The industrial ecology literature demonstrates that "for large and small businesses alike, efficient and responsible resource management is increasingly linked to economic vitality and long-term viability" (Dyllick and Hockerts 2002; Henriques and Richardson 2004; Knox et al. 2005; Bronn and Vidaver-Cohen 2009; York 2009; cited in Ewing et al. 2011). "Consequently, companies must understand both how their business activities affect the environment and how they can reduce those effects without compromising key objectives. To evaluate environmental performance properly, a company must capture its environmental footprint in a comprehensive manner. In a company context, the "environmental footprint" is defined as "a measure of natural resource usage and environmental releases of impacts for which a company is responsible within the life-cycle of its entire operations". For such a footprinting exercise, using a life-cycle assessment (LCA) methodology is a sensible approach, posit Ewing et al. (2011). "Businesses around the world have adopted LCA techniques to understand the overall environmental performance and resource efficiency of products and services, including in-house operations, supply chain operations, and use and disposal phases" (Frankl and Rubik 2000; Huang et al. 2009b, cited in Ewing 2011). The two most widely used methods for LCI (life cycle inventory) development are the process-based LCA databases and the economic input-output (EIO) LCA models. Recent literature promotes the use of hybrid LCA, which combines the above two methodologies, for estimating corporate-sector greenhouse gas (GHG) footprints (Wiedmann and Lenzen 2007; Huang et al. 2009a; Minx et al. 2009; Wiedmann et al. 2009; Busch 2010, cited in Ewing et al. 2011). Extensive literature has also been published on using hybrid LCA for product-level, process-level, and operational-level carbon footprinting (Bilec 2007; Suh et al. 2007 cited in Ewing et al. 2011).

There is an ongoing sustainability transformation in multinational companies and the most successful and competitive ones have been improving their corporate sustainability reporting. Corporations are beginning to apply the concept of sustainability at a practical level in terms of environmental and sustainability accounting and reporting (Van Ahsen et al. 2004; Schaltegger et al. 2006; Tapin et al. 2006; Daub 2007, cited in Wiedmann et al, 2009). One of the possibilities for companies to report on their sustainability performance is triple-bottom-line (TBL) accounting, which requires that companies evaluate and report their performance in all three spheres of sustainability: economic, social, and environmental (Wiedmann et al, 2009). "Companies increasingly go beyond the traditional environmental reporting, based on

a stock-taking of in-house energy and resource consumption, and instead adopt a life cycle perspective of their impacts. Rather than focusing on what goes on within the factory fences, farm gates, or company premises, a life cycle-wide assessment traces impact of the entire production and supply chain of a business. The common theme for such footprint analysis is that the focus has shifted from reporting direct impacts from on-site processes (direct land, fuel, or water use) toward reporting indirect impacts embodied in the supply chain of a company (upstream) or caused by the use and disposal of its products (downstream). The desire to describe these indirect impacts quantitatively is also reflected in an increasing effort to standardize procedures aimed at estimating the "Scope 3" emissions of a company, as defined by the Greenhouse Gas (GHG) Protocol (WRI and WBCSD 2004), and the indirect GHG emissions associated with products (Carbon Trust 2006; SETAC Europe LCA Steering Committee 2008; WRI and WBCSD 2008; cited in Wiedmann et al. 2009) as well as the full ecological footprint or water footprint of an organization, product, process, or service" (Wiedmann et al. 2009).

Yet, there is no one single method for conducting the LCA, which is consistent with the ISO 14000. Guinee and Heijings (2011) offer a more comprehensive Life Cycle Sustainability Analysis (LCSA) tool, based on standard LCA. The framework of LCSA broadens the scope of LCA from mainly addressing only environmental impacts to covering all three dimensions of sustainability (people, planet, prosperity); it also broadens the scope from predominantly product-related questions (product-orientated) to questions that are related to sectors (meso-level) or even involve the entire economy (economy-wide). Guinee (2011) conclude that specifying this LCSA framework into consistent sets of practical methods for addressing life cycle sustainability questions is a major challenge.

Bo Weidema (2011) draws the similarities between cost-benefit analysis of biophysical and social externalities and LCA. "There is no difference between cost-benefit analysis (CBA) and LCA in the way biophysical and social externalities are accounted for at the boundary between the techno sphere and the environment. Nor is there a theoretical difference in the subsequent impact assessment, although CBA tends to require monetization, which remains a seldom applied option in LCA. The social externalities can be modelled in full parallel to the biophysical externalities. This is sometimes referred to as social LCA (Andrews et al. 2009). Examples of social externalities are occupational health issues (work days lost), excess work

(hours worked in excess of 48 hours per week), work place stress, unorganized labour, and injuries (not limited to work-related injuries). Examples of positive social externalities include provision of access to pensions and social security, where these benefits are not provided by the public authorities; efforts to alleviate poverty by providing products specifically intended for the poor; recruitment of workers from long-term unemployment; and support to terminated workers" (Weidema 2011).

With all these advantages of using LCA for footprint accounting, Weidema (2011) posits that LCA will remain incomplete as a decision support tool. The two missing dimensions to make it a strong decision support tool are: a distributional analysis (who is affected?) and a power analysis (who has an interest in the result and the power to take and implement the decisions?). This is the gap that this dissertation's research attempts to explore.

The distributional analysis could be aided by the study of workers' and members participation in the greening of their organizations through integrating the principles of Green Footprint Identity and Green Footprint competencies as this dissertation's research proposes. Through similar lenses the power analysis could also be done. For example, from a perspective of greening, as a pre-requisite to financial reward, that becomes dependent more on the critical mass of workers and organization members' personal green identity and their identification with their companies. Alternatively, in business-as-usual scenarios the power may remain simply with the top management's will and corporate reporting's excellence in enacting environments as opposed to changing the pattern of individual and organizational consumption throughout the life-cycle of products, services and processes. The discussion on the power analysis and distributional aspects of greening are in the theoretical Chapter 3 and in Chapters 5, 6, 7 (the case studies), as well as in the survey analysis and the concluding chapter's discussion.

3.2. Using Practice Theory to Enrich the Analysis of Earth Consumption metrics

3.2.1. Consumption and Practice

Elizabeth Shove one of the leading researchers in environmental and social practice theory[vi] (see EndNote 6) refers to Anthony Giddens positing in 1984 that 'social practices ordered

across space and time' constitute 'the basic domain of study of the social sciences' (1984:2 cited in Shove 2010:283). This is where Shove believes starts the "concerted effort to conceptualize the relative fluidity and fixity of what have come to be ordinary, but ultimately untenable, ways of life. When framed in these terms, understanding changing patterns of mobility, food consumption, heating, cooling or washing requires methods of enquiry that go way beyond the study of green consumerism, or of the relation between environmental belief and action." (ibid).

The theorising on Consumption and Practice are concerned with the ordinary forms of consumption, on how "unsustainable patterns of demand" or the "excess" (Urry 2010) is reproduced in everyday life.

Shove's research on everyday life practices uses the approach of conceptualising and analysing of the processes of recruitment and defection in and from a practice, with research question being "how do practices like those of showering on a daily basis capture us, their carriers? And how is it that people defect from others, like cycling or walking to work?" (ibid:283).

Another problem that Shove deems important is distribution and equity, and the constraints in the pattern and/or bundles of practices, seen through practice approaches.

"Another problem is to figure out how practices circulate and travel, and to understand the related patterns of equity and social difference. This focuses attention on the diffusion and distribution of the material elements on which practices depend, and on the forms of competence, meaning and image that are also involved. For example, how does air-conditioning become normal, not only through existence of mechanical cooling, but also through changes in what people wear, in the temporal ordering of the day and in the cultural significance of the body, heat, and sweat? Also critical, how do social practices intersect to form clusters or bundles connected to each other in time and/or space? Here one might think about questions of convenience, or about how the morning rush is such that there is really no option but to drive children to school, or to build another bathroom."

Silvia Gherardi's view of competencies and a learning organization (see Note 4) are useful for this research framing, it provides an artefact of discursive competencies to be explored and

interpreted, even though through combined methods of interviews, discursive practice analysis, and attitudes and perceptions of a population of workers (workers' survey).

"Social cognition and sociolinguistics of communicative competence, all of which envisage the subject's interpretative ability to obey or not to obey rules, and to know which rules are appropriate to the context and when. Competence is thus depicted by Keats's terms as "negative capability" (Lanzara, 1993 cited in Gherardi 1998:376), as the capacity to live in uncertainty." (Gherardi 1998).

In the bureaucratic system, the ambiguity between possessing competence and being competent gives rise to two cultural models. The legal conception of competence expresses that formal logic which has become the powerful instrument of an ideology of law and a technique of social organization – legal positivism – dominant in European legal culture and which conceives the function of administration as merely executive (Tarello, 1980 cited in Gherardi 1998). [...]. According to this formal logic, competent behaviour rests on two assumptions: (a) that the corpus of rules is clear and does not require particular interpretation (indeed, if such interpretation is necessary, the competent legislative organ is asked to pronounce on the matter; b) that it is coherent, i.e., that it does not contain conflicting provisions which require choices to be made. Under this conception of competence, the requisite cognitive ability is that of accomplishing a logical task, of taking a decision in conditions of certainty, reducing discretion or subjective interpretation to the minimum. In contraposition to it is competence as the ability to solve problems, to interpret problems, to devise alternatives, to choose among them, to exercise discretion and therefore responsibility" (Gherardi 1998:376-77).

Also Gherardi's view is that "The tree of similarity suggests that competence is knowledge of where the boundaries of a person's autonomy lie" (ibid:389).

3.2.2. Qualculative collective devices vs. SEA: from control to discipline, from calculations to qualculations

Gray recognizes that there is a stream of research that is sceptical about the environmental management, and in fact demonstrate the limits of it:

"Emerging line of research which tries to assess the extent to which accounting-driven organisations are incapable of delivering sustainability and to use the conventional accounting

concept of capital maintenance to calculate the extent of a corporation's un-sustainability via estimation of its *sustainable cost* - a notion which echoes similar work in *new economics*. The full impact of what will be demanded of social accounting if it is to fulfil the eco-justice demand of sustainability is still unclear."

The social justice and social equity are at the centre of this uncertainty, and lack of leadership on how accounting of the labour value, land value, and valuation of money can actually be done so that they are not treated as commodities – is this do-able in a society built on mythology and deep structures of capitalist relationships in society? The Great Transformation of Polanyi that attempted to analyse the consequences of the capitalist and industrial revolution in 19th century England is applicable here as the analysis of this great transformation, the social change the is a pre-cursor and the result of the climate change construction and the problematic of mitigating and adapting for climate change in a rather dialectical fashion. The emerging knowing of the workers and members of organizations about the Footprint and Social and Environmental Accounting will facilitate the emergence of new understanding of the calculative devices, the fresh start for considering quality in the calculations, the ultimate qualculation[vii] (Callon citing Frank Cochoy, see EndNote 7), that make the behavioural and infrastructural change, attitudinal and policy transformation for climate mitigation and adaptation more acceptable and less drastic, making the change into a necessary good, and not the necessary evil.

Also on this side of the spectrum is John Urry's discussion on the emergent contradictions that stem from shifts within capitalism in the rich North over the course of the XX century, involving the move from a low-carbon to high-carbon economy and society, "from societies of discipline to societies of control, and more recently from specialized and differentiated zones of consumption to mobile, de-differentiated consumptions of excess. Societies become centres of conspicuous, wasteful consumption." (Urry 2010).

Interlinking these observations of wasteful consumption as a result of a shift from societies of discipline to societies of control the concepts of qualculation with the development of the green competences at work in the greening organizations provides the ultimate framework for the much needed green disciplining that is conducive to the de-carbonization as opposed to green control, that instead of being conducive can only be contradictory and often abusive to all involved (as demonstrated in 2010).

There are useful insights in the Science and Technology Studies (STS) and Actor-Network theory (ANT) specifically on the reforming of the existing counting practices in businesses consuming nature that are blind to environmental and social impacts of nature consumption. Lohmann (2009) demonstrates, the environmental accounting is framed by the neoliberal economist discourses, to institutionalise norms and values, as well as practices that serve the logic of the forces that constructed the market in which Carbon and Carbon Trading are the "only game in town" (Lohmann 2009). Lohmann invokes Karl Polanyi's understanding of the "self-regulated market that is disembedded from its social grounding" (Polanyi, 2002 [1994], p 144, cited in Lohmann 2009, p501). Also referring to Michel Callon's definition of framing Lohmann says "the metaphor pictures economies as 'embedded in economics', their every aspect – property, merchandise, actors, contract, product quality – not only described, defined and measured but constituted, nurtured, 'performed' and transformed by a multitude of practices of calculation and governmentality originating both in academia and 'in the wild' among economic agents at large (Callon, 2005, p.9, cited in Lohmann 2009, p 501).

Lohmann (2009, p.501) provides a detailed explanation of how the "Carbon machine" came to be, and he doubts the foundations of carbon's framing, "The Kyoto Protocol's carbon monitoring system, which categorises emissions sources according to physical location on national territories, helps ensure that nation-states are treated as the agents of global warming despite the fact that transnational entities such as multinational corporations, international financial institutions or social classes are, on some views, equally plausible candidates."

Thus, the questions of which values and valuations systems are being prioritised in a given "Calculative Device", in this case in the carbon accounting and by extension in all other Footprint accounting is one of high importance in this research, as it is directly related to the sourcing of discourses and their institutionalisation in companies, as well as in their essentialising and acceptance as a code or norm by key economic and social actors.

As the technologies for the measurement, management, and reporting of the emissions are streaming to China from the EU and North America the organizations of the local production systems in China struggle with integrating these approaches and tools into their processes and practices. This struggle is response of organizations to larger processes taking place also as a results of the co-constructed new realities of green and low-carbon as a potentially charting the territory and claiming the resources if one can account on them appropriately and

demonstrate a high degree of awareness and know-how of efficiency of resource use. Among the recently developed tools available for reporting emissions are the following: Environmental Management Systems (EMS), Carbon Footprint, Water Footprint, Ecological Footprint, Life-Cycle Assessment (ISO 14001), Life Cycle Management, Green or Sustainable Supply Chain Management, Green Human Resource Management. To what extent do these practices reflect the needs and the resistances of the local community to commoditisation of their land, labour, and natural capital (i.e., forests, waters, raw materials, etc.)? Probably to the smallest extent, as these tools have been designed and used by the corporations that could afford the research and development to invest in constructing tools to aid the business and economic interests of these corporations, that represent institutionalised discourses on market hegemony of neo-liberal utility maximization and declared faith into market equilibrium.

In realist and functionalist views, i.e., contemporary policy making literature Emissions mostly refer to Green House Gases (GHG) and any activity producing measured volumes of listed GHG gases in the atmosphere, implying the depletion of vital oxygen and the damaging effects of the ozone holes in the atmosphere, which exposes the Earth to space radiation and growing global temperatures. There are also other categories of depletions that are linked to pollution of fresh water, oceans and wild forest as carbon sinks, depletion of agricultural land and biodiversity to name a few. Arguably, these various depletions can be monitored through the use of such tools as Ecological Footprint, Carbon Emissions reporting and Life-Cycle Assessment of products, processes and services. The Footprint concept puts the production and consumption systems in the context of the consumption of the Earth bio capacity, thus flagging the risks of resource depletion and arrival at the tipping point of the Earth bio capacity consumption.

Furthermore, there is a co-dependency in the production of the LCA, and this pre-conditions co-construction in the making of the LCA as the foundation of producing the Footprint size. Thus the use of such a distributive data collection and analysis tool requires specific competencies, thus making Footprint production a potentially democratic and participating project a priori by its design, however also due to its novelty and a variety of expert communities claiming Footprint as their legacy or their field, the contested nature of Footprint concept can turn it into a tool for subverting the beneficial “environmental conduct” (Lippert 2012). As demonstrated by Lippert, the production of the carbon emissions accounting is a

situated and biased project, human error and interpretation is high, which makes the data collected not fit for the analysis of the market, which undermines the capacity of the emissions measurement as a valid metric for investments (Lippert 2012, page 277-78).

Lucy Suchman in her article "Organizing Alignment: A Case of Bridge-building" (2000) quotes John Law's "heterogeneous engineering" that is involved in stabilising an artefact made of human and non-human elements, "Each one of us is an arrangement. That arrangement is more or less fragile. There are ordering processes which keep (or fail to keep) that arrangement on the road. And some of those processes, though precious few, are partially under our control some of the time" (Law, 1994:33 cited in Suchman 2000).

Suchman points out that this "heterogeneous engineering" is a "product of ongoing practice" instead of being relations given by nature, and thus "reconceptualised knowledge and action are located in 'ecologies' of social-material relations" (Fujimura, 1996; Star 1995 cited in Suchman 2000).

Suchman refers to Silvia Gherardi when it comes to organizational learning and competencies reminds:"Within organizational setting there is an intimate relation between forms of discursive and material practice, and action's rational accountability. Learning how to be a competent organizational member involves learning how to translate one's experience, through acknowledged forms of speaking, writing and other productions, as observably intelligible and rational organizational action (Gheradi 1998:376; Gherardi et al, 1998:274 cited in Suchman 2000).

While Suchman's research was concerned with a construction of a physical river bridge in one of the actual physical locations in the North America it is a useful metaphor to how to build bridges between discourses, practices, and the actual practitioners communities. Suchman's description of the processes, practices, story-telling, planning and other "heterogeneous engineering" that takes place in a bridge-building project can be applied to the bridge-building between the various greening and carbon discourses outside of companies under study in this research, and the take-up, integration, and institutionalization of the selected discourses in companies following the more organic practices or establishing rationalised and politically situated norms and policies.

Here, the analogy of building a bridge analysed by Suchman brings in the example of the production of the Environmental Impact Statement for bridge construction, as both "sense-making and persuasion" that are "subtly and inextricably intertwined".

"*The problem that the case reveals, then, is twofold. First, engineers face other constituencies, most notably local residents, for whom the bridge represents a substantially different, domestic rather than professional object, and who are orientated along different lines of stabilization (see also Verran, 1998). As Thormongton points out, while modernist planning assumes a common system of values among affected actors, this is clearly not the case. Traffic flow or neighbourhood quiet, access to distant communities or quality of life in local ones – these and a myriad of other issues reveal differences that cannot be resolved through analysis. Second, persuasive resources are unevenly distributed across actor networks. The challenge is how to deal effectively with historically constituted accumulations of discursive power such that, in the case discussed here, engineering discourses speak more loudly than those of citizens. Can those resources be redistributed so as to make the field of discussion and debate a more 'level' one? And if so, can stabilization still be achieved? The answers to these questions are less a matter of principle than of science and politics, technology and persuasion.*"

"The construct of heterogeneous engineering is meant to underscore the extent to which the work of technology construction is, to a significant degree, also the work of organizing. Particularly in the case of a large modern project like that of bridge-building, an interest in engineering in this sense necessitates building a figurative bridge between the fields of technology and organization studies".

Thus, it could be hypothesised that in order to stabilise an artefact, such as "climate change mitigation and adaptation" or "greening", "low-carbon lifestyle", "footprint moderation", etc. there have to be conditions for allowing a certain degree of organizing, certain elements of learning and competence development in order for relations to be established between discursive and material practices, as well as accounting and accountability of these practices.

Interestingly, the metaphor of 'organizational learning' Silvia Gherardi turns into the learning organization and defines the "learning organization" (see EndNote 5) as follows:" [it] stands as a valid alternative to the image of the rational organization, because it depicts an

organization grappling not only with trial and error but also with the ambiguity of interpretative processes, of experience, of history, of conflict, and of power. (1998:374)"

"Similarly, the emphasis across these perspectives is less on the structures and functions of organizations as represented by organization members or analysts, than on the practical performances through which the work of organizing gets done. Representations of the organization in this view stand not as explanations for organizational action but as products of, and resources for, organization members' own ongoing (re)production and transformation of what it is that the organization comprises or could be.", says Gherardi.

3.2.3. Critical Theory, Culture, and Climate

In critical theorising about climate change and the systemic change, Shove (2010) gives an example of how sociology can contribute to the tackling of the problematic of social change in relation to the climate and environmental change:

"In an influential address to the British Sociological Association in 1991, Howard Newby berated the discipline for its limited interest in problems of global environmental change, a reluctance he attributed to a 'deeply-rooted set of theoretical and conceptual difficulties' associated with the development of social thought in contrast and sometimes in opposition to the natural sciences (Newby, 1997 [1991]:471). In the intervening years social theorists have engaged with the different aspects of the environmental agenda, sometimes vigorously so.[...] I point to further divides, not between natural and social sciences, but between genres of social theory and between these and the conceptual models on which climate change policy depends."

Shove gives examples of government funded reports dealing with climate change. "The gulf between the forms of psychology and economics on which the majority of UK policy-making depends, and the issues that attract attention in social theory, is really wide. One of the questions is whether this is a divide that should be bridged, acknowledged, ignored, or welcomed. The value of social theory depends on its critical distance: from this point of view being 'useful' would inadvertently fuel technocratic policy programmes of exactly the kind that are to be avoided. If behavioural and economic models are incapable of dealing with radical social change, policy-makers might do better if they had ready access to a richer repertoire of social theory and if they were routinely encouraged to think about the conceptual

foundations of what they do and the assumptions they make. By implication, failure to engage represents a lost opportunity in those potentially relevant methods and ideas are left sitting on the shelf. Worse, it may be symptomatic of a more profound malaise, indicating the mutual isolation of social theory and climate change policy at exactly the moment when the social sciences (broadly defined) have most to offer."

The emergence of the discourses on Green and Low-carbon can be ontologically located within the theorising about the human induced climate change, environmental movements, and the scientific attempts to explain the global change in weather. In Climate Change theorising Shove (2010) points out to three frames that the research and theorising is often centred around, namely nature, culture and capitalism, which according to Abbot (2001 cited in Shove 2010, p 279) is a "normal tendency to interpret new challenges in terms of existing intellectual positions."

Shove posits that the social theorising about the climate change dwells mostly around three problems, construction and definition of social problem(s), the relation between nature and culture, and the way capitalism figures and emerges in the climate change contexts of social theorising.

According to Shove these three problematic of why studying climate change within the social sciences demonstrates three important focuses: 1) the situatedness of problem construction and definition; 2) the place of the human in the grand scheme of things, including nature, culture, market, global, climate, etc, all those abstractions that are constructed by human and thinkable by humans, and yet often are beyond the human direct effect on the order of things, control, or engineering; and 3) the new aspects of human, nature, and culture interactions revealed by the climate change and the new meanings these discoveries bring to the way the contemporary society works.

And still, Shove admits that "questions of climate change have inspired forms of conceptual innovation across the social sciences." (Shove 2010, p 278). First of all, on construction of problem. "Problem definition is a selective and inherently loaded process, freighted with issues of cultural and political power. This, then, is a line of works in which knowledge(s) of climate change, policy responses to it, and public representations of it are viewed through well-worn conceptual lenses." (Shove 2010, p 279).

Secondly, on the role of human in the grand scheme of things (Scerszynski, Hulme, Beck, Shackley and Whynne mentioned in Shove 2010).

Thirdly, on the workings of the society (Urry, Hulme, Cooper, Mol in Shove 2010).

These problematics are shaped by the insiders, contends Shove, and "these are the points at which the environmental issues have fused with core debates in social theory", namely the nature-culture nexus and the politics of discourse.

Urry (2010: 8) says that climate change means "total reorganization of social life, nothing more and nothing less". "Societal transformations 'not only involve new technological artefacts, but also new markets, user practices, regulations, infrastructures and cultural meanings (Elzen et al., 2004 cited in Shove 2010, p 281).

- From the perspective of path-dependence, i.e., "present social arrangements are taken to shape the conditions of their own future development".
- From the perspective of a system of provision, i.e.,

Shove celebrates the contribution of the Transition management literature as "intellectual space created [...] for thinking seriously and systematically about how environmentally problematic ways of life are reproduced and how they change" (Shove 2010: 281).

Understanding these "problematic ways" is very important in companies, though the measurements and verifications of their environmental impact, as well as through the understanding of the existing practices' and how they are "problematic" or "could potentially be problematic" from the perspective of emissions and consumption. From the perspective of being able to detect the problems through accounting mechanisms, precludes that the accounting systems are not blind to these kinds of "problematic ways". So the question in the companies is how to make the accounting systems to account on these. Secondly, from the perspective of prevailing practices and norms, it is important how the norm and practice emergence happens in the companies, especially from the perspective of re-production and change of problematic practices and norms". For example, the practices to do with air travel in companies, or commuting to work, the use of electricity and paper, as well as energy (i.e., rationing the use of air conditioners and heating, saving modes and sensor equipment for the detection of over-use, etc.).

There is the available accounting of use and consumption of certain categories of products, while it is the embodied use (i.e., use of certain elements unaccounted in the final products, i.e., chemicals or proteins in certain products, etc.) that ought to be broken down into the life-cycle of the elements it is made of in order to trace the product's, the service's, and/or the processes' cycle from cradle to grave, as the LCA experts call it.

For Shove, "the theoretical challenge of conceptualizing social change is inextricably woven into the project of moving towards lower-carbon ways of life". Shove talks about the "co-evolutionary accounts of change" and she claims that these theories allow for the possibility of policy action, while interventions are happening within and not outside of the processes that these policy actions are trying to shape. I believe that this points back at the importance of understanding the deep structures, i.e., the discourses that shape norms and practice, the visible and material representations of the processes and interventions shaping certain adaptations.

3.3. Linguistic, material turns and Constructivism

3.3.1. Discourse analysis, the Construction of an Organization

The article by Philips et al (2012) Organizational Discourse: Domain, Debates and Directions provided a general frame for how organizational discourse analysis can be accomplished for this research. The article provides a useful overview of the available theoretical and empirical research on organizational discourse. Philips et al propose a framework for investigating the emergence of institutions through discourse analysis. This model has been useful in framing the current research due to the following reasons: 1) the model sets several conditions under which the various elements of the model (features of actions, features of texts (including images, videos, reports, etc.), and features of discourse producing certain kinds of institutions) are most likely to occur (Philips et al, 2012 p. 646).

Thus, the concept of discourse from a technical point of view has three main dimensions: "pieces of talk or text, the collection of texts that gives them meaning, and the social context in which they occur" (Fairclough, 1992 cited in ibid). Discourse analysis to be done in the following way, we will analyse "piece of talk or text as they affect or are affected by the social context in which they appear, and by the texts and ideas they draw on and influence in

turn". Most importantly the researcher does not take the social world as it is. "Instead, it tries to explore the ways in which the socially produced ideas and objects that populate the world come to be, or are enacted, through discourse." (Fairclough, 1992 cited in ibid).

This research is conducted with the awareness that the focus is on organization and its social reality that is co-constructed by its various members, participants, and audiences. As "Most of their studies look at texts and talking rather than looking through discourse to see the specific ways the world is produced. The central "linguistic turn" issues of how different worlds emerge, the power relations in this emergence, and how the mechanisms of protection, got lost (Deetz, 2003, p.423 cited in ibid, p 7).

The broader acceptance of social construction created a fertile ground for growing interest in analysis of organizational discourse (Berger & Luckmann, 1967; Gergen, 1999 cited in ibid: p 3) "as a legitimate epistemological perspective in the study of organizations and management (Morgan & Smircich, 1980 cited in ibid: p4). "The study of organizational discourse is about understanding the processes of social construction that underlie the organizational reality studied by researchers using more conventional methodologies (Philips & Hardy, 2002 cited in Philips et al. 2012)."

Philips et al say, "the focus on the process of social construction is the most important contribution of discourse analysis. Where other qualitative methodologies work to understand or interpret social reality, discourse analysis, by focusing on inter-related texts and their role in constituting concepts, endeavours to uncover the ways in which it was produced. It examines how language, broadly defined, constructs social phenomena rather than working to reveal its meaningfulness. The unique contribution of discourse analysis is that it views discursive activity as constitutive of the social world and focuses on understanding the process through which the social world is produced and through which it changed" (ibid, p 10).

3.3.2. Discourses and Institutions

Methodologically, "organizational discourse analysis can be used as a method to analyze the social construction of the institutions that characterise a particular empirical case" (ibid), i.e., a) to understand how the institutional logic that characterised a field at a moment in time came to be, b) identify the main actors involved in its construction, and understand what

effects it had on field members, i.e., to ask questions "how was the logic of field X constituted discursively".

Green et al (2009) point out that institutional theory has been useful and frequent in organizational discourse analysis as institutions "are more than persistent material practices and structures; they are also accompanied by systems of signs and symbols that rationalize and legitimize those practices" (Green et al., 2009, p.11 cited in ibid).

Also organizational discourse can be used theoretically "to explicate institutional processes that are fundamentally processes of social construction such as theorization, translation, and institutionalization/de-institutionalization, i.e., a) using a discursive perspective to develop a model of theorization (Strang & Meyer, 1993 cited in ibid) as a discursive process through which particular institutional arrangements are made sensible, meaningful, and legitimate; b) reframing translation as a discursive process through which institutions as social constructions are adapted as they are moved to a new institutional context. (Sahlin & Wedlin, 2008 cited in ibid).

While Phillips et al. (2004) argue that "institutional research has tended to focus on the effects rather than the process of institutionalization, which largely remains a 'black box' (Phillips et al. 2004, p. 635 cited in Phillips et al. 2012).

"While much of the literature in institutional theory examines the effects of institutions on organizations, or the connections between different levels of institutions (i.e., society, field, or organization), discourse analysis adds an explanation and method for understanding the process through which institutions come into being, change, and disappear. **The contribution of discourse analysis is to open up the "black box" of institutional processes in a way that other methods of empirical investigation cannot."** (ibid).

The study of Organizational change as discourses by Heracleus and Barret (2001) provides a useful framework for this dissertation's research specifically as a way of analysing the corporate sustainability reports and the reports published on CDP and GRI by Siemens, for example. The communicative actions (specific expressions, use of terminology, and level of assertiveness) can be analysed as the materialised representations of the deep structures of the prevailing discourses in the multinational corporations, across time (during 5 years of sustainability reporting).

Livesey's (2002) study of the Global Warming Wars: Rhetorical and Discourse Analytic Approach to ExxonMobil's Corporate Public Discourse has been useful for the development of this dissertation's approach for analysing the media engagement (mostly through website, press releases, online interviews, product showcasing videos) of the organizations under study.

Also, Philips, Lawrence, and Hardy's study (2004) on Discourses and Institutions provides a framework for exploring the pathways of institutionalisation of the discourses in the studied organizations through the analysis of a variety of texts in company's documentation (PR statements, reports, media products, product descriptions, marketing brochures and materials) and the concurrent appearance of the same texts in the company's standards, policies, and documents organising and ordering the company's "sense-making" and self-identification.

Ezzamel and Willmot (2008) study of the discourses used in strategy is a useful account for analysing organizations as they are described in their corporate documents, and as linked to the wider discourses prevailing at the macro and mega-levels.

Iedema's study (2007) that links materiality to the organizational discourse provides an extremely important framework for analysing the embedding of the mega- and macro-discourses at the company level and exemplified by material representations, and the significance of the selected material representation of these discourses may also hold important interpretations to the norms and discursive practices' "selectivity", both intentional and unintentional.

3.3.4. Discipline and Poststructuralist approaches

Post-structuralist notion on the power of discourse to shape reality (both perceptions of reality and the concrete reality that is perceived) is a useful one in this thesis. It recognises that at any given moment human beings experience only limited aspects of the world and some of this experience is based on falsehoods embedded in some of the learned discourses (falsehoods in the sense of not existing separately from the theoretical constructs). These falsehoods may not be satisfying the coherence of defined objects within that discourse, as subject to investigation on the basis of the internal rules of coherence and fact of the discourse. Foucault's Discipline and Punishment is an important epistemes on Knowledge and the Power to Discipline and to be Disciplined, while the concepts of "technologies of the self" and "archaeology of

knowledge" also provide a hint to the structures that underlie human behaviour and "selection" of decisions and actions, linking the "deep structures", norms and values to the articulated and visible enactments in the social change that happens at personal level, within the available world vision and understanding, within the existing layers of personal mythology, understanding of the self, and imposed discourses of the disciplining institutions (as in Foucault's Discipline and Punishment) in which organised human society conducts its ordering and socialising.

The concepts of discourses' falsehoods and their disciplining are useful when studying the phenomenon of Personal Footprint in disciplining, contributing to co-construction and expansion of the green accounting and the "conceptual apparatus" of "greening actor and stakeholder" outside of organised milieu of a personal habitus or organizational habitus (habitus as in Bourdieu). The Footprint accounting can be brought to the practical reason level of footprint stakeholders in all their disguises, i.e., workers, householders, members of associations and lobby groups, right and left, climate sceptics and climate activists, rich and poor, anyone has to understand what is being consumed, how much, and what is the cost to the rest of the actants (as in the Actor Network theoretical and methodological approaches) within the big assemblage or artefact under the rubric of "Climate Change Mitigation and Adaptation" and "Earth's tipping point".

The green norms and practices become institutionalised in view of using footprint accounting at personal reflexive level (i.e., Personal Green Footprint Identity at worker's level), which can enhance the ability to abstract out key elements of the green accounting making the technical and scientific information more accessible to the "lay persons' knowledge', as in Bourdieu's non-academic and non-expert communities become privy to the prioritisations of "green" consumption and the establishment of new norms and practices that are conducive to better adaptation to changing weather and physical conditions of the planet, or the changing social and political constructs of organizations and its members.

3.3.5. Organizational Green Footprint Competence through practicing the management of a Construct of a Green Supply Chain or Network

The stakeholders of a greening organization are many: it could be the entire Earth ecosystem (i.e., 'interspecies justice' in Daly 2006), the world population, and the future generations

('intergenerational justice' in Daly 2006). Yet, for the purposes of this research, let's define the stakeholders of a greening corporation as those parties that receive direct benefit from the economic, environmental, and social activities of a corporation for example. These include the owners, shareholders, managers, employees, local communities of corporate operations base, upstream and downstream supply chains, local and national governments, policy watchdogs (i.e., for good practice examples). These various tiers of stakeholders have varying degree of involvement in the greening processes of the corporation, which poses questions that may yield important insights into where organization draws its boundaries and where it merges with its suppliers and partners into one or multiple networks, identities, communication or discursive constructs – the ultimate assemblages of a greening economy.

It has been demonstrated that a Sustainable Supply Chain Management (also known as Green Supply Chain Management, or Environmental Supply Chain Management) strategy which is clearly defined and well-coordinated at management level increases the employees' readiness to build up know-how on SSCM and to share their knowledge within the supply chain (Kumar and van Dissel, 1996; Bessant et al., 2003 mentioned in Wittstruck and Teutenberg, 2011). In networks marked by strong commitment to SSCM, learning effects regarding SSCM are noticeably higher.

If company's internal and external (inter-organizational) processes are based on closed ecological cycles, it is conjecturable that both the individual companies and the network as a whole will be able to achieve extensive resource savings, for example, through reduced material and energy consumption and a lower amount of production waste. Thus, the resource efficiency (resource consumption per produced product) is increased. By decreasing used materials, costs are decreased and profitability increase. Reduced resource consumption has an impact on environmental and financial performance (Rogers et al, 2002 mentioned in Wittstruck and Teutenberg, 2011). Thus, it is believed that networks modelled on closed ecological cycles are more successful in reducing their resource consumption.

Obtained certification and published sustainability reports are signals that demonstrate a company's social and environmental responsibility and enable likeminded companies to identify as a potential partner (Hirakubo and Kublin, 1998; Dejonckheere et al, 2004, cited in Wittstruck and Teutenberg, 2011). Companies that support the idea of sustainable

development and signal this to their partners and stakeholders are more likely to agree on a common sustainable supply chain strategy with supply chain partners.

A literature review by Gold, Seuring, and Beske (2010a) reveals how competition shifts from inter-firm to an inter-supply-chain level, and how "collaborative paradigm" is regarded as a crucial source of competitive advantage in strategic collaboration. Thus, the Sustainable Supply Chain Management or Green Supply Chain Management (GSCM) is believed to be the catalyst of generating valuable inter-organizational resources and thus maintain firms' competitiveness through collaboration on environmental and social issues. The key characteristics of the inter-firm resources generated by the GSCM are their social complexity, causal ambiguity, and historical inimitability (Gold et al, 2010a).

Gold et al. (2010a) conclude that supply management capabilities are only explicitly mentioned in little more than half of the literature sample that was studied in this research. This indicates that many papers solely focus on external pressures by governments, stakeholders and customers as triggers for firms to implement sustainable supply chain management rather than considering the firms' internal resources and capabilities as well, which are prerequisites for improvements at the "triple bottom line" denominating the need and the responsibility for the simultaneous pursuit of economic, environmental, and social corporate targets (Elkington, 1997, and Ketola, 2006, cited in Gold et al. 2010a).

Unique organizational capabilities emerge when firms proactively incorporate social and environmental issues into their corporate behaviour (Sharma and Vredenburg 1998, cited in Gold et al. 2010a). Even more so, these capabilities represent possible sources of competitive advantage due to their imperfect imitability by competitors (Treece et al. 1997 cited in Gold et al, 2010a); they are socially complex, causally ambiguous as well as deeply embedded in the organization. The practice of joint environmental planning and cooperative problem-solving of environmental challenges are positively correlated with manufacturing and environmental performance (Vachon and Klassen 2008, cited in Gold et al. 2010a). This becomes a unique inter-firm resource. Competencies and resources of building and maintaining effective relationships with suppliers and customers (Rungtusanatham et al., 2003 cited in Gold et al. 2009) held by single firms or rather by whole supply chains, turn out to be preconditions of successful environmental and social collaboration in supply chains. The practice of RPQ participating in the energy-efficiency industry meeting for more than 18 years (sourced form

the semi-structured interview with the top manager of RPQ), bi-annually gathering the best minds and practitioners of the energy sector with focuses on off-grid, saving, de-centralization of energy, is one example of such practice that builds competences in the community of practice.

It is believed that competition shifted from a firm to a supply chain level (Hult et al., 2007 cited in Gold et al, 2010a) supply and distribution management capabilities generally became corporate core competencies. Effective GSCM suggests close, long-term and culturally grown partnerships between companies, mutually dependent on one another for much of their business (Spekman et al, 1998, cited in Gold et al. 2010a). Investing specifically in co-specialised resources generates relation-specific assets, which Duschek (2004, cited in Gold et al, 2010a) regards as one determinant of possible inter-organizational competitive advantage. The likelihood of firms heightening their dependence on supply chain partners in this way grows when relationships are designed to be long-term and when opportunistic behaviour within a supply chain can be largely excluded by effective supply chain governance. On the other hand, trust may be considered a valuable inter-organizational resource itself (Spekman et al., 1998, cited in Gold et al. 2010a), facilitating commitment and a common vision of all supply chain actors. It represents the lubricant for all inter-firm knowledge transfer and learning processes in core areas, such as product development or design, thus preparing the ground for inter-firm collaboration (Gulati 1999, cited in Gold et al, 2010a).

In China recently the environmental supply chain cooperation (ESCC) – which stresses customer and supplier cooperative efforts for eco-efficiency – has rapidly emerged as a strategy among Chinese manufacturers for improving their environmental and economic performance (Zhu et al., 2005 cited in Zhu 2011). There is evidence that cooperation with suppliers and customers is instrumental for enterprises to improve their environmental performance (Darnall et al, 2008; Gonzalez et al. 2008, cited in Zhu et al, 2011) and that such cooperation can also improve economic performance in management of supply chains (Montaban 2007, cited in Zhu et al, 2011). The implementation of the circular economy and ESCC in China has not been widespread yet, one of the reasons cited for the lack of knowledge of circular economy's best practices in China, with particular regard to the need for integrating ESCC practice (Zhu et al, 2011) is the lack of a link between personal and corporate behaviour.

Ma Jun and his colleagues, at the Institute of Public and Environmental Affairs in Beijing demonstrated five case studies on practical lessons of China-based suppliers in achieving Environmental Performance (Ma Jun et al, 2010). Four main lessons were drawn from these case studies, including 1) management processes are adopted by suppliers more effectively than technical measures; 2) low cost solutions lead to effective results; 3) companies tend to improve their performance after environmental violation; 4) the multistakholders and independent third parties can be effective drivers of supplier environmental performance. Wal-Mart was mentioned as one of the lead enterprises that enforces green supply standards with its 10 000 Chinese suppliers. In order to be a supplier of Wal-Mart Chinese companies are required to provide certification of their compliance with China's environmental law and regulations. Wal-Mart also conducts audits on a factory's performance against specific environmental criteria, such as air emissions, water discharge, management of toxic substances, and hazardous waste disposal (Ma Jun et al, 2010). In addition, such corporate initiatives as CDP provides information about supply chains. The Carbon Disclosure Project's Supply Chain 2011 Report has indicated that 534 institutional investors, controlling USD 64 trillion in assets request carbon emissions' disclosure from listed companies in whom they invest. Over 80 global purchasing organizations, from the public and private sectors request carbon emissions disclosure from their suppliers.

In 2011 there were 55 companies that are members of the Carbon Disclosure Project (i.e., reporting their emissions) asking their suppliers to disclose their emissions (and 1000 suppliers have responded with information about their emissions in 2011). Almost one half of the CDP Supply Chain member companies (47% of 55 companies) cited "employee motivation" among their objectives for corporate climate change strategy. Thus, when it comes to employee motivations, the HRM and especially Green HRM research has ever growing insight. From here it makes sense to further research the employee motivations of being green and developing green competences.

3.3.6. Green job routines and Green competencies development through a construct of a Green HRM

Globally, and especially within the MNCs when it comes to attracting high quality labour force, the UK survey data reports, the high-achieving graduates judge the environmental performance and reputation of a company as a criterion for decision-making when applying for jobs (Chartered Institute of Personnel and Development, 2007 cited in Renwick et al,

2012). A wider survey by the British Carbon Trust shows over 75% of 1018 employees considering working for a firm see it as important that such firms have an active policy to reduce carbon emissions (Felgate 2006a cited in Renwick et al, 2012). Comparative interview evidence from the UK and Japan (from 88 interviews among 53 companies) also indicates that it is "easier to hire high-quality employees if a firm had a better environmental reputation" (Bansal and Roth, 2000 cited in Renwick, 2012).

Training is widely seen in the literature as a key Green HRM (GHRM) intervention, not least in order to heighten staff awareness of the environmental impact of their organizational activities (Bansal and Roth, 2000), to equip staff with core skills, such as how to collect relevant waste data (May and Flannery, 1995), and to raise the level of "eco-literacy" and environmental expertise in the firm (Roy and Therin 2008). Well-trained and environmentally aware frontline employees are ideally placed to identify and reduce waste, as they are closest to it.

A key to the effectiveness of training is developing an environmental knowledge base. Rothenberg (2003 cited in Renwick et al, 2012) reports that most environmental projects combine more than one category of knowledge. A self-report study of managers in China (Fryxell and Lo 2003, cited in Renwick et al, 2012) reveals that they have a "strong disposition" towards taking environmental action, and that environmental knowledge and values are predictors of personal environmental behaviours. As controlling environmental impact is now seen to be a responsibility for all employees, taking their tacit knowledge into account in EM is important in identifying sources of pollution, managing emergency situations, and developing preventative solutions (Boiral 2002 cited in Renwick et al, 2012).

Indeed, the issue of treatment of labour as resource gets criticisms, especially the accounts of strategic HRM that assume that human resources are there to be consumed and exploited rather than developed and maintained (Ehnert 2009), and a wider GHRM practice would help place sustainability at the heart of people management. Benefits for the organizations, there is some evidence that better environmental performance is also associated with improved financial performance outcomes – the so-called "green pays" argument (Ambec and Lanoie 2008; Crotty and Rodgers 2011; cited in Renwich et al, 2012). Benefits to employees: the GHRM practices analysed here are likely to improve employee well-being in the workplace,

not least through improving the working environment and satisfying the needs of an increasingly environmentally aware workforce.

Moreover, literature demonstrates that using performance management (PM) in environmental management presents many challenges, not least here being how to measure environmental performance standards across different organizational departments/units, and gaining useable data on the environmental performance of these units and staff. Some firms have addressed this issue by installing corporate-wide environmental performance standards, and Green information systems/audits to gain useful data on environmental performance (Marcus and Fremeth 2009, cited in Renwick et al, 2012).

This kind of green performance appraisals (PA) covers topics such as environmental incidents, use of environmental responsibilities and the communication of environmental concerns and policy. Issues involved in environmental PA concern the need for managers to be held accountable for EM performance in addition to wider performance objectives. One concern is that the PA system with EM objectives appear to be limited largely to plant and division managers and executives only, rather than being more broadly for other employees (Milliman and Clair 1996, cited in Renwick et al, 2012).

When it comes to pay and reward, the literature is mostly on the relationships between compensation of CEOs and the firm's environmental performance, while pay and EM linkages for other staff are rarely reported in the literature. There are some examples of competence-based reward schemes for frontline staff acquiring specific designated environmental competencies (such as knowledge of environmental legislation), as they are seen to help organizations stop serious environmental accidents or illegal emissions occurring (Ramus 2002 cited in Renwick et al, 2012).

Some 40% of UK employers are reported in a CIPD reward survey (Cotton 2008 cited in Renwick et al, 2012) as reviewing their reward and employment conditions policies and practices to see whether they support their environmental objectives.

It is noted in the literature that organizational practice on linking EM and rewards for those below senior management largely focuses on giving employees non-monetary recognition rewards for EM (Govindarajulu and Daily 2004 cited in Renwick et al, 2012). Attributes and modalities of changing labour relations in leaders of footprint reporting need to be identified.

A study of how leaders' cognition shapes their firm's responses to deteriorating environmental circumstances in China finds that executives tend to champion new initiatives following personal values and principles" (Branzei et al. 2004, cited in Renwick et al, 2012). The gap existing in literature today is on lower level managers, shop-floor employees, and wider labour force. This dissertation's research attempts to fill this gap, specifically on charismatic leadership of the Chinese RPQ at the middle-level management hierarchy.

3.4. Workers' Participation in company's greening processes through a construct of Green Identity

3.4.1. Organizational identity and identification studies

Bartel's (2006) studies on organizational identification, organizational forms, and identity were useful in developing of the survey method in this thesis. The approach looks at organizations from the perspective of its' members relationship and attitudes, and perceptions towards their organization, its organizing principles and identity, and the affinities, commitments, and self-identifications of employees with their companies and their companies' objectives and priorities. While the organizational discourse on greening settles itself and becomes legitimate within an organization it goes through many stages of acceptance, re-statements, trial-and-errors, as regulative enforcement. Through internal marketing, among other tools, companies announce their priorities in greening to their workforce; address the workers through managers of all levels, through employee initiative awards, and other internal marketing schemes that help identify workers' preferences, motivations, and commitments. The workers' survey conducted within this dissertation's research demonstrates the above relationships.

3.4.2. Green Jobs co-design and Green Competence co-construction (i.e., flexible work arrangements)

There exist radical demands among researchers and practitioners, including Bebbington (2001) that see organizations that are the main causes of environmental problems, ought to be playing "a large part in addressing environmental management issues" (Bebbington 2001,

cited in Renwick et al, 2012), Such organizations can be the drivers in institutionalization of an ecological economics vision, where the limits of biocapacity and associated ecological and social debits and credits become central. The recognition of certain relationships within and outside of organizations as conducive or non-conducive to environmental performance and reporting could be channelled through tasks and competencies as the stabilising elements (as in Gherardi) of the green transformation this time around. Thus, greening of the tasks and competences is emergent and it is directed at routines and motivations that form a something like a pathway for green jobs.

Furthermore, the institutionalization of green collar jobs within organizations as "decent jobs" perhaps could be even more conducive for raising the awareness about greening within and outside of the organization, as well as arguably, in taming the emissions and footprints. The "green job" specifications and policies around it are important for understanding the capacity (education and training levels) and agency (autonomy, decision-making powers, authority, and embededdness) among employees of organizations to implement the necessary tasks, adjustments, practices for achieving more sustainable and green products, services, operations, and investments.

The skills and competencies for integrating artefacts and tools in organizations need to be developed. At the intergovernmental level during 2007 and 2011 a strong link has been built up between the International Labour Organization and the organizations dealing with specifically social aspects of Climate Change, not only economic and environmental. The discourse has moved on to the green jobs creation and promotion. ILO's definition of green jobs is as follows: "Green jobs are defined as decent jobs that reduce consumption of energy and raw materials; limit greenhouse gas emissions; minimize waste and pollution; protect and restore ecosystems." (ILO 2011(a)).

The perspective of the ILO is useful as "the notion of green jobs summarizes the transformation of economies, enterprises, workplaces and labour markets into a sustainable, low-carbon economy providing decent work" (ibid). Promoting green jobs depends on the participation of workers and enterprises also with the help of the government, therefore the approach to green jobs creation and scaling-up has to be the result of such tripartite effort. The ILO Green Jobs Agenda supports a socially fair transition for enterprises, workers and communities, where the impact of changes in labour markets, including vulnerabilities and

inequalities and new business models are addressed through social dialogue. Jobs are green when they help reduce negative environmental impact and ultimately lead to environmentally, economically and socially sustainable enterprises and economies. The number of green jobs and competencies created within the voluntary greening organizations can become one more indicator of a greening transformation in companies, as well as their show-case item for improved investment profile.

When it comes to the "decent job" aspect of green collar jobs it is the improvement of the labour conditions that have to be taken into account. Palpacuer and Parisotto (2003) in their ILO project "Global Production and Local Jobs: Can Global Enterprise Networks be used as levers for local development? emphasized the link between the sustainable improvement of employment conditions at the local level and the ability of global enterprises to remain competitive at both global and local levels. It is when competitiveness of an enterprises is linked up to the wellbeing of the company's workers' that is when the sustainability of an enterprise can be recognized, alongside the environmental accounting that is rooted in the thermodynamics of natural resources and processes, human direct dependence on natural resources and processes, and thus human activity's adaptation to be in a better equilibrium with the "nature".

An interesting study by Denise Rousseau and Severin Hornung provide a scope for quantitative assessment of a company's accommodation of workers' wellbeing, through proactivity in balancing aspects of employee well-being and organizational performance and "multiple ways that employees can use to pursue both personal and organizational goals through modifying conditions of work and employment to better fit individual needs, goals, and preferences can open up opportunities to play a broader and more active role in contributing to overall performance - and vice versa" (Hornung, 2007) Specifically, Hornung looks at the "interplay of three broader forms of proactivity and the individualization of work: a) the use of existing potentials for change-oriented influence provided by work and organizational design (e.g., job control, participatory practices); b) negotiation of personalized conditions with organizational agents, as captured by the construct of idiosyncratic deals (e.g., special development opportunities); and c) self-discretionary or unauthorized modifications, as expressed in the concept of job crafting (e.g., changing task boundaries). Integrative investigations of organizational standard practices, negotiated adaptations, and individually created variations are necessary to provide more comprehensive answers to the questions,

how workers in similar positions can shape their jobs and construe their employment relationships in different ways, and what consequences this entails for individuals and organizations." (Hornung, 2007). This helped in developing the method for connecting several aspects of "job decency" and workers' wellbeing in the survey of the workforce of RPQ, on the subject of the "flexible work arrangement" and "idiosyncratic deals", and the job co-design at the worker level in the company.

Arguably, when workers have the flexibility of organizing their own work time, it can be a predictor of greater wellbeing. And if the workers perceive that their jobs are improving, this could be a predictor, that their general health and safety at work has improved, and this may have an impact on the workers' work-family balance, helping to avoid work-family conflict, or have a broader expression on the workers' wellbeing. Greening organizations, greening production enterprises inevitable must create green jobs, or jobs and competencies that would help them accomplish their greening and de-carbonisation objectives. Thus, the process of how green jobs emerge in companies is one that will be analysed, the question being whether it is through the organizational design, or individual design, or joint co-design of jobs between the organization and the workers while developing personal and organizational green competence. The construction of flexible work arrangements is one process that has been studied intensively recently in organizational behaviour literature. Task i-deals, or idiosyncratic deals in work arrangements have been studied quantitatively by Rousseau, Hornung.

Survey and interview data from 156 plant level employees among 31 lean automobile assembly plants in North America and Japan reveals that HR practices "encourage a higher level of environmental training", and the development of skills required for waste reduction (Rothenberg et al, 2001 cited in Renwick et al. 2012). Yet there are almost no studies in peer-reviewed literature on the "connection between an individual's subjective well-being and his or her environmental impact (Ferrer-i-Carbonelli and Gowdy 2007, cited in Lenzen and Cummins, 2011).

Observed learning processes of managers in medium-sized and large German and Dutch organizations reveals a participatory leadership style being used, with leaders active in involving employees in sustainability processes (Siebenhuner and Arnold 2007, cited in Renwick et al, 2012).

Companies see employee involvement in EM as providing green opportunities. Wider employee participation in EM rather than restricting involvement to managers and specialists is often seen as crucial to successful outcomes (Bunge et al, 1996; Hanna et al, 2000; Remmen and Lorentzen 2000, cited in Renwick et al, 2012). Although market, business and regulatory demands remain as the key drivers of EM, employees themselves are often reported as a source of pressure for organizations to address environmental issues (Berry and Rondinelli 1998 cited in Renwick et al, 2012). Henriques and Sadorsky's (1999 cited in Renwick et al, 2012) study of 400 Canadian firms finds organizations with more proactive environmental commitment profiles being positively associated with employees as a pressure source. A Belgian study of high-level polluters (as measured by environmental taxes paid) also finds a significant relationship between firms identifying themselves as practicing environmental leadership and attaching a high importance to their employee stakeholders (Buysee and Verbke 2003, cited in Renwich et al, 2012). Very similar results were observed in the survey and interview stages at KLSKY in Kyrgyzstan, and in RPQ in China.

Involving employees in EM has been reported as improving the key outcomes of EM systems, including: efficiency resource usage (Florica and Davison 2001, cited in Renwick et al, 2012); reducing waste (May and Flannery 1995, cited in Renwick et al, 2012); and reducing pollution from workplaces (Denton 1999; Kitazawa and Sarkis 2000, cited in Renwick et al 2012).

Employee involvement in EM seems to have its effects through three core processes: First, through tapping employees' tacit knowledge gained through their close links to the production process (Boiral 2002, cited in Renwick 2012); second, through engaging and empowering employees to make suggestions for environmental improvements (Govindarajulu and Daily 2004); and third, through developing a culture in the workplace which supports EM improvements efforts.

As yet, there have been no systematic analyses of the achievements of trade union Green initiatives but there has been a general reluctance by some employers to involve unions in EM, as such employers still seem to consider it an area of management prerogative. Case study evidence from 43 European organizations finds that, despite some good practice, the strategic nature of EM "constrains the development of an essential role for workers and trade unions" (Le Blansch and Lorentzen 1996, cited in Renwick et al, 2012).

Interestingly, while technical innovation remains central, there is a clear understanding that tools are more than that and that the criteria and measures of progress and growth need to be reconsidered (Stiglitz et al. 2009, cited in Stevis 2011). For example, strong environmental modernization calls for a broader political agenda that includes those marginalized and turns unions into proactive leaders (Sweeney 2009 cited in Stevis 2011). "Labour unions bring concerns about solidarity and equity to environmental politics, as the "just transition" strategy highlights (Silverman 2006 cited in Stevis 2011). Alliances, of which there is increasing evidence, are necessary but not sufficient (Kazis and Grossman 1991; Mayer 2008; Miller 1980; Obach 2004; Rose 1999; Steele 2008), labour unions are a long way away from internalizing environmental values in the ways they are organized and operate, and in the kinds of things they negotiate with states and firms. Such internalizing of environmental values will entail a) formation of appropriate and comprehensive union agendas about the environment; and b) raise environmental issues as issues of public and collective bargaining." (Stevis 2011).

3.4.3. Personal vs. Collective vs. Systemic Footprint?

Grunwald (2011) posits that ideas about how to achieve societal resonance and to mobilize social drivers are being debated. Among some of the approaches he mentioned politics (i.e., Rio and UN's development goals), economy ("greening of industry" and more sustainable products offered at the marketplace), and most recently the roles of individuals and their "sustainable consumption" (Jackson 2006; Tukker et al, 2008, cited in Grunwald 2011). "The dominant ethos in the media is one of appealing for changes in awareness and behaviour in everyday life and in consumption patterns. Due to this new emphasis on individual consumption behaviour as the assumed key to eco-innovation, parts of society have entered a mode of continuous self-observation, monitoring their carbon dioxide (CO2) balance in almost all areas of life", says Grunwald (2011). However, Grunwald along with other authors believes that "sustainable consumption and behaviour by individuals will not prompt society's transition to sustainable development; instead, this transition will need political engagement by larger parts of the population". One of the reasons is, because "the aggregated outcome of individual behaviour is influenced by complex causal relationships and loops, so individual green behaviour may not lead to actual positive environmental effects. Intermediary societal (i.e., economic) mechanisms and (perhaps) societal systems logics can modify or even reverse the intended effects of individual behaviour" (example being emissions trading, given by

Dauvergne 2008 cited in Grunwald 2011). Grunwald posits that the role of individuals is to engage themselves in shaping green boundary conditions for individual behaviour. For example, individuals should engage in changing the boundary conditions for air transport – for instance, be a worldwide introduction of taxes on aircraft fuel that takes into account the external environmental effects of air transport (Grunwald 2011). This could probably be achieved, if it is preceded by diligent introduction of the SEA and Footprint accounting practices.

3.4.4. Green Footprint as an Organizational greening framework

Hoffman describes the organizational „greening" framework for addressing the climate change as a 3-stage and 8-step process, and the very first step is in fact the company's emissions profile assessment (sf. (Hoffman, 2010, p 299). Emissions profile assessment is part of the social and environmental accounting, yet the complexity of such assessment requires competent involvement of a variety of workers, departments, units, professionals internal and external to the company.

Among the emissions profile assessments the corporate Carbon Footprint has become the most widely publicised social and environmental accounting (SEA) practice by the multinational corporations. The routinisation of Carbon Footprint in companies has been recognised as a management and strategic priority (Hoffman 2010). There are three important aspects of this routinization in companies. First of all, the **disciplining** of the managers and workers towards a new sets of praxis that promote sustainable long-term and holistic view of the company integrated within a tightly co-dependent supply chain. Secondly, the co-construction and co-design of the **organizational competences** and the **employees' competences in „Green Footprint"** measuring, reporting, and verification (abbreviated as MRV in the international and industry policies, i.e., World Resources Institute / World Business Council on Sustainable Development (WRI/WBCSD). Thirdly, the **workers' participation** in the „greening" de-carbonising companies is undergoing a meaning transformation, as the sense-making of sustainability as a wellbeing by and for workers and members of these greening organizations in their different role identities. The „organizational learning and unlearning" of how to stop being high-carbon and instead how to become green and low-carbon can be perceived and traced to global or macro discourses as well as organizational discourses on climate change.

The international and national regulations on carbon emissions and targets represent the institutionalised discourses on the risks and uncertainties of eminent climate change "to be managed, mitigated and adapted for" (van Zeben 2012, Lippert 2012).

The global discourses on green economy to the national regulations/standards on emissions and climate change can be traced through the institutionalisation of such discourses in the studied organizations. The signals of embeddedness of green discursive norms and practices in the studied organizations are analysed through the discourses in a variety of text materials produced by these organizations for internal and external purposes. Furthermore, the managers' and workers' awareness, perceptions, and motivations in relation to the Social and Environmental Accounting, „Green Footprint Competence" and workers' perceived role and motivation to participate in company's „Green Footprint co-construction".

Chapter 4. The translation of the Climate Change risks into consequences that are understood within the local context

4.1. A method for studying institutionalization of the global climate discourses at organizational level

Becoming a national and global actor in a Green Economy starts with becoming a valuable and active member of a value chain of a greening multinational. A study of a Chinese Environmental Solutions Provider's greening within the supply chain of a German technology corporation provides an insight into a method of tracing the diffusion of "green and sustainable" discourses of global green economy "guidelines-making clubs" to corporate public relations messages and organizational competences and practices. This case study will demonstrate how discourses on climate change adaptations and mitigation (i.e., the carbon emissions measurement, reporting and verification (MRV), product and service life-cycle assessment, and environmental footprint) are involved in the construction of the field and the pathways of institutionalisation of green norms and values (in this instance the green and low-carbon norms and values) in organizations through their translation. This method also bridges two fields of social studies, science and technology studies and the studies of institutions, or rather their emergence and embedding in organizations and the inter-organizational spaces, such as, the supply chain networks.

4.1.1 Science and Technology Studies in Carbon Research

The prevailing green and sustainable discourses today are produced by the global green economy "guidelines-making clubs". In this article a method is proposed that identifies the vehicle for these discourses' acceptance and enactment in organizations, through corporate green identity projection. Thus, the tracing of the diffusion of "green and sustainable" discourses all the way to the formulation of organizational competences and their practical embedding is demonstrated. The discourses on climate change adaptation and mitigation builds on important metrics (i.e., the carbon emissions measurement, reporting and verification), which are involved in the construction of the field of "green economy" and of the pathways of institutionalization of green norms and values (i.e., the green and low-carbon norms and values). The method here takes the construction of green organizations through the

translation of global green discourses. The method also bridges two fields of study: science and technology studies and the studies of institutions.

Science and technology can be implicated in the processes of embedding norms and values in organizations. In this article I make an attempt to outline a method that bridges two fields of social studies, science and technology studies and the studies of institutions, or rather their emergence and embedding in organizations and the inter-organizational spaces, such as the supply chain networks. The big research question for me was whether the science and technology of accounting for the environmental impact of companies in local places and territories (i.e., LCA, environmental footprint, carbon footprint) aids a more sustainable and green consumption and deployment of the earth and human resources; and if not, then could it be a failure of institutionalization of green norms and values rather than a failure of science and technology? In this article however, I will talk about the method that I propose for answering this question.

I propose a method of looking at the mechanisms and processes involved in the emergence and diffusion of "green and sustainable" discourses of enterprise managers and of the corporate public relations messages. I then demonstrate how discourses, specifically on climate change adaptations and mitigation [i.e., the carbon emissions measurement, reporting and verification (MRV), product and service life-cycle assessment, and environmental footprint], are involved in the construction of the field and the pathways of the institutionalization of norms and values (in this instance the green and low-carbon norms and values) in organizations. Caution has to be applied when generalizing the diversity of normative and practical interpretations of climate change adaptation and mitigation values, norms, and practices, as they seem to be leading to a variety of unintended consequences. If we take China as an example of a country where MNCs like Siemens have large supply networks and local partners, the diffusion of green norms and values can be traced in the texts, discursive practices, and public relations messages of Siemens' offices and supply chain partners in China. The actual translation of global and national discourses into the local company's values, norms, practices and employees' competences for environmentally sustainable compliance and conduct has to be understood.

Translation of global discourses. It has been evident from research on the global environmental conventions implementation at the national and local levels that a diversity of

organizational and cultural translations of the global climate change discourses need to be interpreted more from the high scientific and international conventions' language into a locally acceptable and practical language to be relevant and to be acted upon. I would like to suggest that a much better conceptual translation has to take place in order to explain climate change discourses in an ordinary language to individuals, households, and organizations - especially those in the developing countries with large proportions of poor and vulnerable populations. That is, the normalization of climate change adaptation and mitigation strategies need to be better translated to the very people who are indicated as the most vulnerable and at risk in relation to the fast-paced advancement of climate change.

Thus, in the proposed method assemblage I am building on the concept of "translations" from STS and ANT studies. In this scenario, the managers and employees in a local supply partner of an MNC are taken as the "translators" and hubs of transformation of a discourse and/or often only its elements into a norm-like or a value-like symbol. The next thing that is expected to happen is the norm-like or value-like translated symbol to either be taken further on its pathway of being interpreted into practice at the more local level, or to stay a "black box"; un-deciphered and, effectively, remaining a discursive puzzle to be resolved at an unknown time and place. The various elements of the discourses can create any pattern, any assemblages of values, policies and norms. As researchers we can piece together an articulated discourse from "traces of phenomena "out there"" found in the documents, data, and interview notes. These traces of phenomena are important as a research approach here borrowed from Lippert and the early ANT approaches that are about "how scientists attempt to gather, translate and manage traces of phenomena "out there" (Lippert 2013, citing Latour 1987).

Discourses of risk. Climate change discourses are essentially discourses on risks, including environmental (air and water pollution, loss of biodiversity) and population risks (human health and safety, including the drastically reduced consumption levels from mounting natural disasters, food security, drastic reduction of availability of drinking water, etc.). There is a tendency towards the activation of policies aimed at reducing those risks, which is becoming increasingly norm-like at the national and corporate level, as well as accepted and valuable. This normalization is fostered by the disclosure of low-carbon compliance that has been on the rise, especially in the last 5-10 years, also in China. This compliance in turn indicates the company's chances of being accepted into the world club of financial and policy formulating global businesses and governments that oversee and control the guidelines creation for green

economy. The "translation of green/carbon non-compliance" in the corporate risk analysis is increasingly linked to a) risks of loosing financial investments, b) risks of being excluded from highly valued supply chain networks, and c) risks of being excluded from the green economy policy-making clubs.

Demand for green normativity and values within supply chain networks. The strong need for potent translations of climate discourses into the conceptual and ordinary languages of a variety of stakeholders becomes manifested through the demand for and through an acceptance of green normativity and values among members of organizations and supply chain networks (i.e., employees, managers of companies and supply chain members). This is often achieved by engaging in norm entrepreneurship at the company level, as well as in the inter-company space (i.e. at the level of professional associations or supply-chain meetings).

Lippert mentions the major STS point being that "scientists assemble and engineer heterogeneous entities and relations" (Law 1987 cited in Lippert 2013). From that perspective the entities once assembled need stabilization, and this stabilization happens through the figuration process that Lippert proposes to advance as the following Lucy Suchman's definition (Suchman 2012, 55 cited in Lippert 2013):

"Method assemblage of configuration could be understood as a device for articulating the relation between the "insides" of a socio-technical system and its constitutive "outsides", including all of those things that disappear in the system's figuration as an object."

The contribution of this article to the ongoing climate change debate and the institutionalization of climate change adaptation and mitigation values, norms, and discursive practices is in demonstrating how science and technology studies can be coupled with the studies of institutions through discourse analysis to make a fruitful inquiry into the origins and pathways of the institutionalisation of green values, norms, and practices in the two companies that are members of a "green" supply chain. Thus, the "green" and low-carbon discourses in companies have been traced towards the following:

a) the roots of institutionalising green values, norms, and practices through the development of identities, competences and discursive practices that these companies claim they build up in order to be leading and desired companies in their field;

b) the macro-discourses that inspire the organizational discourse on green and low-carbon; and

c) the macro-discourses that the companies actually co-produce with international business associations, conferences, other MNCs, and governments.

Siemens and RPQ in China were studied for this research. The roles that the two companies play in each of these traced stages are dependent on the level of acceptance of the global discourses, the translation skill into the language and local reality of the companies. Finally the scientific, technological, and managerial capacity in the companies to articulate their own values, norms, and practices that would convince the others of the "greenness" of the company is another factor. These elements are necessary in order to be accepted in the "green economy club" that defines, formulates, and decides upon guidelines and acceptable behaviours of actors, their sanctions and motivations in the new green economy. The latter is a heavily regulated economy, with their regulators not being the states, but the inter-state organizations presided over by the business and MNCs.

To elaborate on the method further, this article presents the macro (i.e. global) discourses that are generally legitimised by the MNCs, who are themselves members of the "exclusive" clubs that formulate the discourses. Secondly, a discourse analysis of web messages of two studied companies is conducted. At Siemens, the first of the two companies, the discourses are analyzed through the reading, interpretation, and de-construction of the texts produced by Siemens in their annual sustainability reports, online media, CDP reporting, as well as through private and public interviews and publications on specific topics related to corporate sustainability, green products, policy and practice. At the second company, RPQ, the discourses are analyzed through reading, interpretation, and de-construction of the texts taken from RPQ websites. Finally, the normalization of the climate discourses of high-science level and international conventions' adaptation and mitigation language is discussed in terms of institutionalization of green competences at Siemens and RPQ.

4.1.2. Legitimating "Green" Discourses

Briefly on the discourse method

Methodologically the general frame of Philips et al (2012) of organizational discourses is used here as it was pertinent for conducting analysis for the current research. Philips et al propose a framework for investigating the emergence of institutions through discourse analysis. This

model allows the possibility of setting several conditions under which the various elements of the model (features of actions, features of texts including images, videos, reports, etc., and features of discourse producing certain kinds of institutions) are most likely to occur similarly to how it was demonstrated in the methodological survey of Philips et al (2012, 646).

This article attempts to build a method of understanding the "green" constructs within organizations through the discursive practices of managers and PR strategists of these organizations. In effect, an attempt is made to build what Philips et al call "The much more developed discursive conceptualization of social construction" (Philips et al 2004, 648) as an important way for understanding institutional phenomena, as perhaps it can offer a variation of a "more comprehensive theory that encompasses stability and change in institutions, institutional fields, and institutional effects" (ibid).

The following definition of discourse from Philips et al (2012) is used in this article:

Discourse as a collection of texts: "A discourse is a structured collection of texts (Parker, 1992) along with associated practices of textual production, transmission, and reception. Through the production and dissemination of texts that accrete to form a discourse, organizational elements are brought into being, are modified, or disappear." Thus, texts can be the building blocks of discourse and a material manifestation of it (Philips et al 2012, 2). "Texts are the sites of the emergence of complexes of social meanings, produced in the particular history of the situation or production, that record in partial ways the histories of both the participants in the production of the text and of the institutions that are "invoked" or brought into play, indeed a partial history of the language and the social system." (Kress1995, 122 cited in Philips et al 2012, 10). Texts may take a variety of forms, including written texts, spoken words, pictures, symbols, artefacts, etc. (Grant et al 1998 cited in Philips et al 2012, 10).

Discourse is "language in use", "conversation", "and dialogue".

Discourse used when referring "to inter-related sets of ideas and the ways of expressing them such as the "discourse of democracy", the focus here is not so much on the specifics of the language used, but more on the coherence of the underlying concepts and ideas contained in a particular set of texts and their evolution through time. When used in this way discourse often

refers to written texts rather than talk and to the cumulative meaning of a number of such texts" (Deetz 2003, 423 cited in Philips et al 2012, 8).

Discourse includes "pieces of talk or text as they affect or are affected by the social context in which they appear, and by the texts and ideas they draw on and influence in turn. It does not take the social world as it is and seeks to understand the meaning of this world for participants like, for example, ethnographers. Instead, it explores the ways in which the socially produced ideas and objects that populate the world come to be, or are enacted, through discourse." (Fairclough 1992 cited in Philips et al 2012, 9).

Discourse as deep structures. Diaz-Bone (2007) discussion on discourses is very useful, as she refers to discourse through the different traditions of French structuralism and post-structuralism as follows "in the structuralist era discourse is introduced as the underlying deep structure of the human mind (Levi-Strauss) or the human psyche (Lacan)". Diaz-Bone says "the Foucaultian use of this concept is the first that combines a structuralist view with a praxeological interpretation of discourse into an at least dualistic concept. Foucaultian discourse is conceived of as a super-individual reality; as a kind of practice that belongs to collectives rather than individuals; and as located in social areas or fields. However, as the later work of Foucault and the work of Judith Butler have shown, discourses have an impact on individuals as they are discursively constructed and constituted."

Thus, for the purposes of this article the definition of discourse is taken as an assemblage of values, beliefs, norms that become the ideational background and source for the manifested, enacted, embedded behaviours, practices, competences, and identity projections of individuals, members of organizations, and organizations as the ultimate constituted assemblages. In a way, discourse is the intricate rooting of the visible tree of everyday life: to understand the fragmented pieces of activity, behaviours, routines, practices we need to trace them back to the values and belief systems that nourish and support them, the roots of the tree, the so-called "deep structures" (Foucault 1986).

Macro-discourses serving as frameworks in studied companies

The text and word analysis of several samples of Siemens' and RPQ's websites reveal that their carbon and environmental compliance is often packaged alongside the following motivations that can be derived from the online corporate image discourses: 1) value creation

for stakeholders, specifically the long-term value creation and long-term growth company strategy, 2) substantial market share of the green economy, 3) key player = key author of the new guidelines for the sustainability and green, 4) financial gains (access to the top banks), 5) continuous improvement of technology to enable integrated tech solutions.

The four macro-discourses have been identified in both studied companies, RPQ and Siemens, in the form of norms and policies articulated in these companies' documentation and projections, including official messages and managers' talks. These four discourses help delimit a general framework, or reference sources which guide the studied companies as they organize the sustainability programs, compliance and internal "green" norm settings, especially those on ecological footprint and emissions measurements, reporting, and verification.

The four macro-discourses are as follows:

Macro-discourse 1. Carbon measurements to aid in Balancing Consumption on Planet Earth: Climate change and the nation states' responsibility discourse.

Macro-discourse 2. Business Carbon Compliance: The **Organizational Footprint MRV (conventional way of referring to Measurement, Reporting and Verification)**: CDP and other investor requirements for "green economy" performance (as opposed to sustainable environmental conduct), and the supply chain (GHG3) emissions reporting requirements;

Macro-discourse 3. Consumers' green sensibilities inside and outside of organizations: Organizational discourses aligned with the competing macro-discourses aimed at company sustainability and shareholder (and stakeholder) value creation, (i.e. Siemens on Green Economy and Social and Environmental Accounting and Accountability);

Macro-discourse 4. Chinese national discourses and national regulation: the macro-discourses (international organizations and MNCs) filtering through to the national agendas and institutions.

Out of all four discourses, the Macro-Discourse of Business Carbon Compliance has the strongest presence in Siemens' web messages and they seem to have shaped its sustainability vision. This is evident from the preferred memberships and partnerships that Siemens has

been engaged in. Siemens' key discourse on high-level policy alliances is articulated as follows:

> "Sustainability and responsible action are not possible in isolation – they can only be realized in joint initiatives on the part of politicians, the business world and society" (website).

Siemens tends to get involved in numerous memberships and strike partnerships with national and international organizations that are vocal about policies, norms, and standards for environmental and social sustainability. While being active in a wide array of initiatives and partnerships in the areas of environmental and social engagement, Siemens had historically been building ties to a set of strong organizations and institutions. This way Siemens has been able to have an impact on setting standards, developing rules and instituting norms. This is important in the context of the present article, especially with respect to the extent to which Siemens' corporate vision is effected by the global discourses on greening and de-carbonization; as well as which discourses are actually translated and taken down further to Siemens' partners and suppliers, which become institutionalised, and part of the competences of Siemens' supply networks.

International guidelines provide for conventions and recommendations recognized worldwide. Siemens lists these in its online public relations messages:

"Siemens observes and respects local laws and statutory requirements as the legal foundation of its business activities in all the countries in which it does business. Siemens places great emphasis on recommendations and standards issued by national and international organizations. As a rule, these recommendations and standards are directed toward member states rather than individual companies. Nonetheless, they also serve as guiding principles for global companies like Siemens as well as for the behaviour of their employees. Siemens endorses the stipulations contained in these conventions and recommendations and expects its employees, suppliers and business partners worldwide to comply with them."

From the web messages several high-level political discourses are notable and may have had an impact on Siemens' discursive practices, its identity, and its organization's and workers' competences. However, it is clear that while Siemens is a member of these "clubs", Siemens' management and board have a strong tendency to influence and shape the discourses of these

"clubs". The following are the most notable: the OECD Guidelines for Multinational Enterprises, Global Reporting Initiative Guidelines, Carbon Disclosure Project, The World Business Council, and International Business Leaders Forum (IBLF), and The World Resources Institute discourses, the UN Global Compact discourse and the "Agenda 21" on Sustainable Development.

The values and norms being supported and promoted by all the above organizations are mirrored in Siemens' public relations messages as being the ones that are correct and identified with. These values and the norms can be listed as follows: human rights, basic workers' rights, environmental protection, and the fight against corruption as an integral part of the businesses' own business strategy. In line with an obligation as part of the Global Compact, for example, Siemens expects not only its employees but also its suppliers and business partners worldwide to particularly observe the relevant guidelines.

4.1.3. The Construction of a "Green" Organization and "Green Supply Chain"

Here the comparison of the organizational discourses at RPQ and Siemens are explained from the perspective of a "social construct", where the online discursive practices of the two partners within an "engineering environmental solutions provider supply chain network" are analyzed.

Using the method of Philips and Hardy(Philips & Hardy 2002 cited in Philips et al. 2012) we take the study of organizational discourse as a way to "understanding the processes of social construction that underlie the organizational reality".

We are lucky that the earlier battles on "social construction" had been won, and "the broader acceptance of social construction created a fertile ground for growing interest in analysis of organizational discourse" (Berger & Luckmann 1967 in Gergen 1979). One of the strong attestations of such victory was articulated by Berger & Luckmann for the social construction to be "a legitimate epistemological perspective in the study of organizations and management (Berger & Luckmann 1967 cited in Morgan & Smircich, 1980).

Thus, this article is built around "a new appreciation of the role of social constructs like identity and institution in organizational life" (ibid) as "the recognition of the importance of meaning and the constructed nature of organizational reality" (ibid, 4).

As while "[…] other qualitative methodologies work to understand or interpret social reality, discourse analysis, by focusing on inter-related texts and their role in constituting concepts, endeavours to uncover the ways in which it was produced. It examines how language, broadly defined, constructs social phenomena rather than working to reveal its meaningfulness. The unique contribution of discourse analysis is that it views discursive activity as constitutive of the social world and focuses on understanding the process through which the social world is produced and through which it changed" (ibid, 10).

There is also an increasing recognition of the central importance of identity at work and of "the complex relationship between work and non-work identities, interactions between organizational and individual identities" (Albert, Ashforth& Dutton2000 cited in Phillips et al. 2012).

The analysis of the words and texts of all discursive practices of RPQ and Siemens point to the discursive constructs that are being borrowed and integrated, or desired to be integrated, in the companies - through norm entrepreneurship and translating as own values, norms, and practices. They also reveal "those things that disappear in the system's figuration as an object" (Suchmann, 2000). Once the borrowed language of the "green and sustainable" concepts and institutions is integrated, the company aims at becoming one of the "authors" and "translators" of the highly scientific speak of international and inter-organizational normatively on carbon, the green and sustainable to the "more" local (i.e., those who are not directly working with the MNCs) partners and suppliers. The norm entrepreneurship grows into the norm setting and standardisation, the market for which is to become increasingly saturated and contested in the green economy.

4.2. Green Identities

4.2.1. Projected Green Identity of SIEMENS - Official Web Messages

Analysis of the organizational discourses based on official website messages reveals strong connection to the discourses legitimized by the international scientific and corporate community in the global clubs and "green" and "carbon" guidelines' authorship circles.

Declared identities, competencies, and discursive practices are translated into the green values, norms, and discursive practices that the two companies use in their public relations messages.

The sequence of filtering and the subsequent institutionalization of green and low-carbon discourses at the company level are suggested to be as follows:

- **Values:** Fierce competition to be a player in the green economy brings companies to the forefront of a struggle to project a certain "green" identity, by declaring "green" values that are indicated and promoted in the company's adherence and membership in global and national organizations that require upholding and projecting of certain values through compliance frameworks, memberships that declare specific values and principles;
- **Norms:** Through the key products and services of the company that materialise through employees' behaviour and the norm setting by managers and decision-makers, the new set of motivations and sanctions are developed to illustrate desired competencies that are needed to endorse the green values and foster the green identity;
- **Discursive practices:** As a result of norm entrepreneurship and rhetoric strategies of the managers and decision-makers in the company the instrumental use of green norms becomes more readily acceptable; i.e. ideal type practices are listed in the online communication channels, interviews, and sustainability annual reporting.

Thus, the articulated values, norms and discursive practices (including the actual practice of compliance) can be grouped under two discursive conceptualization processes within Siemens, which results in social constructs of "green identity" and "green competences" (see Table 4.1). This way the macro "green" discourses become captured and stabilized within the company forming their identity and competences, at least in a discursive way.

Table 4.1. Green Discourses Institutionalised for the Greening at Siemens (website texts)

SIEMENS	**Institutions translated from prevailing discourses (the stabilization of discourses)**			
Company Discourses	**Values**	**Norms**	**Discursive Practices**	**Compliance (practice)**
Construction of Green Identity	Viewing environmental protection holistically: from planning our products to manufacturing them to the collection, recycling, and disposal of used product. Valuing Business opportunities, Stakeholder Dialogue, Continuing education in environmental protection, Sustainability as the cornerstone of Siemens' values, Environment Awards	"**Sustainability organization links KPIs, management performance targets and sustainability,** interacts closely with executives in charge of company units to collaborate on **establishing targets, developing programs and initiatives, and defining key performance indicators.** These **KPIs** are exceptionally important – so much so that they figure prominently in our **management performance targets**. "	There exists a Siemens Sustainability Program, and the Siemens Environmental Protection Strategy that includes: 1) Environmentally compatible product development; 2) Environmental management systems conforming to ISO 14001; 3) Siemens monitors energy consumption and the emission of greenhouse gases, VOCs, and ozone-depleting substances; 4) Siemens is working on continuously reducing the environmental impact of water use; 5) With a company-wide reporting platform, Siemens systematically monitors and measures its environmental performance worldwide; 6) Directed waste management makes a key contribution to resource conservation; 7) Information, communication and training promoted through a worldwide network of knowledge management and communication at Siemens; 8) Nature and wildlife conservation are gaining importance at Siemens.	The **Compliance Helpdesk** "tell us" offers Siemens employees or managers as well customers, suppliers and other Siemens business partners the opportunity to submit reports about violations of the Siemens Business Conduct Guidelines 24/7 all over the world – securely and confidentially. Employees and third parties can contact the external **ombudsman** on a confidential and anonymous basis if they have noticed any improper business practices in the company. The **Code of Conduct** for Suppliers for implementing the corporate responsibility in Siemens is also necessary to oblige suppliers to comply with Siemens' principles. Therefore, the Code of Conduct for Siemens Suppliers is a mandatory element of all new and extended contracts and Siemens expects its suppliers to commit towards its standards and principles in their own company as well as to promote and implement it within the entire supply chain.

Construction of Desired Green Competences	"Walk the Talk", Three levels of reporting, that develop green competences: 1) At least once a year the responsible individuals appointed to **perform EHS duties evaluate the level of goal achievement for the past year,** the status of projects, and strategies for the coming year as part of a management review. 2) At the company level, the **director of the central EHS office reports with his management team to the responsible Managing Board member. 3) Quarterly reports supplement** the management information.	Appreciation of a "Specialist function" (i.e. Environmental Protection and Corporate Citizenship), Integrated company-wide **guideline competency for environmental protection, health management, and safety;** Centralized "Environmental Protection, Health Management and Safety" office (abbreviated as "EHS"); **High level official monitors a linked competence in EHS + HR:** The Managing Board member responsible for **Corporate Human Resources is also responsible for EHS."** "Energy is the driving force behind civilization. It is not enough just to have sufficient amounts of energy available. Sustainable City and Improving people's quality of life by using the right technologies is one of our strongest competences.	**Executive compensation** has for quite some time been tied in part to meeting specific targets defined in the Siemens Compliance Program. The **EHS principles define all parties' responsibilities and lay out the requirements for the competency and qualifications of EHS experts.** Those with responsibility appoint the EHS experts and **provide the necessary technical and human resources**. This ensures an excellent management system for environmental protection, health protection, and safety worldwide. **Clear chain of commands**: At the company level, the head of Corporate Human Resources performs the associated responsibilities. She is supported by the corporate EHS office with its technical sections for environmental protection, safety, health management.	To monitor compliance with the EHS principles and implementation of the management systems, we have defined an **audit concept**. It has already been implemented in environmental protection and safety; health management will be added in the future. The audit concept states that an organizational unit is audited by the next-higher EHS office in the corporate hierarchy. At Siemens the managing boards of the regional companies must also ensure that local laws are observed. For this reason the EHS officers of the regional organizations also conduct legal compliance audits in addition to the examinations described above. The company's central EHS office monitors all these audits using systematically selected random samples to ensure consistent quality.

4.2.2. Projected Green Identity of RPQ - Official Web Messages

A supply chain or supply network membership alongside a leading "greening" multinational with high-profile recognition of its environmental performance (i.e., leader of the Carbon Disclosure Index) has a strong influence on the level of acceptance and drive for compliance with certain green values and norms among its supply chain members. This, for example, can be seen from the comparative discourse analysis of a German MNC and its Chinese counterpart. Yet, this level of acceptance and the drive for compliance, as will be demonstrated further, are not equivocal among the two studied companies in terms of norms and "discursive" practices, while being similar in terms of values. Often the supply chain members need the "translation" of the high-tech and high-science concepts and yet in practice they leave the "unpacked" black boxes of concepts on greening and sustainability. This could

be due to the enormous speed of change occurring in these companies' processes and practices, with such high growth rates and number of clients. So companies want to be left alone to get on with their business-as-usual scenarios and behaviours of consuming local resources, including those of the labour force (personal and professional competences, intellectual capacities, creativity, entrepreneurial spirit, "green and sustainable" ethos, ascetic behaviour towards environment, the "lean-management" practices, etc.).

The managers of the Chinese Environmental Solutions Provider RPQ have been translating the discourses on greening from their larger partners within the supply chain network (i.e.Siemens) and from the national discourses (i.e.legislation, statues, compliance programmes) into their company's operationalized greening values, norms, and discursive practices. For instance, the way RPQ presents itself to its clients (via powerpoint slides) in client meetings and follow-ups, is as follows:

"RPQ, pioneer of thermal storage market with more than 45% market share, number-one-company in the variable-air-volume & low-temperature air conditioning market, with 400 employees across the country, mostly R&D driven with rapidly growing sales of annual rate 20%.RPQ has enjoyed a 40% growth rate during 4 years between 2008 and 2011 from 320 Million to 830 Million RMB (renminbi)".

In the following table and exhibits the official texts/images of RPQ that were taken from their website and provided by the company managers through presentations, internal documents, and PR documents are presented. Again, similarly to Siemens, the values, norms, and discursive practices of RPQ can be grouped under two processes of social construction and institutionalization of the macro-green discourses, i.e., forming the RPQ's "green identity" and the "green competences" in a discursive way (see Table 4.2).

Table 4.2. Green Discourses Institutionalised for the Greening of RPQ

RPQ	**Institutions translated from prevailing discourses (the stabilization of discourses)**		
Company Discourses	**Values**	**Norms**	**Discursive Practices**
Construction of Green Identity	"Science & technology serves environment "is not only a slogan but also a **principle lying in our products and meticulous service.** It is all because we are devoting to building a **harmonious relationship between man and environment** that we firmly believe we are to succeed. And so are you. Cooperate with us, and what **you will obtain is far more than economic benefits**." (Source: website of RPQ)	"An overall contractor in the field of air conditioning or heat system applying thermal-storage technology and environment protecting system for power plants, we provide complete service covering designing, delivery, installation, and testing. It is we who have done almost a half of large projects applying cold-storage air conditioning technology in China." (Source: website of RPQ)	"We are pursuing the ideal of "Science serves our environment" to repay the deep love and concern given by our supporters." (Source: website of RPQ)
Construction of Green Competences	"RPQ Environment Engineering is now the **largest Chinese Hi-Tech enterprise** in the field of thermal storage cooling and heating application. In 2011 the company underwent re-structuring. The new structure of the company is in response to the Chinese government's targets for reducing carbon. Decentralizing of the energy is a priority for government, thus pushing the technology. Also, The Government wants to develop rules for Decentralized Energy." (Source: RPQ manager's interview)	In 2011 the company underwent re-structuring. In the new company structure, there are different directions, no overlapping, functions are clearly divided. Better structure than before. MEP is the new focus in the new structure. It is the most profitable, this department's major work is installation outside and support of the sales teams. (Source: RPQ manager's interview).	"We have been awarded the certificate for complying with ISO-9001.More than 90% of our staff graduated with bachelor degree or higher, among which, there are tutor of doctor, post doctor, doctors and else. We have been awarded the National Science & Technology Advancement Awards on cooling equipment designs, the Ministry Science &Technology Advancement Awards and the Shanghai science &technology advancement awards. We successfully developed the conductive plastics coil chiller and Core Ice Ball chiller, which were the first in China, and approved by the Ministry of Electricity. We are in the leadership In the field of Automation System for thermal storage air conditioning system in China, moreover, we are keeping the most advanced know-how in the field of low temperature ventilating system and variable refrigerant volume box." (Source: RPQ manager's interview)

The following discursive practices become evident from RPQ web messages:

a) the discursive practice of referring to the Footprint MRV as a strategic management tool and an operations management tool as it becomes institutionalized through the adoption of ISO 9001, ISO 14001, LCA, Carbon Emissions MRV, the internal sustainability and environmental standards, and or environmental health that MNCs develop and follow;

b) the reported practices that are made to look as if they become normalized in relation to an "organizational footprint" spill over and filter through to the MNCs supply chain (through written requirements to products and services supplied/ screening);

c) Formal and informal communication channels (training, business meetings, industry meeting interactions);

d) The intended and unintended ways of transferring green requirements, sensibilities, and expectations to the supply chain by large actors, such as Siemens.

Furthermore, in the following three exhibits it becomes evident that the Environmental Management discourse is dominant in the company's perception of itself and the solutions it has on offer. There are three characteristics: 1) science and technology has the solutions; 2) science and technology is the solution; 3) and RPQ has sciences and technology that can help the environments.

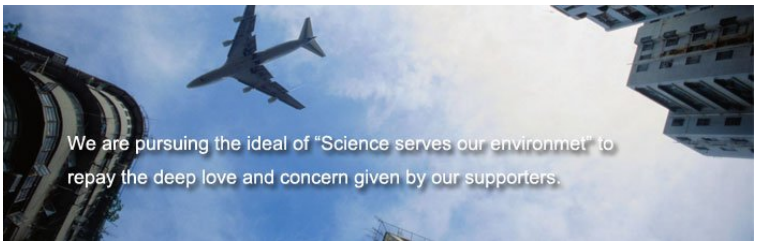
Exhibit 4.1. RPQ Strong Engineering History

The History of RPQ in Milestones that is listed on their website is a typical story of an engineering firm growing steadily since 1956 (Founded the Shanghai Machinery Design-Research Office Of Power Industry), often with government support. In 1980 it was re-organized as the Hangzhou Machine Design-Research Institute Of The Ministry Of Water-Electricity. Since around 1998, after receiving its first commercial contract with the Hangzhou Construction Bank, the company becomes increasingly market orientated and grows its market share in Ice-thermal-storage systems and ice ball, after having been listed into the national Torch planning projects. The Hangzhou branch is reformed into a science and technology company as the State-Power Machinery Design-Research Institute. In 2009 the Hangzhou State-Power and Environment Design-Research Institute is founded, which in 2010 becomes re-established as the RPQ Industrial Group.

Exhibit 4.2. The Website Message from the President of RPQ reads as follows:

"With the rapid development of science & technology, the relationship between man and environment is becoming an important subject in the 21st century. Good environment promotes the evolution of man and propels the society forward to benign cycle. However, science & technology is the most vital element. As an artificial to environmental protection RPQ is science-and-technology-oriented. In the spirit of union, initiative, realism and innovation, the company also keeps on technology. With regard to RPQ, it is the principle that science & technology serves for environment. "Science & technology serves environment" is not only a slogan but also a principle lying in our products and meticulous service. It is all because we are devoting to building a harmonious relationship between man and environment that we firmly believe we are to succeed. And so are you. Cooperate with us, and what you will obtain is far more than economic benefits." Source: RPQ website

Exhibit 4.3. "We are pursuing the ideal of "Science serves our environment" to repay the deep love and concern given by our supporters".



Source: RPQ website

This exhibit shows the connection between the management projection of the company as being the scientific and technological solution provider, as a re-payment of a debt owed to the supporters, meaning the stakeholders and perhaps even the shareholders. Here, the financial sustainability of the company is explicitly linked to the company's ability to find ways to serve the environment.

4.3. Translation of discourses into institutions

4.3.1. Green Discourses translated into Green Institutions for the Greening of the Product Life Cycle

Organizational discourse analysis has been applied frequently in institutional theory because institutions "are more than persistent material practices and structures; they are also accompanied by systems of signs and symbols that rationalize and legitimize those practices" (Green et al 2009 cited in Phillips et al. 2012). Translation is an institutional processes that is fundamentally a process of social construction along with theorization, institutionalization/de-institutionalization. In this research also the translated discourses have been studied on the subject of a) use of a discursive perspective to develop a model of a discursive process through which particular institutional arrangements are made sensible, meaningful, and legitimate; b) reframing translation as a discursive process through which institutions as social constructions are adapted as they are moved to a new institutional context(Sahlin & Wedlin 2008 cited in Phillips et al. 2012).

"While much of the literature in institutional theory examines the effects of institutions on organizations, or the connections between different levels of institutions (i.e., society, field, or organization), discourse analysis adds an explanation and method for understanding the process through which institutions come into being, change, and disappear. The contribution of discourse analysis is to open up the "black box" of institutional processes in a way that other methods of empirical investigation cannot."(ibid)

While Philips et al support the need for a model of the relationship between institutions and actors that highlights the role of texts and discourse in mediating between actions and institutions, the method for tracing the role of texts and discourses in mediating actions and institutions is demonstrated in this article. This builds further support to the argument about building a perspective that recognizes "institutionalization as the discursive constriction of institutions, and for a much greater attention to the texts upon which institutions depend". (ibid)"

4.3.2. Siemens –Green Competences as Green Institutionalisation

There is a strong message in the Siemens China section stating that its Chinese subsidiaries operate according to the global policies, norms, and standards. In 2011, when this study was

conducted, Siemens was the world's third-best green brand and this provides the source of Siemens's confidence in its desired competences and their further development.

This becomes visible when looking at Siemens' corporate competences listed on its website under the title "Our key goals", legitimizing them under the flag of sustainability:

"Our sustainability goals reflect our company's major challenges and topics. We've developed and defined them in a joint analysis with the relevant specialist departments. Here's a selection of our key goals : 1) Help customers reduce their carbon dioxide emissions by 300 million tons. 2) Grow Environmental Portfolio revenue to €40 billion in fiscal 2014. 3) Improve carbon dioxide efficiency by 20 percent in fiscal 2011 was one of our key targets. We have exceeded this goal by 22 percent. 4) Increase water efficiency by 20 percent. With a reduction of 33 percent we've clearly exceeded our goal to increasing the efficiency of water consumption by 20 percent by fiscal 2011 compared to 2006 on a revenue-adjusted basis. 5) Collaborating for sustainability. We believe that complex, interlocking sustainability challenges and topics benefit in particular from close collaboration with stakeholders. We will publish further details in our Sustainability Report 2011" (Siemens' website).

4.3.3. Green Institutionalisation at RPQ: The Black Boxes' unpacking by "Managers' Talk"

RPQ's "Deetang" (meaning low-carbon in Chinese) self-image (i.e. projected identity) has been translated by its managers in the semi-structured interviews conducted in June 2011 and April 2012.

The RPQ Group positions itself as a pioneer of Low-Carbon Energy & Green Environmental technology in China. Its most valued asset is people, the RPQ Low-Carbon Energy & Green Environmental Experts. In the mission of RPQ the most important place is given to its customers and employees, as well as to the relationships between the company, its employees and customers, who are bound together through a social construct called "Honour". The mission of RPQ reads as follows: "RPQ's Perspective, Mission, Values are in the Double Honour: Customers*Employees: customers choose RPQ service as honour, and employees work for RPQ as it is great honour to be one of RPQ's employees".

RPQ excels in integrating their customers' wishes, through various parts of the physical infrastructure (i.e. buildings) having "green" solutions and installations, such as, for instance, the Ice-Thermal Systems in the buildings. Sometimes RPQ carries out turnkey projects for

property owners (see Exhibit 5.11 further on). The transmission and delivery of these turnkey projects can be expensive in terms of energy consumption (mainly transportation). RPQ does not have the ability to control this, as it can only use some technologies to reduce, yet not to eliminate it completely.

However what becomes evident from the managers' discourses is that in the emerging low-carbon economy in China, domestic Chinese enterprises like RPQ are yet to integrate and take advantage of the green management norms and policies. RPQ completed more than 400 energy-saving low-carbon buildings across China, effectively listing the "Green Competences" as each of the low-carbon project implemented.

Some of the following pathways offer solutions:

1) RPQ integrates the PRC governments' as well as the Siemens's and larger green brands' ethos of combining energy saving objectives and metrics with emissions targets and reduction methods at the worker's level, linking organizational objectives to the employees' terms of references, greening of jobs and competencies through normative tools;
2) Not yet articulated but slowly becoming integrated the greening of jobs and competencies through valuation tools: Key performance indicators;
3) Greening of jobs and competencies through situated analysis and designing a system of bottom-up (i.e.idiosyncratic) jobs and competencies by those who have more knowledge;
4) Developing skills and competencies for using new emissions metering and reducing tools through Green/Low-Carbon management, great deal of discourses institutionalised down from the larger supply chain partners;
5) Understanding existing bottlenecks in implementing emissions and resource consumption tools – ongoing;
6) Articulating the change process from energy-saving practices towards footprint and emissions awareness and action practices – ongoing efforts;
7) Formulating indicators for the green / low-carbon practice as embodied through workers who learn to use Green management tools, and help reduce company footprint;

8) Building awareness of individual green competences vs. systemic legacy barriers in material and structures and associated struggles.

4.4 Conclusion

The proposed method for bridging the science and technologies studies and the studies of institutions has been useful in drawing the following conclusions:

- The cultural and technological gap exists between the "makers"/"authors" of the green and sustainability discourses at the high-policy level and international organizations' language and local practitioners, who are supposed to make the green and sustainable a material reality in everyday practices of individuals, households, organizations, and nation-states;
- The "translations" of the high-policy agenda on climate adaptation and mitigation at the company level have diverse focuses and priorities, that are linked to various aspects of companies' life cycles, including the government and market conditions, level of preparedness and fluency of the top managers and middle-level managers on "green and sustainable", and the nexus of sanctions and motivations involved in the process of company image projections;
- The identity of an "Environmental Solutions Provider" that the Chinese company constructs for itselfis partly copied from its more successful supply chain partners (in this case Siemens AG), and partly conceived and negotiated within the organization through various involvements in projects and initiatives that motivate managers of the company to resolve and manage carbon emissions and other environmental issues through compliance with the regulations;
- Those regulations and norms are linked to the discourses of sustainability and wellbeing, which company claims (desired competences) to want to achieve for their shareholders and workers.

Companies' "green, low-carbon, sustainable" or "environmental solution provider" branding may indicate the embeddedness and acceptance of "green" values and norms. Such "green" branding practice is a signaling to various audiences as well as an indication of certain "sequencing" and "designing" being underway.

The signaling of a "green identity" is targeting several audiences and for several purposes:

a) Their shareholders and investors (financial sector) in order to show that they are attractive companies for investments;

b) Their supply chain partners, saying that they require specific "green competencies" and sharing of some "green values and norms" and thus green practices (a claim to establishing a "green community of practice or green specialization and professionalization");

c) Their stakeholders, i.e. employees to show that they are responsible and therefore good places to work as well as to other companies for them to identify with, and to be committed to (as workers, consumers of products, loyal supporters, and carriers of values and "deep structure" discourses);

d) The market, signaling that it aims at building trust in the ideology of a "green economy", and thus building the social capital with specific green signaling; also in order to distinguish itself from the competition, and to position itself as a benign economic actor, as opposed to "polluter, who must pay", thus providing for a strong PR image.

In this chapter the level of acceptance of green normativities at an organizational level and the links to the green discourses at macro and micro levels were investigated by looking at the way the two studied companies conceptualize "green" and "low-carbon", while presenting themselves under "green identities" and positioning their "green competences" to the internal and external audiences. The studying of discourses and their institutionalization in organizations and their supply chain networks through linking the science and technology studies' concepts of method assemblage, translation and "black boxes" (together with concepts of identity construction and competence construction) have been fruitful to help understand how "green and low-carbon" are the discourses that are gradually turning into organizational and individual values and norms. However, very little of it turns into an actual competence and practice. Indeed, it is the green competences and green commitment of the employees and managers that eventually define the actual environmental conduct of the companies, especially the technological and engineering knowledge, as well as managerial and supply chain cooperation skills.

Chapter 5. Case Study: RPQ managers constructing green company identity through energy-efficiency competence

The questions of a job decency and its contribution to improved environmental conduct and altering consumer behaviour towards a more socially and environmentally responsible remains open. The pathways for this to be actualised have been inscribed in some of the international scientific and political "norm entrepreneurship" documents (i.e., ILO 2010), however the gap between the discourse creation, its power and ability to become prevalent, and the pathways for their embedding in the policy arena as well as in the everyday life and work of people, communities, organizations, and territories needs much more elaboration and precision of "how" to do it. Among some of the most pertinent pathways the following have been named: Workers as Stakeholders, Reduction of weekly work hours, Work – Family Balance, Job Satisfaction and Wellbeing (Skidlesky 2013 and new economics foundation website).

The availability of green competencies at RPQ is analysed during a stage in its history when the company was restructuring to become the Environmental Solutions firm in China's construction engineering, heating and cooling, energy efficiency and energy saving industry (2011-2012). One of the key characteristics of RPQ is that it is a member of the supply/value chain of a German MNC Siemens, one of the leaders of corporate greening.

The interviews conducted with the managers of RPQ demonstrate that the greening in the company is being co-constructed by managers and workers, as a response to wider and grander discourses, which reside outside of the company, yet are deemed important and desirable for the organization. The selection of these discourses, the discursive practices, and formal and informal norms and their chances for becoming embedded in the "assemblage of climate change mitigation and adaptation" are being analysed through the web messages and the managers' talking about RPQ and its positioning among the low-carbon "Deetang" leaders in China.

5.1. Organizational Discourse Analysis: Managers' Communication and Official Online PR

By 2011 at "RPQ Group" the managers of this middle-size privately held company in China calling itself the Environmental Solutions Provider had been translating the global discourses on greening into their own company's operationalised greening values, norms, and competencies. This has been visible on the official website of RPQ.

10 exhibits of official texts/images of RPQ that were taken from Company's official presentations and the content of the official company website will be analysed.

In this section, the managers' discourses are analysed based on their answers to the questions of the semi-structured interviews, which are juxtaposed to the online and corporate slide presentations of the key decision-makers of RPQ.

5.1.1. Semi-structured interviews: Mr GF the green and de-crabonization guru on pressures for low-carbon transformations in China

"There is a government's pressure as well as pressure from international society to push the low carbon technology in China. So there are now the decentralised energy and regional committee, there is also a law on new power supply in the grid", says Mr GF the senior manager of RPQ.

"Decentralized technology in China was developing very slowly due to difficulties with power grid. If decentralized energy technologies were used, than the manpower grids would be introduced. Intelligent power grid can solve the problem with China's energy needs. Secondly, there are companies that can sell energy to various types of companies, different kind of markets. Power plants produce a lot of electricity. The grid is too complicated to deliver the power. Thirdly, there are monopolies to look after the production of electricity. If there are more power production companies in the region, then there will be competition for producing electricity. There is a law that limits the production of electricity to power grid company, such as Jungo Kenua. New technologies for producing electricity can cut the revenues of the monopolies. This is a corner stone question."

"Our objective at RPQ is to develop a plant technology for demand side management, to shift the peak load to the off-peak periods. We have many different ideas of how this can be done. 60% of buildings energy consumption is due to air-conditioning in China."

RPQ's Low-Carbon ("Deetang" in Chinese language) Self Image

- RPQ Group positions itself as a Pioneer of Low-carbon energy & Green environmental technology in China
- Its most valued assets is people, the RPQ Low-Carbon Energy & Green Environmental Experts
- In the mission of RPQ the most important place is given to the Customers and to the Employees, and the relationships between the company, its employees and its customers that is bound through Honour. The Mission of RPQ reads as follows: "RPQ's Perspective, Mission, Values are in the Double Honour: Customers and Employees: customers choose RPQ service as honour, and employees work for RPQ as it is great honour to be one of RPQ's employees".
- RPQ integrates the various parts and installs the Ice-Thermal Systems in the buildings. Sometimes RPQ does the turnkey projects for property owners. The transmission and delivery of the turnkey projects can be expensive in terms of energy consumption (transportation mainly). These things RPQ does not have the ability to control. Can only use some technologies to reduce it, but not eliminate it completely.

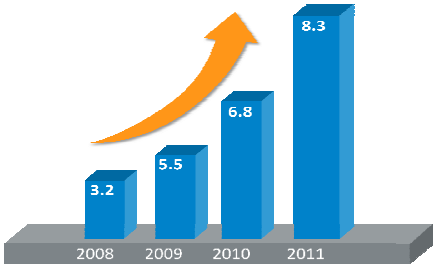
Source: RPQ interview data, June 2011 and April 2012

"This is not "low-carbon-enough" building, look at the way it is built with no solutions for parking buses or access from public roads, it is built too deep within the infrastructure and requires a lot of effort to gain access to", said Mr GF, the senior manager of RPQ while with a team of researchers visiting the "Lantern" of the CSET (Centre for Sustainable Energy Technologies) of the University of Nottingham in Ningbo China (UNN) in May 2011. This was a large group of very busy looking mid-career and old-time researchers. The building was designed by an Italian architect Mario Cucinelli in 2009, and built up and managed by a team led by Prof. John Darkwa of UNN. It was interesting to see a "visitor" who came to look at the first Low-Carbon show-case building in China and was comfortable with criticising and

suggesting alternatives. It drew the attention, and was intriguing "who is this person and how does he know so much about low-carbon building"?

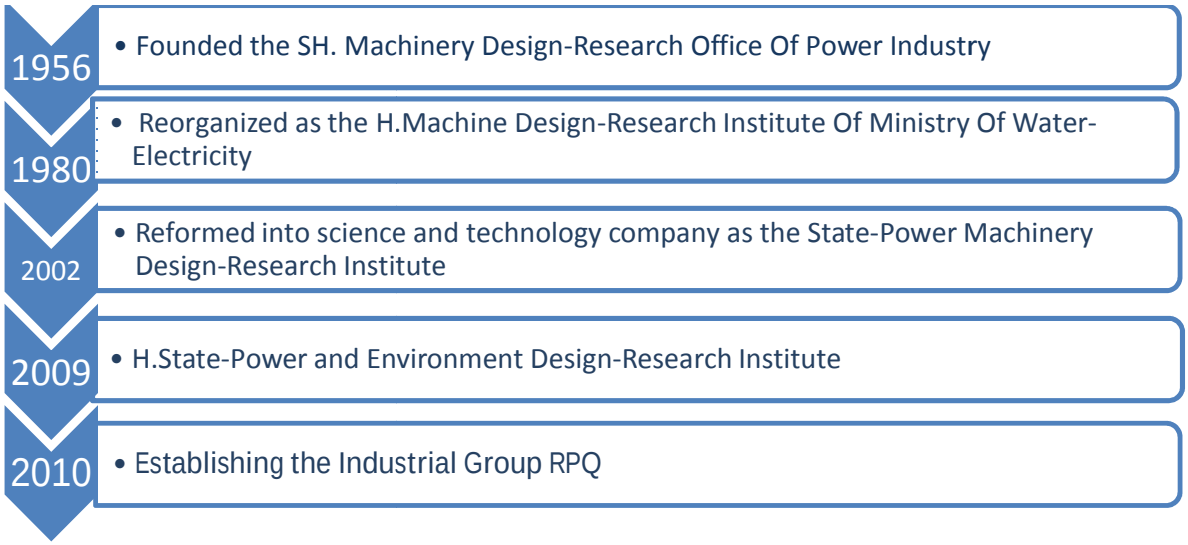
By that time RPQ already had just under 400 projects across China that provided energy saving, and low-carbon air-conditioning and ventilation solutions to constructions and building companies. The strong positioning of RPQ has been in its know-how and a number of technology patents on off-grid energy supply to buildings. **RPQ is a** pioneer of thermal storage market with more than 45% market share, number-one-company in the variable-air-volume & low-temperature air conditioning market, 400 employees across the country, annual growth 20% in sales, mostly R&D driven with rapidly growing sales. The HQ of RPQ is in the city of Hangzhou, Zhejiang province of China.

Exhibit 5.1. RPQ average annual growth 40% between 2008 and 2011 from 320 Million to 830 Million RMB (renminbi)



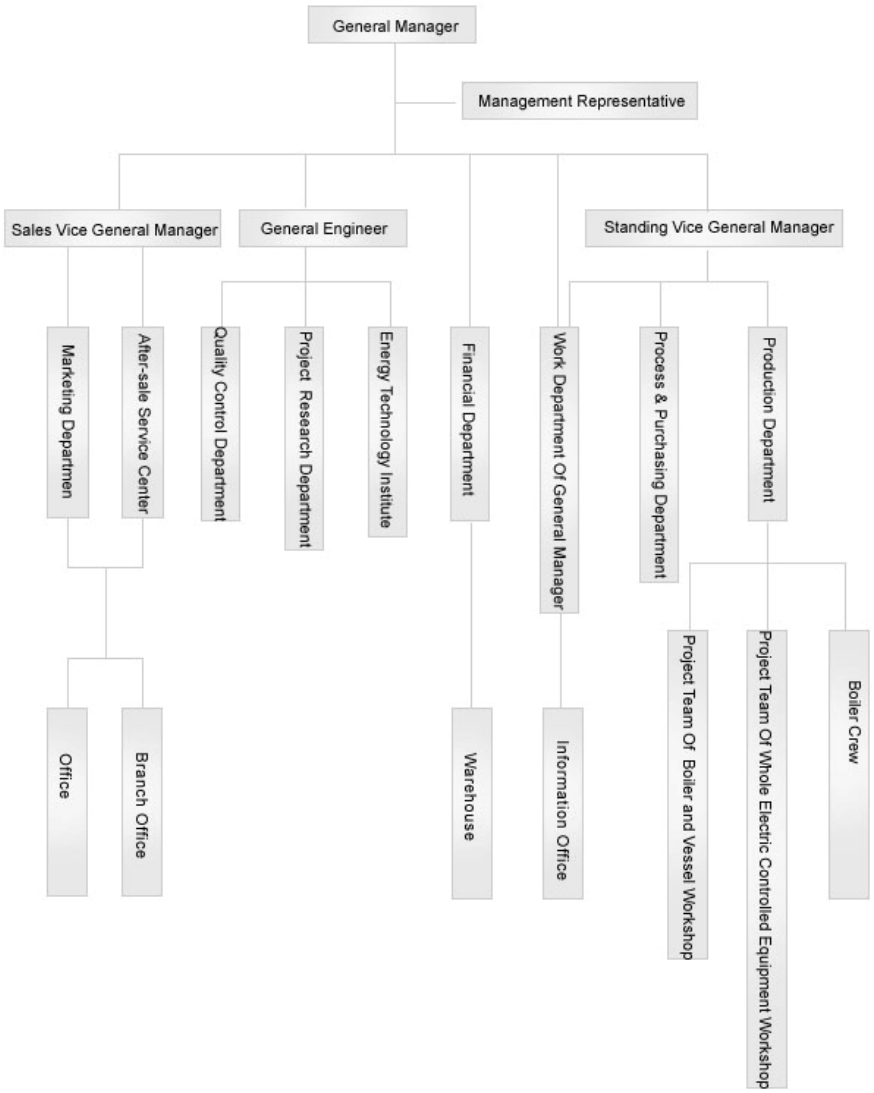
RPQ demonstrates its spectacular growth figures during 3 years between 2008 and 2011, despite the cooling down of the Chinese economy in 2008 when in the 4th quarter the GDP went down to 6.5% after preceding 4 years of double digit growth rates. This is by itself one of the indicators to what extent the energy saving and low-carbon construction are in demand in China.

Exhibit 5.2. RPQ Strong Engineering History and energy-efficiency community of practice embeddedness



On its webste RPQ proudly demonstrates its long-term history in technological and scientific domains in China. The majority of interviews conducted at the HQ of RPQ in Hangzhou were held with graduates of technology and engineering schools. Contemporary RPQ is rooted in a culture of scientific research in designing energy machinery for energy generating plants, electricity grids, water management, environment-energy interaction and R&D for state power generating plants. The five selected milestones mentioned in this exhibit demonstrate this rootedness of RPQ in science, technology, and environmental management.

Exhibit 5. 3. The Industrial Group RPQ's organizational structure, the names of all departments, names of subsidiaries and their locations, sales offices in 2012



Mr GF, who is also the acclaimed leader of sustainability in the company, said in the interview, "in the new structure, there are different directions, no overlapping, functions are clearly divided". He believes that it is a better structure than before. The new focus in the new structure is the Maintenance and Installation of Products (MIP), as it represents the core product and service of the company, and is the most profitable unit, as its focus on quality installation at the customer's site and support of the sales teams across the country" (the so-called pre- and post-sales office in one).

"The new structure is in response to the Chinese government's targets for reducing carbon. Decentralising of the energy is a priority for government, thus pushing the technology. Also,

The Government wants to develop rules for Decentralised Energy". By 2012 the company calls itself an Industrial Group "RPQ".

Source: RPQ interview data (Senior Sustainability Manager), June 2011 and April 2012

5.1.2. Semi-structured interviews, the female engineering guru Mrs. LCHY on RPQ's Products and Services

RPQ provides the following products and services:

- Integration solutions of low-carbon building energy and environment, including: energy-saving central air-conditioning, synergetic control of energy and environment, district cooling technology, etc.
- all-in-one service for the building low-carbon energy-environment consultation, design, system integration & maintenance, etc.

"We can help our customers to save 30-50% of running energy costs, shifting peak hours power 20-40% (reduce the land power shifted)."

"While we provide our products, we also provide the service, not only after-sales service but also training to provide ideas how to save energy."

RPQ integrates the various parts and installs the Ice-Thermal Systems in the buildings. Sometimes RPQ does the turnkey projects for property owners. The transmission and delivery of the turnkey projects can be expensive in terms of energy consumption (transportation mainly). These things RPQ does not have the ability to control. Can only use some technologies to reduce it, but not eliminate it completely.

RPQ's contribution to reducing total footprint of its clients – and this helps them as an organization to reduce the footprint. Tailor made ITS for property owners, project orientated sales.

Source: RPQ interview data (R&D director), June 2011 and April 2012

RPQ and ISO

- In recent years there has been a rapid growth in China, which now accounts for approximately a quarter of the global certifications in IS0 9001:

- Top 10 countries for ISO 9001 certificates - 2009 Rank (see Table 1 below)
- RPQ is one of the companies in China that complies with ISO 9001, safety regulations for construction and building (this needs to be confirmed with the R&D department of RPQ)

Exhibit 5.4. Top 10 countries for ISO 9001 certificates – 2009

Rank	Country	No. of certificates
1	China	257,076
2	Italy	130,066
3	Japan	68,484
4	Spain	59,576
5	Russian Federation	53,152
6	Germany	47,156
7	United Kingdom	41,193
8	India	37,493
9	USA	28,935
10	Korea, Republic of	23,400

(Source: ISO Survey 2009)

5.1.3. How is reducing costs linked to reducing footprint at RPQ, is it sufficient?

- For the low-carbon office building of RPQ these the priorities are "how we build buildings, how much energy we put in them, what are our choice materials"
- Saving electricity, water consumption reduction, and transport costs reduction are the main visible measures undertaken at the management, employee, and wider labour force level.

- There has not been a Chief Sustainability Officer appointed yet, it is not considered as vital, and additional costs the company is not willing to incur?
- "We got the people who deliver to deliver the right engineering solutions to people and companies, organizations and cities that want to reduce their energy consumption costs, and to monitor how much is being used. This is our contribution to the wider China's low-carbon transformation", says Mr GF, senior manager at RPQ
- Source: RPQ interview data, June 2011 and April 2012

5.1.4. RPQ's services do not encompass the concept of Life-Cycles yet

- Mr GF: "We do not have a plan about low carbon development for now. We have the ISO system, but we do not really conduct any low energy accounting – which is not only about lifestyle and operations of an organization. But also in the buildings of RPQ there are measurement devices for electricity (use and heating), we measure water consumption with water meters, do not have the gas meter though. We do not keep track of this, we just have the data. We consume a lot of energy because of the lifestyle, but we do not count it."
- Many companies in China have strong technical skills, but very little understanding of management systems. Thus, RPQ is interested in the findings of this research and insights to structural changes for RPQ."
- The emissions are not measured, only the metering of water use and energy use by the facilities and by individual employees are being targeted
- The facilities and plants energy and water consumption are metered and stored, the information remains idle, not reported as embodied emissions yet.
- Senior Manager of R&D department: "There is a law in China, for energy saving – and companies that do not comply may get punished. The new version of the law is dated 2006. RPQ deals with new buildings, as well as with old buildings, its systems for energy saving are introduced in both. For the old buildings, we can help them to save 15-30% of energy. In the new buildings energy saving problems are considered already at the design stage.

- Energy saving is not only for the building itself, but also the behaviour of people. RPQ focused on how to bypass the human behaviour and the shortfalls in the human consumption, by using technology to detect consumption and reduce.

- We use new technologies, we integrate the solar panels, and the ground resource pumps, we use our own Red Cooling, Air Volume system is used. We change the volume of cold air to be able to change the temperature of the room. In ours systems, we add fresh air and we mix the room air and outside air, and the temperature goes down. The energy saved also when the motor speed is different.

- Source: RPQ interview data (R&D director), June 2011 and April 2012

5.1.5. RPQ's part in the infrastructure with legacy of high-carbon societal systems logic:

- The RPQ VAV box is popular in US and EU, in China we added a different stage, we want to build a domestic production. But there are some complications, we have a different background and parameters, that way we need to adjust the products and localise them. So there are prototypes, that RPQ wants to take over and adjust for local Chinese market. We depend on existing infrastructure and old ways of doing things. We add a small device or an element that makes it local."

- We integrate different kinds of products and whole systems for monitoring energy costs and consumption. Also we have the system to de-code all data for energy consumption, capturing in each room, in each floor and space of a building. There are the standard data of the country, the parameters, and we can compare our own data with the countrywide standards.

- RPQ needs to conduct LCA and measuring the carbon footprint, it would require a few years of preparation. For RPQ the various low-carbon related policies linger somewhere vaguely but is not yet a reality. At the moment the company's operations and sales are a priority, surviving as a company is the first priority. "Once some basic problems of day to day life of RPQ then we want to become a responsible company. We know the direction, we have ideals, but we have our first priorities, those are technology development, sales, and after sales maintenance".

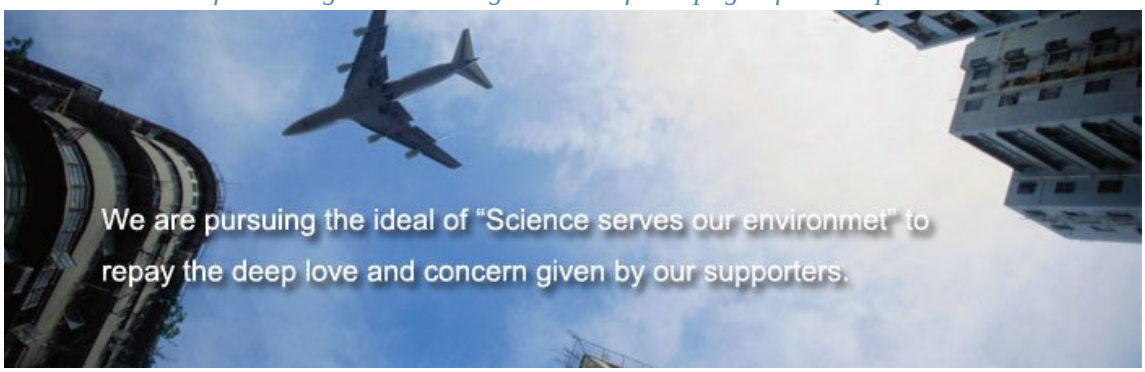
Source: RPQ interview data (R&D director), June 2011 and April 2012

Exhibit 5.5. The Website "Message from the Present" reads as follows:

"With the rapid development of science & technology, the relationship between man and environment is becoming an important subject in the 21st century. Good environment promotes the evolution of man and propels the society forward to benign cycle. However, science & technology is the most vital element. As an artificial to environmental protection RPQ is science-and-technology-oriented. In the spirit of union, initiative, realism and innovation, the company also keeps on technology. With regard to RPQ, it is the principle that science & technology serves for environment. "Science & technology serves environment" is not only a slogan but also a principle lying in our products and meticulous service. It is all because we are devoting to building a harmonious relationship between man and environment that we firmly believe we are to succeed. And so are you. Cooperate with us, and what you will obtain is far more than economic benefits."

The expressions "science & technology" and "harmonious relationship between man and environment" represent the direct translations from the global discourse on science and technology called to rescue the environment, the technological fix seems to be prevailing in RPQ's vision of itself. While "harmonious" is taken directly from the Chinese National Government's strategy of circular economy adopted in 1998. "Harmonious" is the essential Chinese approach in managing growth and becoming an actor in the global green economy, as it has been documented in the most recent key PRC party strategies and 5-year plans.

Exhibit 5.6. One of the images with a slogan on the front page of the corporate website



In this exhibit 5.6 the airplane flying under clouded sky with some spots of blue represent a common image of an urban setting in China, the text reads "We are pursuing the ideal of

"Science serves our environment" to repay the deep love and concern given by our supporters". Again, science is referred to as a tool that is not to destroy the environment, but to serve it and the invocation of "deep love and concern" by the supporters – can be translated as RPQ considers the "trust" of those who believe in the company and its mission to be a norm in order to pursue the value that the company holds true to, which is the ideal world in which science is in the service of the environment.

5.1.6. RPQ and the community of green and low-carbon practice

- The sustainability knowledge and skills of the labour force at the moment are very poor. The department (managed by Mr GF) is a very special one, seven people with very specific skills and knowledge (i.e., in car, machinery, energy, etc). Mr GF is a manager who supports his people to come forward with ideas, and make suggestions, bring innovation.

- The M&I (maintenance and installation) department manager also said: "We put the green elements into our lifestyles, using buses instead of cars, etc… Are all the employees conscious and aware of being green, low-carbon, etc.

- RPQ is an active member of the energy industry that is transforming into low-carbon industry. There have been bi-annual meetings during the last 36 years for the industry champions to meet and develop working relationships, standards, and approaches to successful industry development. In the last two years the low-carbon is very high on their agenda

- "Within the low-carbon industry, we have annual meeting, where different competitors bring their products and display and exchange them with all members. This has been going on for 36 years in energy sector. The entire industry in energy-saving and low-carbon nationally we hold meetings every 2 years, but for the specific areas, territories, hold these kind of meetings annually inside the province. We meet with partner and competitor companies regularly, as for us competition does not mean that we have to kill each other. In 2012 there will be 18th meeting of the Energy Industry, these meetings have been going on for 36 years (once every two years). And for renewable energy laws we had topics on low-carbon, sustainability, and green since 2006.

Source: RPQ interview data, June 2011 and April 2012

Exhibit 5.7. Enterprise culture grounded on History of RPQ in Milestones

Milestones
1. In 1994.8,Foundation of Huayuan corporation
2. In 1995.3 Established the first ice-thermal-storage air conditioning system.
3. In 1995.10 Established plant for ice storage device and automation equipment.
4. In 1996.4 began to give lectures on techniques of ice thermal storage air conditioning to the senior students majoring air conditioning at Tongji university every year
5. In 1996.7 began to offer Huayuan scholarship to the major of refrigeration & air conditioning at Hangzhou commerce school
6. In 1996.10 Passed the scientific achievement test by the Ministry of Electricity.
7. In 1997.6 Participated in construction of institute of thermal storage air conditioning at Tongji University. Ye Shuiquan, general manager of Huayuan, was appointed to vice President.
8. In 1997.6 Compiled and Published the first monograph on the design and application of thermal storage air conditioning.
9. In 1997.6 received the permission from Ministry of Electricity to establish research centre of ice storage air conditioning
10. In 1997, was elected by the Zhejiang refrigerating association as a managing director, was chosen to be the experimental site of Zhejiang technological association of central air conditioning.
11. In 1998.4 Set up the first man free ice-thermal-storage Central Air Conditioning in the office building of Construction Committee in Laishan,Yantai.

12. In 1998, Contracted to build the office building of Hangzhou Construction Bank applying the technique of sending air at low temperature, which was the evidence to reach the most advanced central air conditioning technology worldwide.

13. In 1999, began to train graduated students majoring refrigeration and air conditioning in cooperation with Zhejiang university and Shanghai Jiaotong university

14. In Apirl, 2000, Ice-thermal-storage system and ice ball were listed into the national Torch planning projects.

15. In November, 2000, Huayuan Corporation became the director commissioner in the branch of electrical energy utilization and power generation decentralizing.

16. In sept, 2001, organized the energy-storage International conference together with International Energy Association.

17. In Jan., 2001, conductive plastics coil ice chiller reached market acceptable.

18. In 2002, attended to compile and publish the standard《Thermal storage for cooling Equipment》.

19. In April 2002, purchased Hangzhou Qianxian boiler factory to be the best example of state owned enterprise reformation.

20. In 2002, 6, Established a laboratory in the field of thermal storage which was the first in China.

21. In 2002, compiled the standard 《Measurement &rating of thermal storage AC systems》

22. In May 2004, Shanghai Huadian Yuanpai Environment Engineering Co., Ltd. & Hangzhou Huayuan Power plant Environment Co., Ltd. established

In the Company profile RPQ highlights its strengths and achievements and without being too technical provides information about itself that would interest suppiers and customers alike.

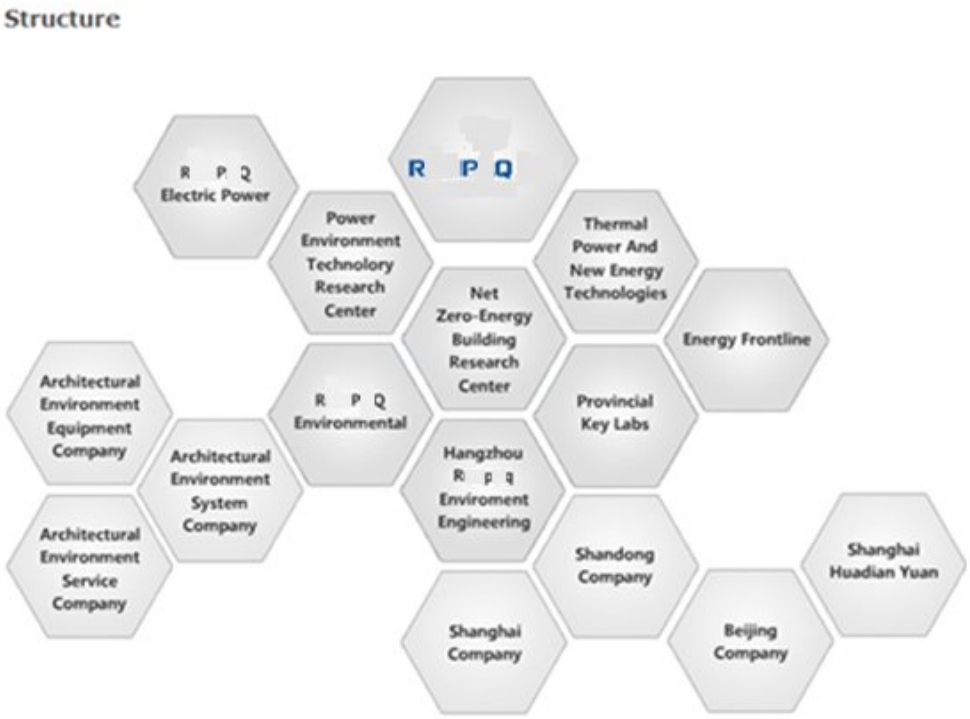
Knowing that multinationals like Siemens may be checking the site, alongside any creditors or banks, domestically as well as internationally, RPQ adds vital information about the human capital that they have, including 90% of workers who are graduates of various levels, including doctors, post-docs. Also the mentioning of the winning of three awards on Science and Technology Advancement awards, i.e., the National Science & Technology Award, the Ministry of Science&Technology Advancement Award, and the local Shanghai Science&Technology advancement award. Also, what is important for the supply chain to know, if there is ISO certification, and especially those on management and operations standards. However, noticably, nothing is said about Environment, Emission, Green, etc.

Exhibit 5. 8. "Company Profile", corporate website

Company Profile

Hangzhou RPQ, Ltd. Is now the largest Chinese Hi-Tech enterprise in the field of thermal storage cooling and heating application, of which the group center is in Hangzhou and there are agencies in most main cities all around China, We can be an overall contractor in the field of air conditioning or heat system applying thermal-storage technology and environment protecting system for power plants, we provide complete service covering designing, delivery, installation, and testing. It is we who have done almost a half of large projects applying cold-storage air conditioning technology in China. We have been awarded the certificate for complying with ISO-9001.More than 90% of our staff graduated with bachelor degree or higher, among which, there are tutor of doctor, postdoctor, doctors and else. We have been awarded the National Science & Technology Advancement Awards on cooling equipment designs, the Ministry Science &Technology Advancement Awards and the Shanghai science &technology advancement awards. We successfully developed the conductive plastics coil chiller and Core Ice Ball chiller, which were the first in China, and approved by the Ministry of Electricity. We are in the leadership in the field of Automation System for thermal storage air conditioning system in China, moreover, we are keeping the most advanced know-how in the field of low temperature ventilating system and variable refrigerant volume box.

Exhibit 5.9. Structure of RPQ's Subsidiary Companies



5.1.7. Semi-structured interview: Mrs. YUM the young supply chain management directrissa on RPQ's Supplier Management Practices

- The most reliable supplier: supplies goods in limited times, according to the RPQ requirements, the quality of goods is very good.
- Some characteristics of the supplied goods are low-carbon, and some are not. There are whole systems produced by RPQ, and some of its elements are low-carbon and some are not.
- Many of the suppliers are low-carbon and green (including Siemens of Germany)
- RPQ has at least 50 suppliers, but the respondent does not know all the details.
- RPQ started its low-carbon and green transformation in 1994, almost 20 years ago. At RPQ we started by cutting energy cost, energy consumption.
- The supplier management respondent was not familiar with any of the laws and policies on low-carbon, while she knows that they exist and that the company aims to work with those.

- Is there enough time to work with each supplier, is considered a good job when each supplier is treated in a very customer-orientated manner?
- Daily workload is very similar for most suppliers; the same process can be applied to every supplier. So it does not take too much time for the team of 4 people to manage over 50 suppliers.
- There is a document describing the process of working with suppliers to explain how the work has to be accomplished, which is studied and used by all employees.
- Email, fax, MSN and ICQ - all communication tools are used to communicate with the suppliers.
- There is an internal RPQ database (RPQ Information System) for keeping all the suppliers and query it. There is one dedicated person in the company who teaches everyone how to use it.

Source: RPQ interview data, June 2011 and April 2012

5.1.8. Semi-structured interviews: the youngest manager Ms CHAN the head of HRM on RPQ's Work Conditions

- The working spaces are improving, there is a new low-carbon building being constructed, and in 2013 the RPQ employees are looking forward to moving there, "it will be a low-carbon building that includes a lot of new technologies. Also, the current office is a much more comfortable working space compared to the one we had before." say company engineers.
- Salaries are rising, from 40,000 RMB (five years ago, 2006) to 80,000-120,000 RMB (in 2011) per year salary increase for those who are "good" (i.e., "use their head", learn fast, have a low-carbon lifestyle, propose innovative approaches)
- Appraisals and evaluations have been shifted towards performance based indicators to determine if the employees are qualified for salary increases.
- "Out of 400 current employees at RPQ about 90-95% are aware of low-carbon, sustainability, and green issues, because first of all we are low-carbon life-style provider, we have to set example, and if we are not ourselves low-carbon and green style aware, we cannot sell our products to our customers".

- There are more than 40 people working in the RD. Their average profile: two doctoral degree level employees, most have graduate degrees, about 14 people. All are engineers.
- The working hours are decided by the amount and volume of work, not by general schedule. While there is an 8 hour working day, the deadlines require often to stay late.
- Salaries in the last 10 years, are rising just like China is growing annually, but the expenses are rising too.
- For many in RPQ the change in lifestyle to a more sustainable is through buying a bicycle for transportation, having low-carbon days to contribute to China's emissions' reductions. The wealthier the Chinese become, the more sustainable they will be. Middle class formation will take at least 10 years in Zhejiang area, for rest of China about 30 years it might take.
- In RPQ there are more specialists engineers, rather than administrators or sales force. RPQ does not have very high capital nor solid capital or assets. The main assets at RPQ is soft, not so much hardware, nor plant equipment, it is the people and their creative talent. Most office workers at RPQ spend almost all day in front of the computers.
- The four people that work at the supplier manager department are all working on different things, and they are not dependent on one another. Their skills and knowledge are at almost the same level. The workers dealing with 12-13 suppliers at once must be very good. They all have different superiors, different managers.
- Low-carbon practices at work are as follows: using local suppliers is one way to stay low-carbon: "We do construction in many different areas. Thus, there is always a way to find the supplies from a very local area, we always try to cut costs of transportation also."
- In everyday practices, the managers and employees of RPQ tend to print on both sides of the paper, walk to the office or take buses and public transport or bicycle.

Source: RPQ interview data (Senior Sustainability Manager), June 2011 and April 2012

5.1.9. RPQ's On the Job Training and Skills Development

- RPQ conducts monthly skills development and professional trainings internally. The trainers are usually the senior managers, or the managers of the RPQ's "subsidiary companies" (that deal with regional sales). Normally training sessions are prepared and conducted by managers who understand how to get things done from their own experience. Yet people in the newly formed departments such as the supply management, often learn most everything by themselves on the go or through a mentor "In China we teach each other this way, through mentorship, not through training course".

- There are four people working in the Supplier Management team, and thus there are approximately 13 clients per supply manager out of approximately 50+ suppliers.

- One of the senior managers at RPQ (who also welcomed this research at RPQ) is the recognised low-carbon "guru" in RPQ and his lectures/training courses are the most often and widely attended by the RPQ labour force and managers.

- M&I (maintenance and installation) manager who is also the chief engineer of RPQ: "we need mostly the skills that solve the problems at the construction designs. When we do programming, we need better programming of equipment. For the research department clients we must connect with them better, so that there is better understanding between the departments."

- The company managers really believe in this: "Practical experience is the best training in the job of our department."

Source: RPQ interview data, June 2011 and April 2012

5.1.10. RPQ's Work Equality and Benefits

- Notably, the respondents of four out of seven interviews conducted at RPQ were women, in senior management and engineering positions.

- Manager of M&E Technical Centre, "I worked in the Research Department for 10 years, and since 5 years I work in Technical Centre. Our team has 10 people; we take the product of Research Department and turn it into something that the clients can use. So we are the primary partner of the client, mostly concerned with technical support of

the Sales teams. At the moment 10 people is enough, during the next 5 years the department will increase by 15% (adding between 3-4 people). The basis for this estimate is based on the sales projections expected to grow no less than 20%."

- "The ISO 9001 and the international health and safety at work standards are used. RPQ made our own internal document based on this ISO, and the quality is according to the rules set out in the international and our internal ISO 9001 quality management".
- With the coming maternity leave, the respondent in the supplier management department said that her Manager "will arrange for a full-time job, but with less workload. In China mothers are protected by the law, and they all work and have children while at work. It provides the income, the status, and the job satisfaction. At RPQ all the laws of the People's Republic of China are applied to the workers, including to situations with maternity leave."
- Source: RPQ interview data, June 2011 and April 2012

The Exhibit below on the Enterprise Culture at RPQ supports the idea that Green HRM practice may be preferred and is being built up at RPQ.

Exhibit 5.10. Enterprise Culture

Enterprise Culture

RPQ treats human as the most important capital and culture as the perpetual drive for enterprise development. RPQ's development is human's development, and culture's development. We always promote the construction for enterprise culture, pay attention to team spirit and improve the whole quality of the workers. Simultaneously, the enterprise also transfer into a good learning group, it provides the education and training flat roof, inspires worker's creativity. All these strengthen the enterprise's cohesiveness and competitiveness.

Enterprise Spirit: Solidarity, Endeavor, Performance, Innovation

Manage Philosophy: Entirely sales, Entirely QCS

Operation Rule: Customer-oriented, Responses quickly, take action immediately

Core Competition: Marketing, Innovation. Quality guarantee and informatization management

Enterprise Image: Science & Technology serves environnement

Quality Aim:

Project technical progress percentage/year > 25%

Project one-time-checked-and-accepted percentage/year >90%

Customer satisfaction index >90%

Manage aim: Modern enterprise group company incorporating “project type, scientific and technological type, holding type and modernization, grouping ,internationalization” into an organic whole.

Exhibit 5.11. RPQ completed more than 400 energy-saving low-carbon buildings across China, effectively listing the "Green Competences" examples here.

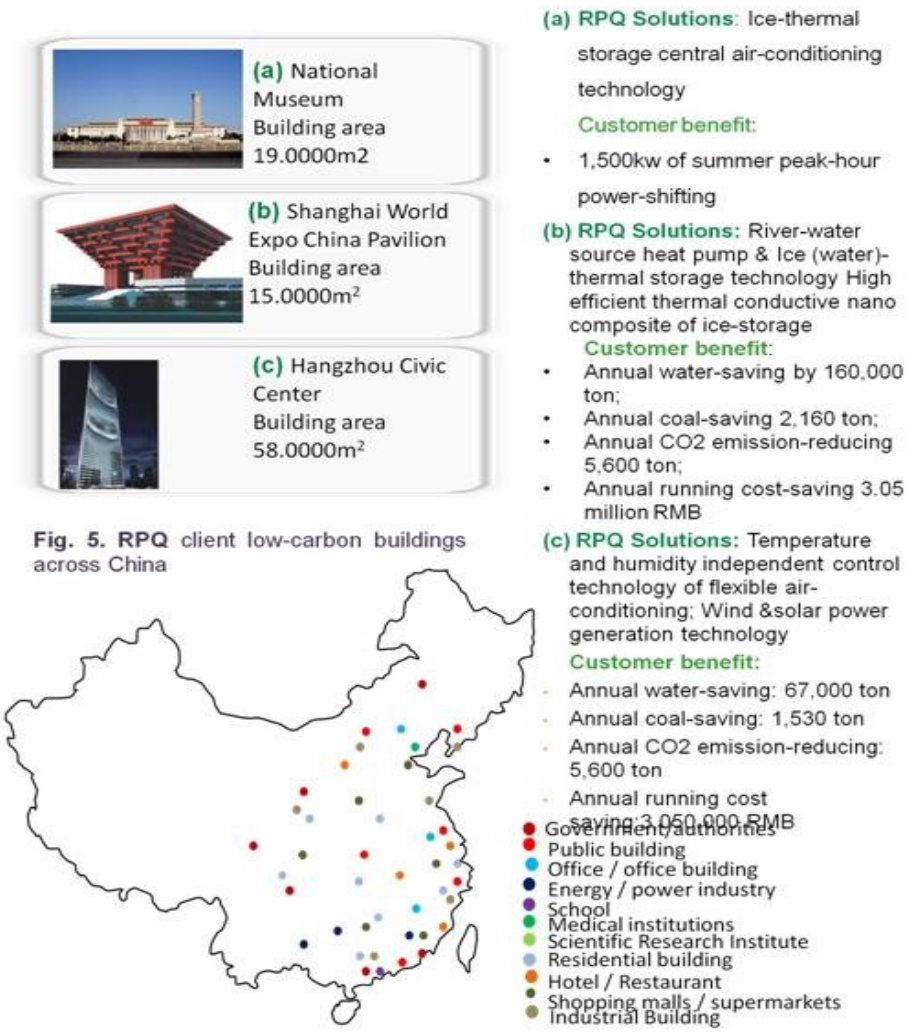


Fig. 5. RPQ client low-carbon buildings across China

5.2. Conclusions of the Case Study

In the emerging low-carbon economy in China the domestic Chinese enterprises are yet to integrate and take advantage of the green management norms and policies, through some of the following pathways:

- Combining energy saving objectives and metrics with emissions targets and reduction methods at the worker's level, linking organizational objectives to the employees' terms of references, greening of jobs and competencies through normative tools

- Greening of jobs and competencies through valuation tools: Key performance indicators,
- Greening of jobs and competencies through situated analysis and designing a system of bottom-up (i.e., idiosyncratic) design of jobs and competencies by those who have more knowledge;
- introducing Key Performance indicators and linking them to specific positions in the company;
- developing skills and competencies for using new emissions metering and reducing tools through Green/Low-Carbon management;
- understanding existing bottlenecks in implementing emissions and resource consumption tools;
- articulating the change process from energy-saving practices towards footprint and emissions awareness and action practices;
- formulating indicators for the green / low-carbon practice as embodied through workers who learn to use Green management tools, and help reduce company footprint;
- building awareness of individual green competencies vs. systemic legacy barriers in material and structures and associated struggles.
- Co-designing jobs, competencies, tasks that develop, accomplish, and scale-up the essential greening, sustainability, environmental performance, and social and environmental accounting and accountability in the company and its life-cycle clusters.

RPQ's key managers have to re-invent their jobs, and the jobs of their colleagues all the time. For instance, the Chief Engineer and Director of the Maintenance and Installation Centre of RPQ who has worked with the company for over 15 years has to deal with sales support, consulting the clients on how to ensure safety on the site, and often finds herself training/mentoring her team of 20 engineers, builders, and sales offices consultants how to conduct after-sale support and maintenance services.

The HR manager mentioned that there are also old infrastructure and old cultural perceptions as barriers in the company, such as it is not encourages for the majority of workers to remain at home, in order to reduce the commute time to work, electricity consumption at work place in the office, and to provide a degree of flexibility to workers.

Here the saving of resources and the flexibility i-deal seem to be the motivations behind encouraging the "work from home" practice at RPQ.

There are two events at RPQ that this study coincides with during the data collection for this research:

1) the imminent move of the RPQ offices to a new "State of the Arts" Low-Carbon Building that "everyone is excited and talking about";

2) the Malaysian Deal – one of the biggest foreign contracts won by RPQ (as of 2012).

It was essential for this dissertation, to identify and define the "business-as-usual" mode at RPQ vs. the "greening/low-carbonisation" since 2009, when as a result of organizational re-structuring there emerged the Hangzhou State Power and Environment Design Research Institute. And although, the managers have mentioned that "energy efficiency and energy saving" has been a concern and a priority in the organization during the last 18 years (since the first Law on Energy was adopted, REFERence) the actual shift started later, but not later than 2009.

The four hypotheses could be interpreted here:

In regards to H1. Legitimisation of the global climate discourses at RPQ through its cooperation in the supply chain of Siemens leads towards more awareness and acceptance of Footprint accounting indeed, exemplified by the energy-efficiency standards and monitoring.

In regards to H2. Branding themselves as environmental solutions provider RPQ has been hiring rapidly as well as developing rapidly the green human resources terms of references, as exemplified by the growing labour force, their growing salaries, as well as their growing carbon sensitivity, energy saving regimes, as well as low-carbon lifestyles tastes and aspirations, i.e., exemplified by the top managers' charismatic leadership of green training and keen interest in low-carbon building nuances, industry interaction and the active participation in the community of practice of energy efficiency, innovation of the ice-storage boxing and other patented inventions becoming popular in the circular economy of China.

In regards to H3. The compliance with the Chinese national regulation on energy efficiency and circular economy demonstrate the link into the global climate concern, yet with a Chinese signature and specifics. RPQ's employees demonstrate strong understanding of the

environmental standards and calculations involved in their professional work of environmental solutions provision in the construction sector to the extent that their skills are in demand abroad (i.e., in Malaysia). A clear example of not only calculation but qualculation is evident at RPQ and thus more environmental and low-carbon conversion is underway.

In regards to H4. Although, there is no evidence that workers understand such practice as green jobs and routines design and co-design, yet within the elite engineering, installation and maintenance, sales and supply chain departments of RPQ the flat structure is evident, collaboration among departments and within the management-subordinate hierarchies are preferred, and thus enforced, making the interaction within the company mobile and alert. These are the key ingredients of successful sales and maintenance provision to the clients. Also the employees are recognised as the key stakeholders in the company policies. This makes them forthcoming and willing to feedback, provide ideas, and solutions. Especially, with a high percentage of women engineers in the top management positions, the gender and age equality seem to create more democratic and flat managerial and organizationsl structures. There is a great deal of spaciousnouss and collaboration, teamwork and mutual reliance within the company's culture as it is evident from the semi-structured interviews and visits to the company's headquarters. There are all conditions for job co-design and green routines co-creation, and most probably it is happening already.

Chapter 6. Case Study of The House of Confectionary "KLSKY Family Traditions", the construction of the Kyrgyzstan's leading green corporate family and its unintended green innovation

There is a leader in the Kyrgyzstan's confectionary market, that is The House of Confectionary KLSKY Family Tradition (here is a short name "KLSKY"), which has become a brand and a corporate culture that transcends the mere organizational setting and boundaries. KLSKY is no longer limited just to Kyrgyzstan, many Kazakhstanis who know its products and aim to shop at the specialised KLSKY outlets praised the "natural product" association that is strongly bound to this food brand of Kyrgyzstan. Having won the "Choice of the Year" 2009 and 2010 awards in Kyrgyzstan the House of Confectionary KLSKY Family Traditions has expanded and stabilised its base in Kyrgyzstan, and spilled over the borders to Kazakhstan, with ambitious objectives of conquering a market share in the Russian Federation.

One of the ways to insure the quality of ingredients KLSKY created its own organic farming site under the brand name The Family Tradition, where fresh yogurts and other raw inputs for the cake making are produced and supplied to the factory on a daily basis, fresh and screened for highest quality within Kyrgyzstan. The KLSKY Family Traditions is considered among the suppliers of dairy products, flour, and water that are the tried and tested quality producers of Kyrgyzstan.

Semi-structured interviews with managers of KLSKY, the survey of the company workers, the website and key policy documents' texts have been analysed for this case study. We start by considering the key documents of the company, the Book of the Employees and the online products' descriptions.

6.1. Corporate structure and culture KLSKY

6.1.1. The KLSKY Family Traditions: The Book of the Employee

There is a policy document at KLSKY that is called "The Book of the Employee of the House of Confectionary KLSKY Family Traditions" (Exceprts). There are 6 authors of this book, some of them are internal managers of various level, including the HR manager, as well as the

external HR and pshycology consultants. There are four key areas in this book, including The Philosophy, The Standards, The Rules, and The Policies.

A large part of The Philosophy chapter is taken by the History of the company, which spans since 1991 when it is said to have been concieved, "1991" is imprinted on the trademark symbol of the House of Confectionary KLSKY. The KLSKY's official 10-year corporate anniversay was celebrated in the summer of 2009, despite the sign on the trademarke symbol.

According to the history sequence that HC KLSKY FM lists in its "Book for Employees" the beginnings were very humble due to the collapse of the Soviet economy and joblessness in 1991 when private baking and selling the goods became popular. Back then Mr OBK, the founder, starts baking a cake called "Bird's Milk" and sells it at the Dordoi market of Bishkek (capital of Kyrgyzstan), where the business really takes off. The traders of the Dordoi market combined gave way for a micro-economy where various service and product providers were able to spin business ideas and get rich. Some, like KLSKY took it even further, they created long-lasting and growing organizations, tradition, and a following among the confectionary connoisseurs of Kyrgyzstan, Kazakhstan and Russia within just 10 years of expansion in the national market. Clever product placement across Bishkek at first, and later across Kyrgyzstan's biggest cities established a brand that is recognizable and has the "seal of quality". Not only is there the great management focus on customer service, but also active reaching out to consumers through various campaigns for children, parents, educators, school and kindergarten teachers. KLSKY reaches out to talk about "natural" product, the "family tradition"of producing dairy, and the constant search for new recipes to surprise the regular customers, as well as re-discivering good old recipes to keep the stability and vitality of the company. We look briefly at some excerpts form the History of the Company below.

6.1.2 Excerpt from the Company history: year on year growth from 2007 to 2014

In 2007 the private enterprise KLV O.B. changes its organizational and legal form into KLSKY Tort Ltd. At this stage the company has its own production workshop, sale network and several branded shops. It is important to note that by that time the KLSKY Tort is the best confectionary company in Kyrgyzstan (according to the people's prize "The Year's Choice"). Distribution is done to all shops that cooperate with the company, including regional shops in Kant, Kara Balta cities of the Chui oblast. In the shopping mall "Children's World" the

KLSKY products department organized an innovative experience for children and their parents under the motto “Make a cake with your own hands!”

In 2008 in addition to the “Orders Window” the service of “Taking orders from individuals and organizations for any types of cakes from the company catalogue with design options” was introduced. Delivery is also offered with this service. The sale channels are growing, the client base consists of 150 shops across Kyrgyzstan.

In 2009 the 10th year anniversary of the company was celebrated at the cultural centre for children and youth “Seitek” where guests, friends, clients, and suppliers of KLSKY were invited on 26 September to celebrate in a reception&concert programme format.

The same year KLSKY takes part in the competition “The Choice of the Year” and is recognized as the №1 confectionary company of Kyrgyzstan.

In 2010 at the exhibition Kyrgyz Agro Prod Expo the gold medal for the French line of products was given to KLSKY**.** Also the corporate shop in the centre of Bishkek opens up, at the shopping mall Plaza.

From 2011 the move of the main workshop into its own new building ensured that all production facilities are housed in one compact place. The new brand “Family tradition” is launched featuring live yogurts, natural jams, and confitures.

In April 2011 KLSKY received the gold medal for the products made of the so-called “sand dough” at the Kyrgyz Agro Prod Expo 2011, and October the same year - the gold medal for the cheesecake.

The 2012 is the turning year; large transformations are in the books. The company was restructured, new product lines were introduced such as the “World of Eastern Desserts”, the French line “Glassed Glasson” which was re-named into “Sweet Europe” including not only French but Italian and American assortments.

The trademark was designed and made visible, and re-branding of the company from KLSKY cake into the House of Confectionary KLSKY (HCK) and the change of the logo led to the complete transformation of the firm’s style, brand colours (preference was given to the purple).

From then on The House of Confectionary KLSKY works at a different level: all directorates are further re-structured to become more mobile and effective, the aim is to deliver the best quality work in all direction. European equipment was bought for automated processing of cookies and separate equipment for chocolate. Important positioning happens on the supply side, HCK becomes the official distributor of the Germany Lubeca, the chocolate and marzipan maker. Exchange visits with the French, Italian, and German confectioners who introduced innovations in the selection of cakes, as well as the decoration of exclusive cakes rose to a new level. The new direction of souvenir making out of chocolate called «Chocoland» was introduced.

In October 2013 the gold medal for the European dessert "macaroon" was awarded to HC KLSKY at the Kyrgyz Agro Prod Expo 2013. Also, among the assortments of "Family traditions" brand new products such as the home made cottage cheese and drinking yogurt were introduced.

The company network of shops widens, 2 more corporate sale shops opened up in the central Bishkek.
In November the first edition of the "House of Confectionary KLSKY Employee's Book". The book contains such diverse information as Philosophy, Standards and Rules, merchandising. The book enjoyed immediate success among the employees; it became the guiding star for the newly hired personnel as well as for the older more experienced employees.

Between 2004 and 2014, almost for 10 years now KLSKY is recognized as the confectionary leader of Kyrgyzstan, keeping this position since obtaining the "Choice of the Year" award in 2004.

6.1.3. The structure of the House of Confectionary KLSKY – Family Traditions

The company structures is hierarchical, and does not include the actual shop-floor workers, it is not clear where in the structure they belong, thus here is the short description of the structure:

Exhibit 6.1. Structure of KLSKY the House of Confectionary (translation of the chart is below the image)

Translation of the image:

- At the top is the Founder of the company,
- then the lower rectangle denotes the Director,
- then the Managing Director, and
- next level down four directorats reporting to the Managing director: production directorat, commercial directorat, financial directorat, and logistics directorat,
- and the next level of management are the following: the technical directorat, the security service, the quality control department, and the human resource management department.

6.2. Products of HC KLSKY Cake "Family traditions" and their handling

6.2.1. The Natural Products of the Family Tradition

The "natural product" of "Family traditions" farm spinned off as a supply business of HC KLSKY can be viewed and ordered online at their website.

There are two key product categories: confitures and yogurts. There is enough information on the website to entice webusers to order online. These are especially convinient for the customers in the regions of Kyrgyzstan, as well as for those abroad.

Confiture extra: “A piece of summer in each spoonful”. 25 employees are involved in making 1 ton per day of this product, it is sold in Kyrgyzstan and Kazakhstan. The volume of production is 20,000-30,000 units of 450 gram jars per year. Assortment includes: cherry, strawberry, blackcurrent, raspberry, peach.

Bio yogurt “Feel the taste of healthy”: 25 employees are involved in making 1 ton per day of this product, it is sold in Kyrgyzstan and Kazakhstan. The assortment of yogurts with the “Confiture extra” made of apricot, cherry, strawberry, blackcurrent, raspberry, peach 160 gram units), the “Dessert with honey and nuts” (170 gram units), as well as “Greek yogurt” (230 gram units) and “Bio yogurt” (230 gram units) have become the trademark. All made from natural products, which is labeled on the package.

Exhibit 6.2. Cakes & French chef recipes (Cake “Three Chocolates” and biscuits “Macaroons”)

Exhibit 6.3. KLSKY Family Traditions products (Jams “Confiture Extra” and Yogurts “Bio”)

6.3. Analysis of the Official Website Message and Managers' Talking of the Supply Chain Partners

When analysing the discourses that prevail in terms of greening of the company, it is the Japanese and German corporate management influence that is found in the KLSKY's book of corporate values, rules, and standards.

Where does KLSKY draw its organizational green normalizations from, which discourses are implicated? The summary of the interview with the managers of the company demonstrates the sources of influences, including the German and the Japanese corporations' discourses.

6.3.1 Semi-structured interviews with the managers of KLSKY: Human Resource Management, Mr VIT

Mr VIT is the HR manager at KLSKY, he is in charge of implementing the key functions of planning HR work, motivating existing personnel, developing training and mentorship schemes, hiring of the new personnel, creating and supporting conditions for the newcomers adaptation, as well as looking after correct administering of the human resource management. Mr VIT is not familiar with the ideas about green jobs or green human resource management, however he is very open to the idea and feels that Kylikovsky has already created many conditions of the employees that could be considered "green".

There is a total of 3 persons working at the HR deparment, Mr VIT says that they "try to make work mutually implementable, all three persons can do each others' jobs, in order to support one another in times of illnesses or absences. Mutual replacebility is a key concept at KLSKY.

Mr VIT believes that the ideas of "greening" in the company were introduced by its founders. The man and wife, who are the founders of KLSKY are sensitive to the ideas of harmonious relationship with nature, and while they are on their spiritual search they feel that sharing their ideas with the company directors, managers and employees will only help the company grow stronger, bigger and eventually green.

Mr VIT remembers that starting from 2011 there were preparations going for the changes and re-branding, the HR policy was about to change to.

The corporate culture of HC KLSKY is founded on three pillars: development, professionalism, harmony (see Table 6.1). Thus, the company's philosophy and culture are undergoing profound changes, that are actually the company founders' values.

Mr OBK and his wife incorporated (officially registered) the company in early 2000, and only since 2011 they started formulating a clearer philosophy to share with the employees.

Thus, the majority of employees today share the company philosophy and values, starting from the job safety to the technical hygiene to the personal and professional transformation of the employed into competent, confident, and inspired people who love their job. Thus, the career success at KLSKY is closely linked to the willingness and ability of the workers to share the company values and goals. The conversion of the employees into the system of values of the company happens naturally, without much pressure, employees find the values reasonable, transformation happens by itself.

Natural product, professionalism of workers, and harmony at work and personal life – these are central values of the company shared by the employees. Mr VIT says, "to impose the culture of green and harmony with nature on to employees is too complicated! These values have to be born inside each employee, they've gotta be intrinsic."

Mr VIT conducts a lot of work on training of the employees. Among these trainings are the HACCP related trainings. In fact, it was one of the most important recent innovations in management of the company has been the introduction of the HACCP (the Hazard Analysis and Critical Control Principles). These principles were first formulated in the international code of the EU directive: CAC/RCP1-1969 Recommended International Code of Practice General Principles of Food Hygiene. Based on HACCP systems of management of Kylikovsky re-focused on food safety that is provided by stage by stage analysis of the biological, chemical, and phisycal risks of dealing with food products. This system is shared among the suppliers and distributors while making produce from raw materials, delivering the produced goods, and handling of the food products, especially the perishable ones. In fact, not accidentally the German Lubeca, the large supply partner of KLSKY has the same system compliance in accordance with HACCP the industry standard (as it is seen in the Table 6.2).

Mr VIT organizes meetings in which feedback from employees is expected as he says, "in much the same way as the Toyota employees feedback organized, through written notes posted in the special feedback mailboxes after meetings".

During the trainings often employees voice their concerns and suggest improvements in work processes, Mr VIT said that these are good opportunities to write down the feedback and to follow-up on them. In fact, what is encouraged in the company and especially repeated during the employee trainings, is that any employee of the company is free to make an appointment with the Directors of the company and drop-by to discuss any matters. Many employees feel that it is beyond anything they could imagine. In fact, many in Kyrgyzstan are surprised to discover a company like ours here, they cannot believe that these kind of values can be nurtured here. We invest a lot into our incoming employees, we train them a lot, as very inexperienced and young people come working for us at the shop floor. And at the very start we tell them about our company's philosophy, and they realise that it is not far from their own human values to be in harmony with themselves, with colleagues, with clients, and with our consumers, with the state, with our partners and suppliers.

Work conditions and benefits

The employees of HC KLSKY FT have a standard Regime of work time and rest time. Employees know their functions and the reward system. The working conditions that are standard to the labour legislation of the Kyrgyz Republic are provided and administered by the management of HC KLSKY.

However, there is a list of awards for advancements at work, indicated in the Exhibit 3.

Exhibit 6.4. Work awards at HC KLSKY (extract from Work policies, The Book of Employee)

P.3. For continuous and impeccable work, improvements in the labour productivity, improvement in product quality and other achievements at work the following motivations are applied:

- gratitude announcement;
- bonus payment;
- award of a gratitude letter;

- award of the title «The best worker of the company» based on the results of the professional competition among employees;
- award of the corporate prizes;
- payment of a one-off material support for multiple years of diligent work in connection with a jubilee anniversary or retirement.

P.4. One or several of the above combined are allowed.

Mr VIT mentioned that the functions of the employees were formulated by the managers and directors during the most recent re-structuring of the company in 2012. The more experienced employees, who are often called upon by the HRM department to be the mentors to the less experienced ones, wrote the description of functions in great detail. However, there was no specific focus on being "green", instead it is always linked to being pragmatic and efficient, especially in terms of resource use and energy saving.

"We have approaches towards consumption reduction, i.e., before installing a light bulb we think about its energy consumption. When the technical directorat was busy building our new facilities for offices and shop floor they carefully designed the space so that the heat generated for the offices could spread in the most energy-efficiency way across the space to keep the people warm. For example, the alignment and sizes of the windows, rooms, corridors can be designed in such a way that the ventilation, sunlight, and generated heat can be regulated with greater effect to keep comfortable room temperatures and to allow for healthy ventilation", says Mr VIT.

The greening practices like the above one being adapted by the technical directorate are closely linked to the management principles of Kai Zen or the lean management style that is being favoured at KLSKY. Mr VIT said, "We use the japanese system Kai Zen, which is management of the production quality. They love to combine organization and culture. In the Employee Book the principles of Kai Zen are also included, especially the 5th standard about sorting and cleanliness conduct, etc.".

"All resources that are used as production inputs are calculated in terms of grams, liters, and other volumes before the cake or cookie recipes are introduced. Everything has to be checked. Overuse of one or any components is prohibited", explained Mr VIT.

Some of the principles are listed in the Exhibit 6.5.

Exhibit 6.5.. Definition of Kaizen from its author, Kaizen Institute Consulting Group

Kaizen is the practice of continuous improvement. Kaizen was originally introduced to the West by Masaaki Imai in his book Kaizen: The Key to Japan's Competitive Success in 1986. Today Kaizen is recognized worldwide as an important pillar of an organization's long-term competitive strategy. Kaizen is continuous improvement that is based on certain guiding principles:

- Good processes bring good results
- Go see for yourself to grasp the current situation
- Speak with data, manage by facts
- Take action to contain and correct root causes of problems
- Work as a team
- Kaizen is everybody's business
- And much more!

One of the most notable features of kaizen is that big results come from many small changes accumulated over time. However this has been misunderstood to mean that kaizen equals small changes. In fact, kaizen means everyone involved in making improvements. While the majority of changes may be small, the greatest impact may be kaizens that are led by senior management as transformational projects, or by cross-functional teams as kaizen events.

KAI = CHANGE
ZEN = GOOD
Or "CHANGE FOR THE BETTER"

改
善

"Kaizen = Continuous Improvement...by Everybody! Everyday! Everywhere!" additional information can be obtained from here http://www.kaizen.com/about-us/definition-of-kaizen.html (Kaizen Institute Consulting Group)

There is a total of 350 employees at the company today, only 70 of those are office workers with access to personal computers and internet. “We are the recognized leader of the market in terms of turnover, perspectives, assortments and partnership capacity. In this bigger game my task at HRM is clear: it is to reach out to the employees and bring them our philosophy, and help them integrate the values of the company as their own personal values.”

This case study demonstrates that at KLSKY the alignment of the company identity and the employees’ values and self-identification is a recognized objective and a well respected and endowed with resources process. It is integrated in the company’s policies, employees are motivated to align their values alongside those of the company’s philosophy, and they are offered a broad vision of how their personal career goals can be integrated alongside the company’s growth.

6.3.2. Semi-structured interviews with the managers of KLSKY Production and processes: Supply chain, Mrs. NUZA

The interview with the supply chain managers demonstrates the German corporate influence (also see Tables 6.1 and 6.2.).

Mrs NUZA is an employee with a long history linked to the growth of KLSKY. She is the key person dealing with all the suppliers, up-stream and down-stream, and her department has been central in organizing the Family Traditions new facilities and branding them as the KLSKY products. Mrs NUZA is good a practical things, and she prefers that her colleagues deal with the formal and written documentation, as well as with the external stakeholders, reporters, or researchers. There were two of her colleagues who were present during the interview, and one of them was very actively drawn into the interview by Mrs NUZA as someone who knew the definitive answers. In fact, the younger colleague obliged and explained some of the most significant facts or names related to the value chain and suppliers, mentioning Lubeca and the chocolate distribution in Kyrgyzstan as a unique KLSKY victory in conquering more market share in Kyrgyzstan and the neighboring countries. Also, Family Traditions was formulated not as a supplier of the dairy produce to the KLSKY baking facilities but rather as the in-house dairy production facility of KLSKY. Mrs NUZA said that this ensures quality of input and to uphold the claim that “we use only natural products”.

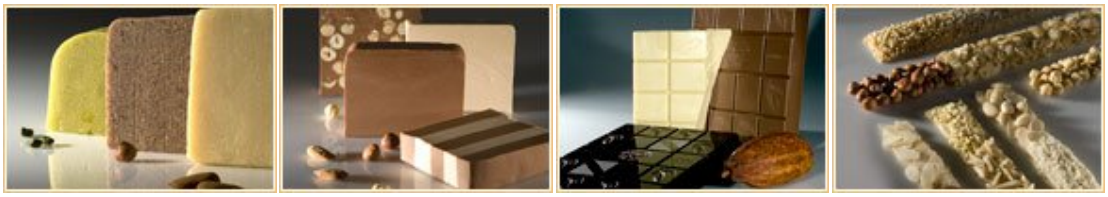
Training the suppliers, conducting joint meetings, teambuilding excercises with the suppliers and partners is an important part of the KLSKY work processes and organizational culture.

Mrs NUZA could not really comment on anything related to “green supply chain”, however she said that KLSKY works very closely with it suppliers, year after year her department works on gradually improving the quality of supply in terms of timely and prompt delivery, quality of inputs, trust, and payment mechanisms, as well as strong mutual support in the market to alert about all relevant development in the niche that KLSKY is keeping as the domain of its own. Developing smooth production processes greatly depends on the internal organization of the production facilities, as well as on the individual capacity of each employee. Mentoring of the newcomers and developing and motivating shop-floor and mid-level managers is very important to the company, and therefore all key directors and top managers pay a lot of attention to raising new generations of employees to step into those positions that become vacated or emerge as new while the business is expanding rapidly.

6.3.3. Semi-structured interviews with the managers of KLSKY: Production and processes, Mrs DIRA

In the production of the confectionary at KLSKY there is a strong presence of the German, French and Japanese ideas and standards. The most recent addition of the buildings at KLSKY and the betterment of the central workshop and the offices demonstrate an aspiration to higher standards of work for all levels of employees, and in a way to match the facilities of the Germany supplier, whose production and administrative facilities are the state of the arts in the industry, as shown in the Exhibit 3.

Exhibit 6.6. The golden standard for factory facilities of confectionary production



“We are a medium-sized company with a long-standing tradition of high quality requirements. We have about 150 employees. We encourage all employees to self-initiative, overwhelming commitment and team spirit. We care about ethical trading standards. We spend a lot of money for an environmentally-friendly production. We are committed to environmental protection and the preservation of resources” (from company website).

The above Exhibit demonstrates the plants, facilities, product assortments, technologies used at Lubeca is impressive and overwhelming for the KLSKY managers and workers, much to learn, replicate, and innovate and to get inspired. The production and processes expert at KLSKY, Mrs. DIRA, demonstrates the electricity of the influences, including the openness of the founders to new knowledge and new experiences, while staying true to the original idea of the HC KLSKY Family Traditions.

Mrs DIRA started working at KLSKY very early on when the company was still unknown and small. She was invited to work by her relatives, who were among the founders of the company. Having come from a completely different background, remote from the confectionary, baking or culinary domains, she was diligent and determined, quickly learning on the job and soon becoming the key employee knowing of all production processes, required skills and started training workers to ensure quality and motivation. Besides being on the new job, Mrs. DIRA found herself also in a new town, new surroundings and she had to overcome many challenges before she felt comfortable and confident in her new job and new life in Bishkek. However, the founders of the company kept her inspired and motivated, she shared the worldviews with them, she gained insight into many cultural and intellectual surroundings of her superiors, and her life journey turned into a professional spiritual journey. She said that “there is no point in doing a job that you do not love and do not enjoy”. Thus, coming to work and giving all of her time and energies to improving the production processes, the product lines, inventing new ways of reaching out to customers, offering them new recipes and innovative ways of consuming confectionary in Bishkek made her feel that she found her place, that it all had a meaning beyond just an everyday life routine. The founders of KLSKY, the husband and wife KLSKY having been on a spiritual journey of

their own included all their colleagues, employees, partners into their journey. They have been sharing the findings and approaches, the central of which has been love and spiritual search not only in private lives, but also in professional and business initiatives. The founders of KLSKY have been able to introduce their own inspiration from spiritual practices and art and teachings of the family of Nichalas Roerich to their employees such as Mrs. DIRA. The re-prints of several of the Roerichs paintings decorate the walls of Mrs. DIRA's office: over her desk, bookcase, and windows overlooking the wide open face of the beautiful BCHK (Bolshoi Chuisky Kanal), one of the 3 rivers that cut across Bishkek bringing the Southern mountain streams to the Northern medows and valleys and low-land pastures. She confessed that often when she feels she has too much work and stress is rising she likes to spend a few minutes near the window and enjoy the view. It recharges her and makes her day go smoother. So is the effect of the Roerich paintings, that she said have a very special combination of colours that makes them shine and feed the person viewing them, with nourishing and calming effects.

Mrs. DIRA told about the recent move into this new office building, and the greater comfort of the office spaces for the employees. She shares the office with her two colleagues. Her assistant and her adviser and the in-house "mad scientist" or "wizard of Ozz" or simply the French Chef of all the desserts Mr CLM. She nodded at the empty desk of the chief confectionary guru, the Bishkek famous Mr CLM, who has been developing the Sweet Europe product line with some of the most beautiful innovative sweets in town since 2012. Mr. CLM spends most of his time at the factory conveyer belt and his name is connected to the growing European confectionary aesthetic view of the products made by KLSKY. About her assistant, whose desk was also empty at the time of the interview Mrs. DIRA said that she loves to be a mentor to the young employees who come to work at KLSKY. This role is often given to her as she is considered one of the most experienced employees and old-timers not only knowing about the production processes but also about human nature and human condition, she understands what makes people tick. Mrs. DIRA is someone who helped in developing the Employee Book and she has been among the most successful mentors in the company, her mentees tend to stay longer at the company and they learn the best ways to implement their jobs impeccably, on time, and with greather productivity.

6.4. Tables of Analysis of the Official Website Messages linked to the discourses institutionalised among the Supply Chain Partners

In this subchapter the institutionalization of the global green discourses at KLSKY linked to its supply partner Lubeca, and other global companies' (i.e., Toyota) is analysed in the tables below. First of all the Green discourses are traced in the KLSKY, further on under the Supply Chain management subchapter the analysis table of discourses at Lubeca are provided.

Table 6.1. Green Discourses Institutionalised for the Greening at KLSKY

KLSKY	**Institutions translated from prevailing discourses (the stabilisation of discourses)**		
Discourses	**Values**	**Norms**	**Discursive Practices**
Construction of Green Identity	**Our foundations of corporate culture:** **Who we are?** We are a production company for confectionary goods made from natural ingredients, the industry leader in Kyrgyzstan. **The foundational principles of our company is: "Love what you do, and Do what you love!"** **HC KLSKY's mission and values** **Our mission towards our clients:** To give our clients the joy of natural high quality confectionary produce and high level of customer service. **Our mission towards our employees:** We value and respect each and every Employee, we aim to develop our Employees' professional qualities and help in their self-realization. We respect the rule of law and therefore we aim at achieving wellbeing and protection for all our employees.	***Professionalism is*** education + mastering of skills that are strengthened by love towards own calling. From organizational point of view: • Quality control • Innovative • Creative • Discipline From personality point of view: • Responsible • Discipline • Punctuality • Skillfullness • Search for innovation The Special Normativity of KLSKY: • The principle of using natural ingredients • High level of customer service • Availability of unique (original) confectionary assortments **Development is *an unceasing process (aspiration) towards limitless self improvement.*** Development from organizational point of view:	**Corporate Rules for dealing with suppliers** *While working with the suppliers of products and services the employees f the HCK must be guided by the following principles:* • The purchase of the goods and services necessary for the production processes as well as for the support of internal business processes are done only by the appointed employees; • While dealing with the suppliers the employee must act strictly in the interests of the Company and its shareholders without any protection or preferences of the third parties based on personal interests; • Purchase of the necessary products and services must be implemented through effective tendering procedures; • While making a choice of the suppliers of goods and services the appointed employee and a group of employees must be guided only out of advantageous ratio "quality and cost" for the company; • Responsible employees must not ask or accept payments, gifts, and/or anything of value from the actual or potential suppliers of the Company as a matter of gratification for the deal concluded or being concluded. **With colleagues** • The main principle of interaction between colleagues is

	Our mission towards our partners: We develop long-term stable relationships through conducting honest, transparent, and mutually beneficial partnerships. **Our strategic goal is to become the confectionary house with a world renowned name.** **Key characteristics of the values of HCK:** • Harmony • Professionalism • Development ***Harmony*** – flexibility and balance in development From the organizational point of view • Caring for the environment • Caring for those who work with us • Balance in work conditions and pay • Balance in money and spirit • Balance in rest and work • Balance in clients' tastes and the quality of our products Harmony from the personality point of view: • Calm • Virtue • Tolerance • Care • Diligence • Kindness	• Opening up new markets • Improving technologies, know-hows • Investment and capital growth • Development of the national economy • Cutting unemployment • Development of the human capital • Client as a partner (partner relationship) Development from the personality development point of view • Aspiration • Vision • Willpower • Desire • Idea • Discipline • Freedom from prejudice	the respect for the person and human dignity, openness and friendliness, readiness to always help a colleague; • Discrimination and dislike of any employee to another based on race, religion, gender, age, citizenship, phisycal disabilities or any signs of such in the employees' relatives and friends must not be allowed in any form; **Between the line manager and the subordinate worker** **The main objective of the line manager** is to help the a subordinate worker to grow professionally, to see the perspective of his or her job activity in the context of the units and departments of the Company, to feel themselves as active contributors to the Company as a whole. **With the competitors** In the relationships with the competitors we are guided by the understanding that healthy economic competition contributes to a fairer goods and services distribution and to the rise in the wellbeing of the state and the population. We respect the phisycal and intellectual rights to the property of the competitors, we avoid unlawful use of coercion against them, including the obtaining of the commercial information through dishonest, illegal, and unethical means. *We take upon ourselves the following duties:* • To contribute to the development of open markets for trade and investment; • To support the competitive behaviour that is beneficial socially and economically, while the mutual respect of the competing sides are demonstrated; • To observe the rules of honest competitive fight with other professional players in the market.

Discourses	Values	Norms	Discursive Prctices
Construction of Desired Green Competences	**Harmony:** Stability Wellbeing Honesty Health Security Family Love Fairness Freedom Happiness of others **Professionalism** Dignity Responsibility Teamwork Discipline Efficiency Work Tolerance **Development** Confidence Personal growth Recognition Self-realization Belief Wisdom	**Corporate Standards** ***Standard 8.*** WE do not miss meetings that are created for information exchange and for agreeing plans. We actively participate in these meetings, express our views on the issue raised. We know that our views will be taken into account while decision is being made. However, it is not necessary that the decision will be coincidental with ours, and it is indecent to be offended by it. ***Standard 13.*** WE know that our proposals directed at the improvement of the system of labour wages are read and heard by the management if they are provided in written form to the company management instead of complaining of being underestimated by the management. We understand that in response to our requests and proposals we can receive agreement and/or justified refusal of agreement. Being offended is indecent. ***Standard 14.*** WE never speak poorly of our company and our colleagues. ***Standard 15.*** WE know of three risks that await every person: envi, jelouzy, and lazyness. In order to keep ourselves from these WE socialise with our colleagues, we work and solve problems together and we are responsible for anything that may be caused by our letting them down. We are open for communication and regularly share our results. We know that being offended is like a manipulative intrigue.	**Instruments of lean production management ("5S"):** 1. **Sorting ("Sortirovka")** – clear separation of things that are needed and those that are not needed, getting rid of those that are not needed. *All materials, equipment and instruments are sorted by such categories as:* Needed always • Materials, that can be used in the moment • Materials that can be used in work, but at this moment they are not demanded; • Not used: faulty products, unused containers, carriages, to have them at the time of sorting but otherwise marked with a red sign. 2. **Order observing ("Sobludenie poriadka" – accuracy)**– organization, keeping of the necessary things that allows for a quick search-find-use. By using a system of signs that makes finding things easier such as labels, pointers, catalogues, etc. Each thing has its own place and each place keeps its own thing. 3. **Keeping clean (Soderjanie v chistote – cleaning)** – keeping clean and tidy work place. The working zone must be kept in ideal cleanliness, action sequence: 1. to divise the line into zones, create maps and schemes with work places labelled and equipment labelled on them, etc. 2. define a special group that is responsible for cleaning the place with a needed regularity. 3. define time of the cleaning: morning: 5-10 minutes before the start of work day; Lunch time cleaning: 5-10 minutes after lunch; After work: when work stops or

		Standard 16. WE value in our workers the internal motivation. If our employees want to work but do not know how to do it or do not have experience we teach them and we expect results that are convergent with the training provided. ***Standard 17.*** The best that WE can do for our colleagues in difficult situations is to help. The best thing we can do when we are in difficult situations is to ask for help from colleagues and the management of the company. ***Standard 21.*** WE take on courageously new and unknown, we are not afraid to be weak or incompetent. WE are not afraid to make mistakes. We are confident that we can fix the mistakes. ***Standard 27.*** WE are caring for the property of our company, we take care of information safety and we protect our intellectual property. WE never allow ourselves to use company property for personal gain or third party gain, except for the gain of our Company. ***Standard 28.*** WE consider teamwork as the foundational principle. WE clearly see the common goal and we are ready to help and support each other because our colleagues are our confederates or like-minded people aspiring to a common victory.	during waiting times. 4. **Standardization (supporting order)** – necessary conditions for the implementation of three rules. Develop instructions for the three standards support: tidy, clean and sorting. The most important rules must be in writing and located at the work places at the level of eye sight every day. Formal written grounding of the rules of work place order keeping, work technology, and other procedures. Work instructions must include step-by-step actions for internal order keeping. At the same time developing of the new methods for monitoring and remuneration of the distinguished workers is kept high in the everyday agenda. 5. **Improvement ("Sovershenstvovanie" – habit forming)** – developing habits of precise auctioning of the established rules, procedures and technological operations. Turning the sequencing of the established rules into own habits. Rules must be increasingly executed and improved. **Goals:** • keeping the number of accidents low; • raising the quality level of products, reducing the number of defects; • creating comfortable psychological climate, motivating of the desire to work; • Increasing the work productivity, which in turn raises the company profit and subsequently raising the level of workers' income.

Table 6.2. Green Discourses Institutionalised for the Greening of Lubeca

Lubeca GmbH	**Institutions translated from prevailing discourses (the stabilization of discourses)**		
Discourses	**Values**	**Norms**	**Discursive Practices**
Construction of Green Identity	Portrait "We are a medium-sized company with a long-standing tradition of high quality requirements. Within the markets we serve, we act as flexibly as successfully. At the same time, we… have about 150 employees, working in multiple shifts; offer many apprenticeships (more than eight percent of the overall number of employees); encourage all employees to self-initiative, overwhelming commitment and team spirit; care about ethical trading standards; put effort into maintaining a friendly working atmosphere; spend a lot of money for an environmentally-friendly production; are committed to environmental protection and the preservation of resources are certified according to the International Food Standard; donate all profits to charitable causes through our sole owner (Friedrich Bluhme und Else Jebsen Foundation) "Marzipan- produced with tradition	What we produce Marzipan, persipan and nut masses; Nut nougat and almond nougat mixtures ; Covertures made from dark, milk and white chocolate; hazelnut and almond preparations; a broad range of products from every category, also available in organic quality and Fair Trade products. What we stand for Dr. Axel Hahner Management With our products, we stand for indulgence through quality because quality is our culture. Andreas Bäder Sales and marketing We stand for direct sales and comprehensive customer service. Raimund Freund Head of Production We stand for delivery on short notice and for the impossible made possible. Andreas Horn Head of Quality Management We stand for high product quality and safety. Erich Dietrich Head of Product Development We stand for	Old recipes computer-controlled and manually realised within a well-structured workshop environment: "Marzipan The marzipan is roasted in open, rotating copper roasting boilers. This method gives the marzipan its unique, incomparable taste. And: the Lübecker Marzipan-Fabrik is one of the last marzipan manufacturers to use this procedure and thus attain the uniqueness of Lübeck Marzipan. However, before the marzipan can be produced, the raw, brown almonds naturally must be processed. They are cleaned and then blanched with hot water, so that the loosened brown seed coating can be removed in husking machines with rotating sets of rubber rolls. Electronic sorting machines remove faulty almonds, while two additional, specially trained employees remove any remaining faulty almonds manually. Naturally, there is a recipe for every marzipan production. This recipe, which is subject to strict rules, is programmed into the computer-controlled production. In accordance with this recipe the almonds are automatically added, pre-crushed and mixed together with sugar and water. Only then does the tradition, which is over 100 years old, come into operation, after the pre-crushed mixture of almonds, sugar and water is finely ground by two whetted sets of granite rolls, working in opposite directions. The granite rolls give the marzipan a slightly fibrous structure for the right kind of "bite". Then the mixture is heated in the open, rotating copper roasting boilers. Experienced master roasters guarantee an even, high quality roasting of the raw marzipan mixture. After the roasting, the raw marzipan mixture is cooled with sterile air, shaped into blocks of 12.5 kg and packed in foil. The packed blocks are cooled in cold storage to around 16°C within a few hours, so that the valuable almond aroma is not damaged by an excessively slow cooling procedure with longer extremes of temperature. The product quality is monitored during manufacture by a well equipped quality control laboratory, also from a microbiological

	It is one of those methods of production that harmonise tradition and quality: the roasting boiler procedure. Nougat- the finest molten enjoyment At first it was merely an idea - back then, when chocolate was mixed with hazelnut paste. Today, hazelnut nougat is just as much a speciality as almond nougat, and one can no longer imagine the confectionary market without them. The fact that a difficult process is necessary for the manufacture of this fine nougat mixture in order to reach the very best quality is demonstrated every day in the nougat production at Lubeca. Chocolate coatings - the perfection of taste Taste, melting quality and appearance in perfection - Lubeca's chocolate coatings deliver what they promise. The renowned excellent quality is determined by knowledge that has grown over decades. Hazelnut and almond preparations - quality that can be seen Regular almond chips without any broken-off tips, large planed slices of hazelnut and almond with few cracks, halved almonds for	professional customer advice as we are specialists for marzipan, nougat and chocolate covertures. The entire manufacturing process is monitored by the quality control laboratory. Similar to the marzipan and nougat manufacture, HACCP systems (Hazard Analysis Critical Control Point) are also used here to guarantee a high degree of production safety. This includes, for example, microbiological examinations for any relevant germs including salmonella and the carrying out of sensory tests for deviations in taste.	perspective. Nougat The basis of nougat variations are formed by hazelnut or almond paste, which we manufacture from freshly roasted hazelnut kernels or almonds. Depending on the type of nougat and the desired degree of roasting, the dried fruit is roasted to degrees ranging from light to dark brown and then ground to a paste by fly cutter mills. The roasting is done in a hot stream of air in a fluidised bed procedure, whereby the nuts are roasted individually and not as a compact mass, as is the case with drum roasters. This produces a more even heat transfer across the entire surface. Important factors for the differently defined degrees of roasting are roast duration and roast temperature. The fine or molten quality of the nougat is achieved by rolling it finely with five-roll refiners. Sugar, coating and cocoa butter, where required also milk and cream powder are added in a computer-controlled process in accordance with the respective recipe. The homogeneity and the consistency of the nougat is achieved by the subsequent conching process in 3 to 6 tonne plants. The filling into buckets or boxes is done by modern heat-treating machine, with which the desired consistency and firmness of the nougat is created. Chocolate coatings Select cocoa growths from the best plantations in South America, Africa and the Caribbean are added in a computer-controlled procedure to other raw materials such as cocoa butter, whole milk powder, sugar and natural vanilla extract in accordance with the respective recipe and then homogenised in the mixer. Fine rolling operations with two-roll and five-roll refiners lead to a refining of the grain from around 16 thousandth of a millimetre, thus transforming into the popular fine molten chocolate coating from Lubeca. While conching for up to 48 hours, unwanted aroma materials such as acids disappear. Once poured into 2.5 kg forms, the nougat then passes through a cooling tunnel and is automatically packaged after it has been shaped into bars. Hazelnut and almond preparations

	decorating, selected by hand - our preparations are of the highest quality, as our customers constantly confirm."		Calibrated almonds and hazelnut kernels of selected origin are the raw materials that we use for our preparations. Only kernels of this provenance and of a defined size (e.g. Californian almonds Nonpareil or Carmel of at least 27/30 size or Levantine hazelnut kernels from the Black Sea coast with a size of 13-15 mm) are considered. Because almonds and hazelnut kernels are relatively brittle, they must be conditioned with moisture and heat. Only then can they be cut into especially thin slices of 0.45 mm. These planed slices are not only of high quality optically, but also provide a high yield for covering confectionary and baked products. Furthermore, the large surface means that the almond taste is even more prominent. Conditioning, slicing, grating, chopping and cutting - we also use these methods in manufacturing almond chips and other preparations. For this purpose we maintain a modern selection of machines with permanently whetted and sharpened tools. The water added in the conditioning process is reduced again after processing in a drier, so that all products delivered have a maximum moisture content of only 5%."
Discourses	**Values**	**Norms**	**Discursive Practices**
Construction of Green Competences	"Our traditional methods of production and our high demands on quality guarantee a highly respected degree of quality, recognised particularly by marzipan experts as much now as in the past. As well as the roasting process in copper roasting boilers, the secret is also the previously mentioned high demand on the raw materials. For example, we prefer to use almonds from plantations in the Mediterranean region for our top products, which have an excellent almond aroma due to the	What we think Ralf Gredler Technical Department We work 24 hours a day to keep production running. Here the work, not the employer, determines the pace. Leif Beth Production There is a super work atmosphere here- we're fully behind the company and we're passionate about making marzipan Karoline Gutjahr Quality Assurance We work hand in hand with Production and the company's	"Lübecker Marzipan Strict rules for the highest quality" The following discursive practices ensure this highest quality aspiration: "For the composition and manufacture of marzipan in Germany, the regulations for oilseed apply. According to these regulations, the marzipan raw paste M0 must comprise of sweet, peeled almonds with a moisture content of no more than 17 %. No more than 35 % of sugar may be added, and no less than 28 % of the mass should be almond oil. In the marzipan raw mass MI, up to 12 % of bitter almonds may be added. Marzipan is a mixture of raw marzipan mass and, according to the German guidelines for oilseed, at most the same weight in sugar. The sugar can be replaced by up to 3.5% glucose syrup and/or 5 % sorbitol in relation to the total weight of the marzipan. Fine marzipan consists of at least 70 parts raw marzipan mass and at most 30 parts added sugar.

	provenance and the climate.”	management to implement, check and further improve quality standards. Stefan Stropek Dispatch To me Lubeca means good working conditions and quality in all areas. Trainee: “Lubeca offers us varied training, which is a optimal preparation for our future careers.”	Raw Materials for our products The almond- a cultivated plant for the last 2000 years Some are bitter, others are sweet. Almonds are as versatile as the manner in which they are processed. A distinction is made between bitter and sweet almonds. Sweet almonds are bred by means of refinement, in other words grafting the bitter almonds. Most kinds of Spanish sweet almond tree also carry small amounts (around 2%) of bitter almonds. Bitter almonds alone are inedible. However, they are used at a proportion of between 3% and 5% in the production of marzipan in order to provide a stronger taste. In California, 100 % of the almonds harvested are sweet almonds with no bitter almond share. The cultivation of large plantations leads to even fertilization and artificial irrigation. Depending on the weather, the annual American harvest can produce up to 700,000 tonnes. The most important varieties are "Nonpareil", "Carmel", "Monterey", "Butte", "Padre" and "Sonora". Californian almond kernels are treated according to variety and size. They are offered in "raw or "brown" versions, as well as "peeled" or "blanched". Almonds from the Mediterranean region are more aromatic than those from California. The reason for this lies in the manner of cultivation. Mediterranean almonds tend to grow more in original and natural cultures. The climatic and geographical conditions in the Mediterranean area also ensure a more intensive aroma. In Spain, the annual harvest amounts to up to 70,000 tonnes of almonds. The most important varieties are "Valencia" and "Marcona". Spanish almonds have a thicker skin than Californian almonds. Almond kernels contain a lot of fat and are nutritious. The percentage of almond oil is between 50% and 57%. Almonds are very healthy due to their fatty acid spectrum. This consists of 80% oleic acid, 15% linoleic acid and 5% palmitic acid. In addition, it has 19% protein, 16% carbohydrates and many minerals, above all potassium and vitamins B1and B2. The proportion of water is around 4% to 7%.”

6.5. Conclusions of the Case Study

While trying to understand the impressions, influences, and inspirations behind the products and services of KLSKY as well as organizational structure and culture of this company, one would be impressed by the electricity and a certain selectivity of the methods and tools available at KLSKY. At KLSKY there is a very strong influence of the French baking and confectionary tradition since 2012. Most recently, in 2013 the German chocolate and marzipan maker Lubeca gave KLSKY the status of the official distributor and thus KLSKY is not only the key member of the Lubeca's downstream supply chain, but also became the member of the natural product supply network of cacao based products, and thus uses the products of Lubeca as ingredients of the confectionary products of KLSKY.

Eclectic founders on spiritual journey themselves have become the charismatic leaders of the green change in KLSKY. The key managers followed, and they inspire in their turn the broader employee base to adhere to the values of the founders and the interprested values of the Roerichs. As a result we have witnessed the unintended green competences developing at KLSKY, that are not called this way nor is there any strategy for developing specifically "green competences" or "green identities". However, the qualities of learning, and of a "learning organization", very much in the manner of Gherardi's learning and knowing organization is developing, with the workforce having creative, spiritual, and practical de-carbonizing behaviours encouraged and to feel a belonging to a bigger cause of being more nature and team spirited, lean and conserving of resources, feedingback the visions, ideas, observations. These are all symptomatic of a strongly growing and successful organization that is a living being in a the ecology of the Kyrgyzstan's emerging green economy.

The four hypotheses of the research can be interpreted here:

In regards to H1. Legitimisation of the global climate discourses at the level of Lubeca is clearly visible in the institutionalization of these discourses at the KLSKY organizational level too. The awareness and acceptance of Lubeca's approaches at KLSKY, especially towards certain industry standards (i.e., one of a variety of instruments for the "Footprint accounting"), and the subsequent integration of the labour, product, and supplier partnership standartization required by the larger partner in the supply chain confirms this hypothesis being valid for KLSKY's management green legitimisation.

In regards to H2. Although KLSKY does not directly brand itself as green (i.e., natural product and lean management) it still serendipously creates more green and low-carbon jobs, as exemplified by the Human Resources department's policies and the vision of the founders and top management of the company. The continuous investment in improvement of labour conditions, safety, family and work balance, as well as the training of the employees KLSKY creates unprecedented environment for the labour to develop loyalty towards the company due to the "greening" and de-carbonisation of the labour and work processes at the company. Workers feel heard and actively participate in feedback, very much in line with the Japanese and Germany management styles introduced at the HR and Supply chain management levels.

In regards to H3. The exposure of the KLSKY's founders and top management to the ideas about harmonious development, spiritual practices and "loving the job" rather than being one of the many workers of a faceless company, becomes contagious and inspiring for the workers, at least to those who share these values. The HR department monitors closely the conversion rate into the founders' and top managements' values. Untill these values remain universal and humanitarian, there is a strong chance the workers will continue integrating them and that they eventually become translated into more of a low-carbon and green values, norms, and practices.

In regards to H4. Workers of KLSKY do not have much chance to formulate "green" job routines, as the processes at KLSKY are very simply broken down and most innovation is done at the top management level. However, the rather flat structure of the company's management makes the company into a learning organization in which conveyer belt workers can easily feedback to the top management, and the managers can learn very quickly of the problematic and bottle-neck areas of the production, sales, and supply areas. Thus, workers are autonomous enough and yet are well trained and tamed to be within the Kulkovsky structure and feel loyal and integrated, especially if the company will continue to exhibit and articulate its employee-friendly atmosphere that gives them a competitive edge compared to other similar companies in the country.

Chapter 7. The Green Economy actor FOAM BKG in the Value Chain of IFOAM: Case Study of the Organic Movement in Kyrgyzstan as a "learning oganization" drawing on experiences of green movements of EU, Bhutan, China, and Kazakhstan

"Live life simply, so that others may simply live",
Mahatma Gandhi

"Consumerism has to become as "no-no" as drinking-and-driving",

Germain Greer, The INSIGHT

7.1. Case introduction

While Green Economy remains exotic and rather otherworldly to the majority of households and organizations in the Kyrgyz Republic there is a growing trend in Kyrgyzstan since the early 2000 to integrate into the world's economic trade through emphasizing something of its own, authentic and original, something that grows out of the local and traditional, that had been cultivated and conserved for many years and perhaps for many centuries and generations ahead could be kept so. Organic agriculture is one aspect of this search. It offers some strong points and unique advantages of Kyrgyzstan's positioning itself in the world market in the second decade of the XXI century. With two revolutions at the backdrop that re-defined the cultural, social, and economic relations inside the country Kyrgyzstan has been in the midst of re-defining and re-stating its values, norms, and writing up standards for internal use as well as for outside with the growing Diaspora of Kyrgyzstanis abroad. Simultaneous to the large and intensive outmigration of the Kyrgyzstanis from the country to the near (Russian Federation and CIS) and far abroad (USA, Canada, Turkey, Germany, France, Italy, Arab countries, Asia, elsewhere). There is a growing competition for Kyrgyzstan as a sphere of influence between Russia, China, USA, Turkey, European Union, Arab countries, Japan, Malaysia, as well as of the neighbouring Central Asia countries. Kyrgyzstan presents today an amazing puzzle to be resolved, a mighty game being played out by external forces, in which Kyrgyzstanis often feel paralyzed, outraged, urged to align with some external values and pressures, and beholding what's unfolding without much control over what is going on. The various integration scenarios have been presented, articulated, battled over, as a result Kyrgyzstan is about to join the Eurasian Customs Union, while effectively keeping its

membership in the WTO and in the Shanghai Organization for Cooperation. One of the most recent integration possibilities seems to be the China-led and Kazakhstan-supported *Silk Road's Economic Belt* where Kyrgyzstan is called upon to become a player of the new regional dimension, in an alliance of some global significance.

This could also be interpreted as a way for Kyrgyz organizations and individuals, activists of the civil society sector, entrepreneurs and the farmers of the newly shaping organic sector to take a bite of the emerging green economy, and to establish a market niche that can be used to transform the disadvantage of the perceived Kyrgyzstanis' agrarian dominated backwardness into an imagined and acted upon unique economic and social advantage of the last bastion of the non-chemical and non-GMO based food production in the world.

When talking of a life-cycle supply network for the purposes of this research we look at the assemblage of the IFOAM and the BKG as a unified value chain (in this case, we are talking of a community of practice that has the potential for a supply chain network). As indicated in the method presented in this dissertation, the analysis of discourses of IFOAM and BKG is attempted in order to understand what sipped through and got embedded as values, norms, and discursive practices from the global IFOAM to the local Kyrgyzstan's BKG members. This is a case study of the Federation of Organic Agriculture Movement (FOAM) BKG of the Kyrgyz Republic as a national player in formulating organic standardization in Kyrgyzstan in their bid to provide the centralised guidance and political link for the national organic agriculture standardization and certification.

7.2. Discourses of the global economy clubs and local context

As early as 1960s the idea of organic energy and organic food fuelled the debates and action by activist consumers, scientists, intellectuals, food connoisseurs, enlightened farmers, and entrepreneurs in the US and Europe. IFOAM defines organic as "food raised without chemical fertilizers, fungicides, herbicides and pesticides, and for livestock access to the outdoors as well as no growth hormones and antibiotics".

As the organic formal and informal movement around the world takes various shapes and forms, the boundaries of organic become further clarified, widened or narrowed, depending on the objectives of the organic actors. There are additional conditions and qualities to

organic, that are taken into consideration, and debates rage on both sides, among those who want to narrow the boundaries, and those who want to keep them wide. For example, IFOAM suggests that "food certified organic has been grown in harmony with nature, by farmers committed to building soil health, increasing organic matter and protecting ground water and pollinator and wildlife habitat. Thus, for consumers who desire healthy, sustainable, natural food, they must also detect such qualities of food as being local, Non-GMO Project certified food—as long as it's also certified organic (although certified organic is by definition *always* non-GMO). And there are some doubts and digressions about what is called the "natural" label. For instance, some commentators suggest to "skip the "natural" label", as it means almost nothing specific and is perceived unaccountable.

IFOAM and its proponents consider the reform and re-imagining of the industrial agriculture into low-carbon activity, for example as it is stated on the website of IFOAM:

"It is generally acknowledged that industrial agriculture and our globalized food system is a major contributor to greenhouse gas emissions, up to 50% if proper account is taken of emissions from land use change and deforestation, most of which are due to agriculture, and for food-related transport, processing, storage, and consumption. Nevertheless, it is also generally recognized that agriculture holds tremendous promise for mitigating climate change, and much else besides."

The researcher of the Institute of Sciences in Society, Dr Mae-Wan Ho wrote about the "*rising chorus from UN agencies on how food security, poverty, gender inequality and climate change can all be addressed by a radical transformation of our agriculture and food system*" (Ho 2014):

"The successes of small agro-ecological farms are well known. Study after study has documented improvements in yield and income as well as environmental benefits from eliminating agricultural input and polluting runoffs, increase in agricultural and natural biodiversity, reduction in greenhouse gas (GHG) emissions, and most of all, improvements in water retention, carbon sequestration and resilience to climate extremes such as drought and floods. There is evidence of improved nutritional value in organically grown food, not just from reduction or elimination of pesticide residues, but from increased content of vitamins and micronutrients. Olivier de Schutter, UN Special Rapporteur on the Right to Food is in no doubt that agroecology is a solution to the crises of food systems and climate change. He cites

a study published in 2006 on 286 recent sustainable agriculture projects in 57 developing countries covering 37 million ha (3 per cent of the cultivated area), which found that crop productivity on the 12.6 million farms increased by an average of 79 per cent, while also improving the supply of critical environmental service. Noémi Nemes from FAO point out that an analysis of over 50 economic studies demonstrates that in the majority of cases organic systems are more profitable than non-organic systems. In developed countries, this is due to higher market prices and premiums, or lower production costs, or a combination of the two. In developing countries, greater profitability is due to higher yields and high premiums. The increased profits are accompanied by enormous savings due to reduced damages to the external ecosystems from polluting agrochemicals."

Thus, the organic movements supported by millions of farmers who are dedicated to grow food that is instead of damaging the envronment actually supports the biodiversity of crops and cattle, helps reduce carbon emissions, and develops processes that benefit the economy and the society overall, as well as every single farmer and the farmer's family at the same time. There are no loosing scenarios in organic farming.

Besides, Ho (2014) demonstrates that the emergence of the green circular economy around the world has been ahead of the actual research and theorising about it:

"Han Herren, President of the Millenium Institute, highlights results of a modelling exercise undertaken by his institute for a comprehensive UNEP Report, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*. It shows that investments in sustainable agriculture can indeed meet the need for food security in the long term, while reducing agriculture's carbon footprint, thereby making it part of the climate change solution. More importantly, it also shows that the same investments into business as usual 'brown agriculture' will decrease returns on investments in the long run, mainly due to increasing costs of inputs especially water and energy, and stagnating/decreasing yields. The costs of negative externalities of brown agriculture will also continue to increase, initially neutralizing and eventually exceeding any economic and developmental gains. Green agriculture will result in more calories per person /day, more jobs and business opportunities, especially in rural areas, and greater market access opportunities, especially for developing countries. In short, green agriculture is capable of nourishing a growing and more demanding world population at higher nutritional levels."

It must be mentioned here that at the high-politik level of "global discourse producing clubs" this new vision of Earth productivity to support life was brought to the international organization's magnitude by the vision of the Bruntland Report "Our Common Future" (1987). At the time, the Norwegian prime-minister Gro Bruntland announced her adherence to the idea of sustainability reforming today's consumption and lifestyles so that we could leave resources for the future generations that are no less than we enjoy today. Even earlier, since the late 1970s the principles of a green economy started forming around the environmental management, industrial ecology, sustainability, climate change adaptation and mitigation ideologies forming some of the foundational principles of the emerging de-carbonization processes at the global scale. These principles are pertinent to the emerging economic integrations and alliances processes in the Central Asian countries and China especially, as the regions indicated as those that will be hit earliest and hardest by the climate change due to many reasons, natural, social, economic, and demographic. Thus, the Silk Road's Economy Belt is one of the first economic alliances in Asia that is considering green economy and the associated developments in policies and standardization among its highest priorities, nonetheless due to the great emphasis that People's Republic of China places on de-carbonization and green economy principles, through raising energy-efficiency and reducing air and water pollution regulation.

7.3. Principles of Green Economy, do they need conceptual translation at community level?

Green economy principles in the economic integration initiatives such as the New Silk Road Economic Belt must be understood at the community level, and the community level acceptance or rejection of the green principles needs to be understood at the global policy making clubs. There are the prevailing discourses and new economy modalities that are being actively planted and imported into the region of Central Asia, and to Kyrgyzstan specifically. In order to remain current and keep learning the conceptual language of the emerging green economy and newly emerging economic integration unions one needs to keep on top of the most influential discourses, and notice those discourses that become replaced. The discourses and the existing practices in the organizations need to be studied in view of the growing demand for climate-smart competences and practices to enable the actual de-carbonization of organizations and practices, not only performative enactment of green. At the same time, the technical organizational studies such as product life cycle assessment (LCA) and value chain

studies are the components of the environmental accounting that are the ubiquitous modalities for the organizations of the Neo Liberal Capitalism (i.e., sustainability orientated, climate-smart) are introducing or about to introduce just like ICT and mobile connections were during the last two decades.

Naomi Klein, David Suzuki, Paul Hawken, Anthony Giddens are some of the few researchers and scientists, activists and conscious people that have recognized that the Neo-Liberal capitalism is a system that created the problem of climate change today, thus the mindset of neo-liberal capitalism is not capable of solving the problem of climate. The paradigm shift is required for the new mindset to shape and to start governing the actions. Two paradigm shifts happening globally through environmental activism, personal committed routine transformation from harmful to more environmentally responsible, life-style changes towards low-carbon, and self-education and mainstreaming of new measurement, verification, and reporting of the environmental impact of individual, household, industrial, organizational, and national consumption on the Earth and climate. Those are 1) Paradigm shift "Consuming Earth Resource" to "Mother Earth": from consuming resources of the planet Earth to considering and caring for Earth as for a Mother, and 2) Paradigm shift "Country borders" to "Borders of the supply chain networks": from viewing and treating life and active living within country borders towards conceiving of a view and forming practices of life and active living within and alongside borders of the supply chain or rather value chain networks.

Among some of the basic principles of green economy are the following:

- **Green economy and climate link.** Green economy is necessarily, if not central but, part of a climate-smart world, where transformations in consumption and consumer behavior towards low-carbon life-work-family-styles, work-family balance, urban-rural balance, institutionalization of the green and low-carbon cultural preferences and tastes, as well as green jobs and competence development are not only desirable but mandatory.
- **Green economy and cultural values and norms.** Values, norms, discursive practices, awarenesses, perceptions, and motivations of self-organized communities of consumers and entrepreneurs in relation to technologies and knowledge related to climate-smart practices are changing rapidly, and the most important aspect of this rapid change is that they are streamlined, shared widely, and involve as many individuals and organizations, institutions and communities of practice as possible.

Such streamlining will result in commonly shared culture of sustainable consumption and responsible norm entrepreneurship, policy making and standardization that reflects the consumption patterns and infrastructural demands on the eco-systems and human population's activity.

- **Green economy and Ecological Footprint concept.** The introduction and diffusion of the concept and instrumental use of the Ecological (environmental, carbon, water, personal, organizational, national, etc.) footprint (EF) as a metaphor and a measurement method of unsustainable human activity, use of EF among decision-makers and professionals (i.e., Slow Food, organic agriculture movements, green construction and building, life-cycle assessment standardization and certification, etc.).

7.3.1. What is Ecological Footprint (EF)?

Ecological Footprint is both a **technical concept and a metaphor** that means "the human footprint should not exceed the area able to support it". It is a unique equity perspective that is capable of bringing the necessary change to the prevailing accounting norms today, by showing that, in order to sustainably accommodate Northern large footprints, very little space would remain for Southern footprints (Ecological Footprint Standard 2009). The best way to understand what EF is to read this info graphics: http://assets.panda.org/downloads/good_infographic___diet_scenarios.pdf.

What more, EF analysis is a **strategic management tool that allows for the** strategies that reduce the footprint to be prioritized and shared widely. Besides, EF analysis is a **visioning tool** that enables its users and readers **to think about scenarios** for the creation of a more sustainable future. There is an inherent democratic and engaging quality to the Ecological Footprint. And last, but not least, EF analysis is an **awareness raising and educational tool**, which multiplies understanding, cultural inclusion, and further the self-education about sustainability, and scaling-up of the standardized solutions proposed by the EF analysis to classrooms worldwide due to the simplicity and visualization qualities of the EF. EF can make complex discourses of climate change, green economy, and social transformation accessible to diverse and remote communities, individuals, and households. It promotes sharing.

Most importantly, EF analysis addresses the problem we have today, that is the consumption's dualism. There are broadly two categories of consumers with unsustainable footprint (Giddens 2009, Global Footprint Network 2009, WWF Happy Planet Report 2010), those are:

1) **Subsistence resource misuse (mostly Southern Consumers) due to poverty** (i.e., material, informational, and institutional poverty)
2) **Affluent leisurely over-consumption (mostly Northern Consumer).**

The resource misuse and over-consumption in both South and North is driven by at least three (but there are many more) phenomenae:

- **Prevailing infrastructure and institutions of utility maximizing models of consumption** that are deemed preferable, desirable or somehow encouraged by the society at large and/or by distinct groups (i.e., elites, wealthy, decision-makers, organized crime, professional associations and clubs, special interest groups, etc.).
- **Corporate interests** that endorse products and services that is not demanded by consumers but often, in the age of consumerism, become a supply driven purchase, misuse, and waste.
- **Cultural tolerance of over-consumption is** beyond being a function of human need, thus it is consumption has emerged as a discourse and the distinction of taste, and therefore linked to self-perception and self-knowledge of consumers and organizations. Climate smart knowledge or green discourses are an 'acquired taste' and often has to be made available to people at a very personal level, unless there is clever marketing that translates the high-policy speak or high-scholarly language to 'lay persons' speak'.

7.4. Green economy steps in China and Kazakhstan

The new regional integration initiatives in Central Asia have room for green economy principles, and China is leading the way in green norm setting in the region. Before detailing the green economy principles for the New Silk Road's Economic Belt the mega-project with a working name "The New Silk Road's Economic Belt" has to be understood.

7.4.1. The Silk Roads' Economic Belt: the China bid

Official start of the "Silk Road's Economic Belt" initiative is linked to the speech of the PRC leader Xi Jinping on 7 September 2013 at the Nazarbayev University of Kazakhstan. The idea was further fleshed out in the official Communist Party's newspaper *People's Daily* (Renmin Ribao) with content and advantages of such project. The idea of the Silk Road's Economic

Belt – is the effort to unify of the Central, Eastern, Southern, and Western Asia through diverse means of economic cooperation. In the Autumn of 2013 official Beijing conducted a string of visits to the Central Asian countries headed by the Chairman Xi Jinping, resulting in more than 60 billion USD contracts across the spectrum.

The BBC correspondent Bulin (2013) writes, "In Uzbekistan he signed 31 agreements on mining oil, gas, and gold worth 15.5 billion USD. In Turkmenistan he signed 8 agreements worth 7.6 billion USD. In Kazakstan the Chinese company China National Petroleum Company (CNPC) bought 8% shares of the oil consortium that developed one of the oil reserves of the Caspian Sea worth 5 billion USD. In Kyrgyzstan Xi signed 8 agreements worth 5 billion USD, including a gas pipeline projects."

Sinologist Vladimir Korsun of the Moscow State Institute for International Relations commented that the Chinese have built up an auto and railways corridor from Guangzhou to Amsterdam, bypassing Russia. China has tied the Central Asian countries to itself too closely by now ", says Korsun.

Some commentators like Elena Kuzmina believe that Russia still has a chance to pull the Central Asian countries towards itself, away from China. Kuzmina argues that Russia is the largest trading partner of Kazakhstan and Uzbekistan. Moscow sent more than 1 billion USD in aid to the Central Asian countries, and between 2010-2012 provided around 10 000 scholarships to students from these countries to study in the Russian universities. According to Kuzmina, the volume of Russian investments in Central Asia has grown 4.4 times during the period from 2005 to 2010.

7.4.2. China's green commitments for 2014

The China's report on National Strategy 2014 demonstrates Chinese government's focus on energy efficiency and technological solutions to advance in the new economy, including in the new economic integration unions. China's vision on green economy of the Silk Road Economic Belt is summarized in the following:

"We are working hard to conserve energy and reduce emissions. We will intensify the responsibility and accountability system for meeting energy conservation and emissions reduction targets, and conduct assessments to control energy consumption and intensity. We will carry out key projects for conserving energy and reducing emissions; intensify efforts to

conserve energy, reduce emissions, and enhance oversight in key areas such as industry, construction, transportation, and public institutions; launch an intensive campaign to get more than 10,000 enterprises to save energy and lower carbon emissions; and move faster to establish an online system to monitor energy consumption by major energy consumers. We will start implementing the top-runner system for energy efficiency and forcibly impose green building standards on the construction of buildings for public welfare and public buildings of 20,000 square meters or more. We will implement guidelines on accelerating development of the energy conservation and environmental protection industries. We will push forward the special science and technology action for energy conservation and emissions reduction. We will continue to get everyone to save energy and reduce emissions.

Among the international organizations the UNIDO (United Nations Industrial Development Organization) has expressed its desire to be a partner for all the countries along the Silk Road Economic Belt. UNIDO states that it can assist all these countries putting in place "the inclusive and sustainable industries which surely must be the backbone of this Economic Belt" (UNIDO presentation at the Silk Road Economic Belt conference in Astana 2014).

"UNIDO is already at work. Last year, we produced pilot guidelines which can be used to direct the development of new, green industrial zones along the New Silk Road. We are ready to go further, in cooperation with the Asian Development Bank and other partners. Together, we aim to create the necessary green technical know-how as well as the managerial skills required to build the Silk Road Economic Belt."

7.4.3. The Silk Roads' Economic Belt: Kazakhstan's support of the idea

There has been a strong support by the Kazakhstan's president to the Chinese initiative of Silk Road's Economic Belt, and Kyrgyzstan followed in November 2014 at least at the expert level with a conference titled *Joint development and wellbeing of the countries along the Great Silk Road* organized by the National Institute of Strategic Research of the Kyrgyz Republic. So what are the steps being taken by Kazakhstan?

The Novosti Kazakhstana (2014a) reports "President of The Republic of Kazakhstan Nursultan Nazarbayev said, that Kazakhstan must re-invent its historic role and become the largest business transit hub of the Central Asian region, a place where Europe and Asia meet. As a result of the mega project Silk Road's Economic Belt the volume of transit transportation streams through Kazakhstan will double by 2020 with the minimal target of 50 million tonnes."

The Government together with the Council of Foreign Investors conducted high-profile discussions and an implementation plan of the project Kazakhstan on the New Silk Road has to be ready by the end of 2014.

Indeed, Kazakhstan's location in the heart of Eurasian continent links some of the biggest markets of China, Europe, Russia, CIS countries and provides transport itineraries into the countries of Central Asia and Persian Golf (Novosti Kazakhstana 2014a). The Kazakh president also mentioned that the growing transport corridor connects the world's largest economy China to the countries of the OECD. Thus, his expectations are for the trade transactions turnover between Kazakhstan and the neighbouring countries to grow by 1.5 and will reach 1 trillion USD. The annual turnover between China and Europe already by now exceeds 500 billion USD at an average growth rate 8%. By 2020 it will grow towards 800 billion USD. Nazarbayev is confident that the transit itinerary from China to Europe through Kazakhstan has its own undeniable advantages, it is much shorter compared to the sea route throught the Suez channel. The Nazarbayev's vision is to be realised through the opening of a unified network of hubs of international level, including trade and logistics, finance and business, innovation and technological, as well as tourist hubs within the key transport corridors of Kazakhstan. According to Nazarbayev, the competitive advantages of the proposed project New Silk Road will be based on several principles: speed, service, cost, security and stability. As a result of aligning along those principles the Kazakhstan's president expects the synergy effect, which has to become the main source of competitive advantage of the New Silk Road compared to transit specialists like Dubai and Singapore. The transport and logistics hub, as the key element of the project, will develop on the grounds of already existing multi-modality transport and Logistics Company of the Kazakhstan Temir Joly (Kazakhstan's Railway); on the grounds of the trading centre "Hargos". On the western side of Kazakhstan projects such as the seaport Aktau expansion and the construction of the logistic centre in Aktobe will turn them into the western gates of the Republic and exit into the Near Caspian region, Russian, and further on to Europe. "We are quickly building up the corridor Western Europe – Western China, which will be completed in 2015, and work will continue on expanding the traffic capacity of the railway networks of our country", said Mr Nazarbayev.

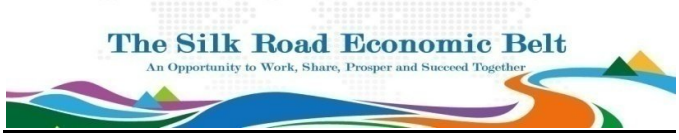
7.4.4. Formulating principles of Green Economy for Kyrgyzstan

Surely, the Green Economy's most meaningful and most democratic discourse is about work and prosperity shared, i.e., the discourse of "green jobs". However, while the principles of green economy are being advanced by organizations supporting industrial development the green jobs make sense. While within the context of Kyrgyzstan's local communities, local firms, entrepreneurs and activists "green jobs" may become realized in the organic agriculture, organic food production, and organic lifestyle industry that is growing in Kyrgyzstan and Kazakhstan. The joining of both countries through national federations and association of organic farmers to the global IFOAM since 2012 has some examples of exactly how this process unfolds.

The discourses of the Economic Belt along the Silk Road have been sipping through China to Kazakhstan and now to Kyrgyzstan. There was a conference titled *Economic Belt along the Silk Road* at the Astana VII Economic Forum that took place in Astana in May 2014. There was a document developed specifically for this conference that was made available online, it is titled the Regulations of holding the International Conference on the "Economic Belt along the Silk Road" in the Framework of the VII Astana Economic Forum.

Before going in detail into the organic agriculture movement examples as greening and de-carbonization organizations in the region, consider the image discourse of the The Chinese initiative of the Silk Road Economic Belt in Urumqi that offers exactly the discourse of "green jobs", as clear in the exhibit 1. There is a mountain road, in at least 7 different colors, winding up and down the hills, bringing the sense of diversity and complexity of the terrain. However, the heartwarming words are typical of the Chinese rhetoric, spilled over the borders to entice the neighbors to unite under the banner of the Silk Road once again many centuries later, linked by opportunity to work, shared prosperity and success.

Exhibit 7.1. The banner of the conference with the title The Silk Road Economic Belt: An Opportunity to Work, Share, Prosper and Succeed Together, June 2014, Urumqi, Xinjiang, PRC and the proceedings of the conference.

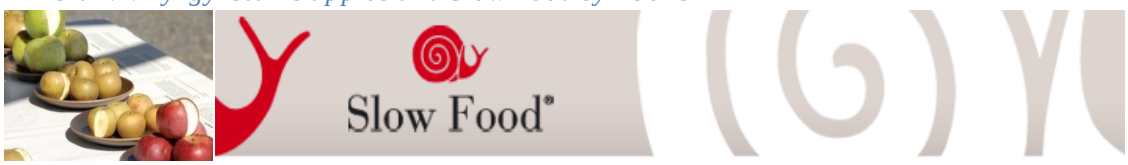


7.5. Greening Identity and Competences ideas at the local oganizations level: Slow Food's Local Chapters in Kyrgyzstan and BKG Organic Aymaks

The founder of the global food production movement "Slow food" Carlo Petrini said "Sustainability is a complex concept, including quality, taste, social justice and new socioeconomic systems based on delocalized production" (12 May 2005, Carlo Petrini, Slow Food website). The movement started out of the town called Bra in the Piedmont region of Italy famous for the quality and diversity of the best wines and food in Italy and abroad.

There are two elements of the Slow Food Movement already planting seeds and growing into locally Kyrgyzstan's initiatives. The Arc of taste (the inventory list of local tastes of food that enrich the global food tasting, food diversity and unique qualities from various food production regions of the world) and the local chapters (registered local Slow Food organizations such as Bio Muras and the Slow Food Kyrgyzstan Chapter sharing values and norms of the Slow Food movement). It is very likely that Kyrgyzstan will join the global Slow Food's Arc of taste with some of the most extraordinary and unusual tastes that exist in the world's cuisine. There are at least two registered chapters of Slow Food in the Kyrgyz Republic by now, and there is a growing interest in organic food production, sale, export, standardization and certification.

Exhibit 7.2. Kyrgyzstan's apples and Slow Food symbolism



Another very important development happening in Kyrgyzstan is the membership of the BKG a Federation of Organic Movement (FOM) of Kyrgyzstan in the International Federation of Organic Agricultural Movements (IFOAM).

In these efforts it is the Federation of Organic Movement BKG has been trying to strengthen its positions in the organic market of Kyrgyzstan and provide services to the organic farmers in terms of training on organic agriculture, organic cattle breeding, and gaining access to the world's organic food trade markets. There are numerous members in the federation, some of them have remained with the organization, and others chipped away and formed new alliances with similar objectives and different approaches to achieving the results and setting new standards.

Exhibit 7.3 demonstrates the discourse of long history and intellectual struggle to position IFOAM and the values of organic in European first, and then to take these values and normalize them abroad. This is unlike the multi-national corporations' discourse institutionalization and embedding. It is important to note the difference in the discourse formulating and translating positions of the MNCs such as Siemens (see Chapter 4 of this Dissertation), of the private business enterprises such as Lubeca (see Chapter 6 of this Dissertation), and of such international NGO as IFOAM. A diversity of means and ends to legitimize the preferred discourses are unfolding. As a non-for-profit organization IFOAM demonstrates that it has to look for funding and to strike alliances with the UN agencies and multilateral organizations to survive and to carry on the torch of organic. And thus, the infusion and mutual exchange of discourses happens there, merging the UN's FAO, IFAD, and UNFCCC discourses of the global economy and policy making clubs into the milieu of the local farming and food producing communities around the world as it can be seen in the following Exhibits.

Exhibit 7.3. IFOAM's Conception and Growth

1972 – Organic association founding by a group of enthusiast scientists and activist farmers
The humble beginnings of IFOAM trace back to a meeting in Versailles, France in 1972. Roland Chevriot of Nature et Progrès envisioned the need for Organic Agriculture movements to coordinate their actions and to enable scientific and experimental data on organic to cross borders. In order to realize this vision, he invited organic pioneers including Lady Eve Balfour, founder of the UK Soil Association, Kjell Arman from the Swedish Biodynamic Association and Jerome Goldstein from the Rodale Institute to join him in Versailles to set the International Federation of Organic Agriculture

Movements (IFOAM) in motion (Roland Chevriot, founder's invitation letter is on the IFOAM website, http://infohub.ifoam.org/sites/default/files/page/files/founding_letter.pdf).

2002. IFOAM World Board Meeting

Forty years later, IFOAM has evolved into a global association with about 800 Affiliates in 120 countries. Once seen as a fringe movement shunning modern day science and subject to criticism from farmers and researchers, the organic movement has pioneered methods that are now widely welcomed as a viable and credible alternative to present day industrial farming.

2020. Looking ahead

Despite notable achievements and an ever-growing organic sector, financial restrictions pose a constant challenge to our work. Already daunting tasks seem, at times, impossible and resourcefulness has become one of our key survival tools.

But with drive and determination, we continue to bring the ideas initially articulated in France to the tables of international stakeholders; in these efforts we actively work with United Nations organizations such as FAO, IFAD and UNFCCC.

Undeterred by financial and other challenges, we remain committed to leading, uniting and assisting the organic movement in its full diversity.

One of the most pertinent examples of the IFOAM work on behalf of the diverse organic movement from around the world is the representation of the farmers' perspectives in the Climate Talks, as it was done in Lima at the COP 20 in December 2014, see Exhibit 6 below.

Exhibit 7.4. IFOAM representing Farmers' Position in Climate Talks

PRESS RELEASE: FARMERS' POSITION IN CLIMATE TALKS - WFO, IFOAM, & SACAU, COP 20 LIMA
12.12.2014
With the impacts of climate change being felt on food systems around the world, agriculture is one of the issues at the heart of climate change concerns. The three Farmers' Organizations - World Farmers' Organisation (WFO), International Federation of Organic Agriculture Movements (IFOAM), and Southern African Confederation of Agricultural Unions (SACAU) are united in their call to governments at the United Nations climate conference (COP20 Lima) to put agriculture on the table for the Paris climate agreement.
Climate change poses a myriad of threats to agriculture, including the reduction of agricultural productivity, production stability and negative effects on farmers' incomes. The Farmers' Organizations - WFO, IFOAM, and SACAU - strongly believe that agriculture has the potential to be part of the solution, through the mitigation of a significant amount of global emissions. The world's food and farming systems are now facing multiple threats and the ecosystem functions that underpin them are increasingly unstable and subject to more and more unpredictable weather conditions. It is

not only the food security and livelihoods of farmers in the developing world that are under threat, but also the agriculture sector everywhere.
"*The climate is changing more rapidly than expected, challenging the capability and capacity of agriculture to adapt. This reality must be addressed. Throughout history farmers have been developing resilient actions to adapt to the changing climate, as such, agriculture has the potential to be part of the solution, through the implementation of measures that can enhance farmers' adaptation capacity to climate change effects,*" stated Marco Marzano, Executive Director of the World Farmers' Organisation. "Despite their important role in climate change adaptation processes, farmers' involvement in global discussions on climate change are often very limited; and the voice of farmers' is not always considered in decision-making processes that directly affect their work and lives."
Although family farmers produce the lion's share of all global agricultural production, half of them are still amongst the world's hungry. The International Federation of Organic Agriculture Movements (IFOAM) assures that sustainable farming techniques including organic agriculture in soil, water and biodiversity conservation, as well as integrated and sustainable farm management help small farmers be productive, achieve family food security and climate resilience. "*Unless family farmers are given the agro-ecological technologies they need to meet the challenges posed by climate change, impacts on food production will be devastating, pushing millions into poverty*," declared André Leu, IFOAM President.
"*No constituency is more vulnerable to climate change than the world's farmers. And no constituency can do more towards mitigation and adaptation to climate change in a shorter space of time than farmers of the world. Yet agriculture is still not part of a legally binding agreement*," pointed out SACAU President, Dr Theo de Jager.
De Jager, who is also president of the Pan African Farmers' Organisations (PAFO) says that farmers cannot change their circumstances alone and that agriculture must get the attention and support it deserves. "*A large part of the population in Africa relies on agriculture for their livelihood - they are the poorest people in the world, yet the continent has huge potential to be the bread-basket of the world. Prosperity in agriculture on the continent can transform the lives of millions of households*," he emphasized.
"*As parties work towards a new climate agreement in Paris next year, we urge them to acknowledge that farmers are particularly vulnerable to climate change and without support their livelihoods and global food security is at great risk. Parties need to urgently agree on a framework for ambitious and far-reaching actions to support adaptation and mitigation in agriculture*," concluded the three farmers' leaders.
If you would like more information please contact, Gábor Figeczky, IFOAM Advocacy Manager, g.figeczky@ifoam.org
FURTHER INFORMATION & CONTACTS:
World Farmers' Organisation (WFO) is an international organisation whose members are national farmer organisations of small, medium, and large-scale, from all over the world. As of today, WFO counts around 70 members from about 50 countries. WFO mandate is to facilitate the inclusion of farmers' organisations and agricultural cooperatives in the global policy process on agriculture-related issues, in particular on climate change, food security, and value chain, in the promotion of cross-cutting issues like innovation, gender, youth and livestock.
Contact: Press Office, press@wfo-oma.org, www.wfo-oma.com
Southern African Confederation of Agricultural Unions (SACAU) is a membership based regional farmers' organization whose members are the national farmers' organizations in Southern Africa. Currently SACAU has 17 members from 12 countries. **Contact:** Manyewu Mutamba, Analyst: Economics & Policy, mmutamba@sacau.org, www.sacau.org

How this, and some of the other discourses of IFOAM are understood and translated at the local level by its partner organization BKG is analysed further in this chapter. The study of the

discourses' transformation into identity and competences of the FOAM BKG compared to those of the IFOAM are presented here.

The analysis of the discourses institutionalisation at FOAM BKG start with the study of the key identity constructs of the IFOAM discourses as indicated in the table 7.1 below.

Table 7.1. Green Discourses Institutionalised for the Greening at IFOAM

IFOAM	**Institutions translated from prevailing discourses (the stabilization of discourses)**		
Discourses	**Values**	**Norms**	**Discursive Practices**
Construction of Green Identity	"Working to lead, unite and assist stakeholders from every facet of the organic movement." "With offices and networks across the globe, IFOAM ensures that the organic voice is heard on both a regional and global level." "Our vision is the worldwide adoption of ecologically, socially and economically sound systems that are based on the principles of Organic Agriculture." "We pursue several courses of action, anchored in five Strategic Pillars, which unite organic stakeholders (Umbrella), advocate long-term social and ecological change (Advocacy), facilitate production and trade (Value Chain), assist organic development (Programs), and train the next generation of leaders (Academy)."	"IFOAM is the only international umbrella organization for the organic world, uniting close to 800 Affiliates in 118 countries." "2014 Membership E-Directory "THE IFOAM FAMILY OF STANDARDS (May 23, 2014) The Family of Standards is the core of the new IFOAM Organic Guarantee System and contains all standards officially endorsed as organic by the Organic Movement. IFOAM recommends to any program that relies on "organic" products or ingredients to consider referencing the IFOAM Family of Standards as a criterion for what constitute a trustworthy organic standard. View the frame of programs that are using the IFOAM Family of Standards as a requirement here Programs listed in this new frame require that products be certified to a standard approved in the IFOAM Family of Standards. Those programs are therefore considered by the organic movement as having a sound and credible criterion to ensure organic integrity of products accepted under their program, from the standard point of view."	"Supporting a diverse global membership, we • organize high profile events where organic stakeholders can share their knowledge and expertise and establish valuable partnerships; • put Organic Agriculture on the agenda of international decision makers, showcasing its potential to benefit food and livelihood security, battle climate change and preserve biodiversity; • implement projects, with global and regional partners, which facilitate conversion to Organic Agriculture, empower local stakeholders and strengthen supply chains as well as help raise consumer awareness; • guide you through the increasing complexity of organic standards and regulations, and promote alternatives to certification that are adapted to the diverse needs of organic farmers; and • shape the future of the organic sector by training a new generation of leaders through Organic Leadership courses and other services.
Discourses	**Values**	**Norms**	**Discursive Practices**

Construction of Desired Green Competences	"Since 1972, IFOAM has occupied an unchallenged position as the only international umbrella organization of the organic world, uniting an enormous diversity of stakeholders contributing to the organic vision." "IFOAM implements the will of its broad-based constituency, close to 800 Affiliates in more than 100 countries, in a fair, inclusive and participatory manner. The IFOAM Action Network comprises self-organized IFOAM regional and sector groups and daughter organizations, as well as a World Board originating from all continents." "Day by day we are taking the world a step closer to the mainstream uptake of Organic Agriculture." PARTICIPATORY GUARANTEE SYSTEMS (PGS) "Participatory Guarantee Systems (PGS) are locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange. " An Internal Control System (ICS) is the part of a documented quality assurance system that allows an external certification body to delegate the	"In view of the multitude of organic standards worldwide, the IFOAM Family of Standards serves the following purposes: Draws the line between credible organic and non-organic standards (and also inadequately written organic standards), while acknowledging the need for diversity and local adaptation of organic standards. Improves transparency and public understanding about the differences between different organic standards. Facilitates equivalence agreements between organic standards and regulations, including unilateral, bilateral and multilateral equivalence agreements. The IFOAM Family of Standards is the only tool set up to enable multilateral equivalence between organic standards and technical regulations. Its principle is to conduct equivalence assessments of each standard against a single international reference: the COROS - Common Objectives and Requirements for Organic Standards (also called "IFOAM Standards Requirements"). In dealing with import approvals, IFOAM recommends that governments use the IFOAM Family of Standards as a basis for approving equivalent standards and regulations (see the IFOAM Policy Brief). IFOAM's Policy 42 regulates the approval of standards into the Family. PARTICIPATORY GUARANTEE SYSTEMS (PGS) IFOAM advocates for the recognition of PGS by governments and has developed Policy recommendations published under the IFOAM Policy Brief: How Governments Can Support Participatory Guarantee	"Equivalence assessments are conducted by IFOAM experts in accordance with a codified procedure, involving the IFOAM Standards Requirement Committee. Upon approval and publication of a standard in the Family, the results of this assessment are published with the Family Frame. Entrance and continued approval in the Family are subject to admission and annual fees, in accordance with the Family Fee Scheme. All organic standard setters or owners who want to have their standard approved in the Family can apply (see application procedure), including governments, CBs, associations and PGS initiatives. Approval in the Family entitles standards to the use of a specific logo in relation to the standard. Standards and regulations can be further promoted by subscribing to the promotion package (see fee scheme). Motivation and instructions to Apply to the Family." "Official IFOAM PGS Definition PGS initiatives are serving thousands of small organic farmers and their consumers all over the world, and the numbers are increasing every year. IFOAM recognizes the full diversity of Organic Agriculture, so we encourage and support the development PGS as an alternative and complementary tool to third-party certification. Through this online portal you

	periodic inspection of individual group members to an identified body or unit within the certified operator. This means that the third party certification bodies only have to inspect the well-functioning of the system, as well as to perform a few spot-check re-inspections of individual smallholders.	Systems. Note: Participatory Guarantee Systems (PGS) are not to be confused with Internal Control Systems for group certification (ICS), another certification tool promoted by IFOAM to support smallholders. INTERNAL CONTROL SYSTEMS (ICS) FOR GROUP CERTIFICATION Group certification is an approach that facilitates access of smallholders to organic certification and hence to organic markets and their associated benefits. IFOAM works extensively on the topic of group certification and the associated concept of Internal Control System (ICS). This page gives you an overview of the work done and the resources available on that topic. Group Certification is regulated by a specific set of requirements in the IFOAM Accreditation Requirements for Bodies Certifying Organic Production and Processing.	can have access to comprehensive information on PGS, a vast selection of resources and publications, details on the IFOAM PGS logo, granted to PGS recognized by the IFOAM PGS Committee, and the Global Database of PGS initiatives around the world. PGS Basics – way to learn about PGS and find answers to common questions. PGS Facts and Figures – finding information on PGS around the world. PGS Updates - accessing or subscribe to the PGS Newsletter. PGS Media Library - a wealth of videos and publications on PGS.”

Furthermore, the following analysis table of the institutionalisation of the discourses of values, norms, and discursive practices of the FOAM BKG was conducted, Table 7.2. The Green identity and the Green competence constructions were studied in a close interconnection with the influential discourses of the IFOAM and the global agricultural movements such as the Slow Food.

Table 7.2. Green Discourses Institutionalised for the Greening of BKG

BKG	**Institutions translated from prevailing discourses (the stabilization of discourses)**		
Company Discourses	**Values**	**Norms**	**Discursive Practices**
Construction of Green Identity	**Mission of the FOM:** Conservation and development of the bio-cultural diversity **Vision:** The foundations of the systemic approach are laid for the conservation and development of the biological and cultural diversity in Kyrgyzstan through introducing of the principles of the organic agriculture (health, ecology, honesty, care) **Goal:** Promotion of the organic agriculture as a strategic vector of the economy of Kyrgyzstan **Development capacity of the organic agriculture in the Kyrgyz Republic:** **Organic fertilizers:** Biogumus Compost Biological means of plants protection from disease and pest Agrobiocentre Institute of Biology and Bio technology of the Academy of Science KR Ecoagro LTD **Organic ayimaks (districts) – the Kyrgyz model of the systemic sustainable development of the rural communities**	**Advantages of the organic agriculture** Improvement of the soil fertility and solving the problem of plant disease and pests through internal economic experience and local supplies: • The cost of production falls • The necessity to use costly imported chemical fertilisers and pesticides disappears • Good organic practice raises productivity and yields, this will make Kyrgyzstan fully self-sufficient in producing ecologically clean food products, production wise as well as quality wise **Regional cooperation** 2013 – Signing of the cooperation agreement between Ministry of Agriculture KR, ICCO, GIZ и FOM BKG; 2013 – Signing of the cooperation agreement between the organic movements of Kyrgyzstan, Kazakhstan, Tajikistan, Uzbekistan, Azerbaijan, and Mongolia; 2013 – The idea of creating and cooperating through a network of IFOAM EuroAsia of the CIS countries; 2014 – a network of organic movements of 11 countries of IFOAM Euro- Asia is created. Norms similar to those in Bhutan: • Bhutan intends to prohibit trade in fertilisers (pesticides and other chemical substances), thus it will become the first organic state in the world, the guarantee that the products will be organic rises • From 2004 the total prohibition of sale and use	Development of the organic agriculture in KR Organic fertilisers such as **Biogas:** • More than 7 mln tonnes of manure and household organic waste are processed • 7 mln tonnes of bio fertilisers is produced, more than 200 mln м3 of biogas is produced. • Full biogasification of the country requires 150-160 mln USD **<u>Agricultural ores:</u>** **Gluakanit, green mud (montmorillonite), bergmeal are recommended as natural mineral fertilisers, detoxifiers, melliorants, and food suppliments** **Reserves of the agriculture ores in the Kyzyl Toi mining site:** • around 15,3 mln tonnes, out of which 1,5 mln tonnes of glaukonite ores • consuming 300 thousend tonnes of ores per year as fertilisers will last for 50 years • while for cattle breeding needs 26 thousend tonnes of glaukonite ores per year will last for 57 years. **The national plan on organic agriculture and organic production – instrument for the implementation of the Sustainable Development Strategy 2013-2017. The FOAM BKG standard includes:** • NDP Organic agriculture and production – this is part of the KR Government programme on transferring to sustainable development strategy for 2013-2017 • The SDS is a road map for the organic movement and

	that combine historical experience of the nomadic culture and advanced achievements of the modern civilization **Development perspective** The widening of the cooperation with the IFOAM network Opening of the training courses of the IFOAM Academy for the Russian speaking states Development of the unified organic standards in the network Development of the mutual cooperation in the unified organic space of the countries of the network and creation of the unified economic market of the organic production	of the tobacco was introduced in Bhutan There is a fee imposed, up to 175 Euro • Organic policy of Bhutan will allow the country to win the reputation of the producer of the high quality organic products, which will allow in the future having a market advantage and setting the price. • The constitution of Bhutan confirms the duty of the state to take care of the happiness of its citizens. Thus, in Bhutan the GDP was replaced by the Gross Happiness Product measurements, the index of happiness has been developed and offered to the entire world for replication through the United Nations. • Kyrgyzstan is to become the country of organic agriculture and production by 2020	has many approaches not only for development but also for the implementation. • The NDP for organic agriculture and production is directed at achieving social and sectoral organic objectives • NDP Organic agriculture is capable of gaining a strong following if the stakeholders each attempt to get the objectives done. Governance, coordination, loyalty of the participants of the organic movement of Kyrgyzstan in achieving these goals and objectives, and the monitoring will demonstrate it, when the goals will become realised. • The FOM BKG standard (developed on the basis of the IFOAM standard) has been adapted and agreed for the internal market
Discourses	**Values**	**Norms**	**Discursive Practices**

Construction of Green Competences	**"Mission:** Re-birth of harmony of human and nature in the living locations of the rural population." Bhutan is taken as an exemplary country, the Bhutanese experience and values are taken as important to study, replicate, and support. "In Bhutan the decision is being made about how to achieve high level of Gross National Happiness: a combination of material wellbeing and health, environmental protection and conservation of the psychological health and cultural uniqueness – the problem that is found everywhere around the world. The key for Bhutan is to consider the GNH as a long-term journey, not a list of indicators. Bhutan started this important journey. Other world economies will follow the lead. The minister of agriculture o Bhutan Pema Geamtsho sais Bhutan made a decision to aspire towards a green economy despite the enormous pressure, which we feel on the planet today. If you are conducting intensive agriculture it means that you are using a large volume of chemicals, which is against our Buddhist believe that	**The Land fund of the Kyrgyz Republic has:** • The total arable land area 1275 thousand hectares • Multi-year plants make up 74,7 thousand hectares • Forests make up 1164 thousand hectares • Pastures make up 9,147 million hectares • The main products are certified according to the organic standards of the EU, including: *Cotton, Beans, Chick peas, Medicinal herbs, Apricot, Walnut, and Prune* • The producers are: Cooperatives such as Bio Farmer, Alysh Dan, Reina Kench, Organic ayimaks "Kopuro Bazar", "Taldy Bulak", "Dobolu", "Ortok". • *There are over 1700 organic farmers today* • *The area of organic land is more than : 7000 hectares* • Service providers: Public Foundation Bio Service, The Rural Consultative Servies (RSS), Association AgropromExport Goal: Establishing of a sustainable local model o a comprehensive community striving on the principles of organic movement and capacity of the traditional culture. 4 ayimaks, 9 villages (in Talas and Naryn oblasts) and the number of farmers between 9081, with the total area ofarable land 6867 hectars, and with the total area of pastures being 108000 hectars. Since October 2014 the project for the founding of 5 organic animals in the Issyk Kul oblast was launched.	• We organized two National Organic Forums and the trading exhibition of organic and natural produce took place. This supports the development of the organic agriculture and production in the Kyrgyz Republic (December 2012, November 2013); • At the First Forum in 2012 the declaration on the development of the organic agriculture in the Kyrgyz Republic and Central Asia was adopted; The following developments in the regional cooperation have been achieved: • Agreement on regional cooperation (Kyrgyz Republic, Republic of Kazakhstan, Republic of Uzbekistan, Republic of Tajikistan, Mongolia) was signed at the 2nd Organic Forum (2014); • Membership at IFOAM, IFOAM Asia, in the Alliance of the Mountain Partnership, The Chamber of Trade and Industry of the Kyrgyz Republic; • During 2 years since 2012 the National information campaign on promotion of the foundations of the organic agriculture reached 2000 farmers, including information seminars on organic agriculture in every oblast of the Kyrgyz Republic, cooperation); Development of the state and private partnership: • Memorandum of understanding (FOAM BKG, Ministry of agriculture KR, ICCO, GIZ) signed at the 2nd Organic Forum; • Memorandum of understanding with the representatives of the Government of the KR in all

	calls on us to live in harmony with nature." Creating a cooperation network of organizations in the member countries of IFOAM Euro-Asia; Learning from Bhutan by developing cooperation with the Ministry of agriculture of the Kingdom of Bhutan.		oblasts, Agency of the professional and technical education was drafted and agreed upon with the National Academy of Sciences of the Kyrgyz Republic; • Active work with the agrarian policy committee of the Parliament of the Kyrgyz Republic (Jogorku Kenesh KR), Ministry of agriculture KR, Ministry of Economy KR, Ministry of Labour, migration, and youth KR on the development of the legislation on organic agriculture and production; • Strengthening of the development capacity for organic agriculture (training at the Academy of IFOAM on management of organic agriculture).

7.6. Organic Ayimaks as the know-how cristallization of the Kyrgyzstan's Greening

The pictures of the soil and the hands bringing them for the observation of the camera are many on the websites and the presentation slides of the members of the FOAM BKG, soil and its fertitility, cleanness, nutritious value for plants are built in to the value system of the BKG very strongly as an inheritance of the future generations living in Kyrgyzstan.

Exhibit 7.5. Land and soil quality handed down to future generations.

The scale of FOM BKG is presented by the main products that have received EU organic certification; the product makers and the service providers in the Exhibit 7.6 below.

Exhibit 7.6. The self-presentation of BKG at the 2nd International Organic Forum (presented by the Chief Executive Mr ARI)

Translation of the Exhibit 7.6:

- Main products, certified according to the EU organic standards: cotton, beans, chick peas, medicinal herbs, apricots, walnut, prunes.
- Producers: Cooperatives: Bio Farmer, Alysh Dan, Reina Kench, Organic Ayimaks such as Kopuro Bazar, Taldy Bulak, Dobolu, and Ortok.
- Organic farmers: more than 1700 persons
- Organic fields: more than 7000 hectares.
- Service providers: Public Foundation Bio Service, Rural Consultative Service, Association AgropromExport

7.6.1. Semi-structured interviews with the managers of FOAM BKG: The general manager and political link

The Chairman of the BKG Mr ARI said that Organic Ayimaks voluntarily transform their farming and cooperation through the local councils and community work towards organic philosophy and methods. By and large, organic is very close to hearts of the local people in the Kyrgyz Republic. Every citizen in the rural areas is entitled to a land plot. Collectively there used to be mono-cultural crops. Now, there is a high fragmentation of farmers, and they

grow all kinds of different produce, which results in overconsumpion of irrigation water problem. The overuse of water makes the soils less rich in minerals and nutrients, and thus it effects the crops yield. Thus, water use and soil use are very important aspects of organic agriculture, and farmers need hands-on training of organic ways in watering, soil care, and growing vegetables and animals.

There are plans to build agricultural produce processing plants in the areas more or less in the central geographic locations between the Organic Ayimaks, which could motivate the farmers to unite and work collectively with organic methods to reduce the risks of the perceived risks in transferring to organic.

There is a lot that the Federation can do for its members, in the Exhibit below the services provided to the member organizations and communities are listed and detailed.

Exhibit 7.7. The Spectrum of services covered by Bio –KG for its members

Translation of the Exhibit 7.7:

First of all, the four key words representing the values of BKG that are taken directly from IFOAM's value system are promoted in the organization's logo and all trademarks just under the logo: Health, Ecology, Honesty, Care. Secondly, there is the overarching aim of the Federation, to consolidate the efforts to bring about the legislation that supports organic agriculture and production in Kyrgyzstan. Thirdly, 5 pillars of Federation's work, somehow reminiscent of the IFOAM's pillars and under each of the pillars there are lists of logos of organizations that are involved in cooperation under each pillar as follows:

- Education, Certification, System of guarantees: Bio Service;
- Production, training, experience sharing: Bio Farmer, Batken Oerugu;
- Training, know-how scaling-up: Rural Consulting Service (RCS), Bio Farmer, Tsoki;
- Processing and refining: Toi Talkan, Organic, Bio Nan, Kut Talkan;
- Marketing: Association of Agro Industry Export, Biomart. kg, Batken Oerugu.

Mr ARI says, "we supported the Ministry of Economy KR in writing up the parts on organic and green economy of the National Strategy of Sustainable Development 2013-2017". Providing the support to the Ministry of Agriculture KR in writing up the vision for the state and private sectors' cooperation, the state-private partnership modes and regimes were formulated to frame organic sector's development. The ministries in Kyrgyzstan suffer from the illnesses of the bureaucracy and inertia of civil service, instead of getting help from them we often feel that they do not want to allow the civil society and private sector into the areas that are dominated by the state, such as legislation, policy, and monitoring and sanctions.

In addition, Mr ARI has a very strong position about GMOs:

"GMO is highly dangerous, and more people among farmers understand the risks of GMO, especially because the Kyrgyz are used to eating freshly pastured meat, very high quality, the animals in our cattles graze in the mountain alpine pastures, with a great variety of some of the best flowers, herbs, and clean soil and water. Thus, GMO is considered by many as the gravest compromise in the quality of produce, especially the taste of meat. And the unnatural way of treating animals also makes our farmers uncomfortable and suspicious in terms of GMO being unwated, unnatural, and dangerous for health. The only way forward for Kyrgyzstan is through organic sector."

To that end, the organic movement of Kyrgyzstan is very friendly to the efforts of the Slow Food movement of Italy, which is accepted as a symbol of high quality food culture. Mr ARI says, "IFOAM and Slow Food are the two organizations that help us to understand the organic production concepts prevailing in Europe".

7.6.2. Semi-structured interviews with the managers of FOAM BKG: The ideologist

Mr SARG can safely be called the chief ideologist of the organic movement of the Kyrgyz Republic. Mr SARG says, in Kyrgyzstan there is no less than 60% of agricultural produce and food that is organic. During 2010-2012 Mr SARG together with a long-term expert of the organic movement Mr SULT worked on a personal project on selecting pilot Organic Ayimaks, searching for the authentic Kyrgyz food products and living forms of economic activities such as raising cattle, plants, growing food and also the traditional and nature conserving income-generating activities. Mr SARG developed the technical specifications for honey production and honey export, "however what we were and are still lacking is the professional communication".

Mr SARG says, "there is a very local and traditional value that is very similar to the organic values declared by the global green policy clubs". He argues that the trouble of all the post-soviet societies in the post-soviet era is that "we were advised by a variety consultants, policy makers from abroad who were not always the best or suitably conducive, they could bring their own vision, which is far from being close to nature, to the dynamics of the laws of nature and the megaspaces, in which human beings are just a small part. The anthropocentric focus is what is undermining all of the efforts to be green and organic. We must learn to live in harmony with nature. Time in which we live is just a moment in the mega space's life, and therefore the technogenic society is just one glimpse in the entire life flow."

SARG believes that the organic movement in the Kyrgyz Republic is not prompted or inspired by the foreign discourses formulated at the global level but rather grow out of the local and traditional. SARG says, "We must remember and integrate our old traditional ways of living in harmony with nature. In fact we are learning and understanding the language of the global green and organic discourses once we remember our own true natural living and being. The global organic discourse is important but only for the communication and mutual sharing of experiences. However, we can find all the necessary knowledge and culture of interacting with various forms in nature and society, polished up during thousands of years, and therefore we re-invent ourselves, instead of accepting and adopting external ideas and discourses that are brought from different contexts and conditions."

Very much in the same manner as the Club of Rome in 1976 and the most recent climate social movements, Mr SARG with his colleagues and friends wrote a letter to the Shanghai

Organization for Cooperation in 2008 calling to conduct a regional conference and a global one afterwards about the planet being on the verge of a catastrophic destruction, and finding ways to use the small window of opportunity to make an important contribution to rescuing the humanity and the planet during this trying and transformational times. No state structure will resolve this civilizational crisis because any state structure is a civilizational step backwards. Thus the people, communities, activists, scientists need to work at their own level without relying too much on the country leaders to resolve the problems of climate.

Mr SARG says, *"every bank must make audit before providing a loan, to ensure that the client will be able to pay off the debts. There are many micro-credit organizations that have been operating absolutely inhumane ruthless practices of giving out cheap loans but as a result taking away defaulted people's homes, leaving so many people, and whole families destitute. Have you noticed that there are family vaigrands, not just individual vaigrands anymore? Whole families, husbands and wives and their young children can be seen at the cheap labour's spots in Bishkek, where many unemployed gather and wait to be picked up to go and work in various places without any guarantees and protection of their rights, neither labour nor human."*

As an alternative Mr. SARG mentions the Organic Ayimaks as a method and enabling environment to prevent these kind of snowball of human, family, community, social, and economic catastrophies.

There are 9 villages in Naryn oblast, and 6 villages in Talas that were included in the Organic Ayimaks project back in 2012, and in 2014 more communities joined.

Exhibit 7.8. Organic Ayimaks of Naryn and Talas oblasts

There is a special place given to the Organic Communities (Organic Ayimaks) within the BKG strategy. The goals of Organic Communities are:

- Introducing of the principles of sustainable organic agriculture practice in the selected local communities (economic component);

- Re-birth of the cultural and ecumenical foundations of nature protective economy among the selected local communities (social-economic component).

Among the objectives that the FOM BKG has formulated for itself as a movement are the following:

Objectives:

- Establishing scenarios of effective cooperation among the members of the Organic Ayimaks (OA), developing the rules of cooperative interaction.
- Adaptation and integration of the System of Participation Guarantee for sustainable links between the producers and consumers based on mutual guarantees. Promotion of the national standards of organic agriculture adapted from the standards of IFOAM for a variety of regional conditions and situations. Preparing internal inspecting monitors;
- Integration of the product processing and promotion along the value chain with the account of specific qualities and situations of the OA;
- Development of the handicraft production, local craft retailers and promotion of the local brands along the principle of "one village – one product", grounded on gender equality and fair trade principles;
- Synthesis of the traditional culture and positive experience of modern advancements that have been through the test of time, activation of the world view based on "eco-centrism", harmony of the human beings in nature, as the main factors of sustainable rural living;
- Contemporary interpretations of the «traditional culture» and exchange of experience of the traditional agricultural know-how. Demonstration of the healthy lifestyles, including active promotion of healthy eating.
- Establishing mechanisms of the effective civic and corporate responsibility of the producing and processing entities through the use of adapted traditional mechanisms and institutes;
- Integration of the system of mentorship, experience exchange, and ecological education;
- Establishing the system of Machine and Technological stations and micro-credit unions based on the experiences of the "Ayimak kurjunu" (Ayimak's pot) among the closest OAs. Developing optimal forms of cooperation between OAs.

Two Organic Ayimaks of Talas oblast:

- OA Kopuroe Bazar in the Kopuroe Bazar village,
- OA Taldy Bulak in the Taldy Bulak and Ak Korgon villages.

Two Organic Ayimaks of Naryn oblast:

- OA Dobolu in the village Kenesh, Alysh, Dobolu villages,
- OA Ortok in the Ortok, Eki Naryn, and Kaindy villages.

The combined capacity of 4 Organic Ayimaks:

- Residents – 14029 persons;
- Number of families – 2717 families;

- Household farms – 1718 farms;
- Number of farmers – 9095 farmers;
- Irrigated land – 6886 hectares; rain irrigated land (bogara) – 1497 hectares; Pastures – 108 206 hectares.

Four more communities in the Issyk Kul oblast joined the project in 2014.

As one of the fathers of the Organic Ayimaks concept at BKG Mr SARG pointed out at the so-called "Painful aspects" of the movement's growth:

- The accumulated inertia and apathy, indifference and lack of confidence in own capacities, tiredness from various projects without results and from seminars that are irrelevant.
- Tendency towards atomization and fragmentation while attempting to individually resolve common and overwhelming problems.
- Sharp lack of competent specialists of the rural production.
- The tendency towards over-emphasizing of the economic components instead of paying enough attention to the cultural (spiritual and moral) side o life (albeit this tendency is lesser than there is in the cities).

Despite all the above difficulties, Mr SARG believes that there are also reasons for optimism, including the following:

- The largest yet very little used resource is the social resource, rich and multi-directional capacity of the traditional culture, especially in terms of motivation, as well as the resource of cooperation and coordination of mutual action.
- Great interest in the opportunities of the Organic Ayimak model and through it the materialization and manifestation of the available resource capacity and the experience of the nomadic culture, preservation and development of the relationships with the environment, interest towards unification of the effort framed by common programmes, especially through creation of the unified agro-, eco-, and ethno-tourism with the use of the synthesis of the organic technologies and the experience of the traditional practical knowledge in processing and saving food products.

- The youth's and the middle-age people's interest towards the ecological knowledge and traditional culture, for which the organic movement becomes the framework of sustainable development within the green economy.

Mr SARG as the ideologist of BKG has a vision that is shared by many at BKG that is "Kyrgyzstan 2020 is the country of Organic Agriculture and of a harmonious sustainable development through the means of the Organic Ayimaks, the community of exemplary living in harmony with Mother Nature and the modernity" visualised in Exhibit 14 below. Thus, the Organic ayimaks can be considered the key community organization advantage of Kyrgyzstan.

Exhibit 7.9. The vision of growing the scale of the formula "Kyrgyzstan = Organic Country by 2020"

7.6.3. Semi-structured interviews with the managers of FOAM BKG: The organic marketologist and the rebel within

Mr SULT is the founder of the Agrarian Platform, an activist farmers' club that became one of the founding members of the FOAM BKG tells a more contentious story of the organic movement in the Kyrgyz Republic, it is a perspective that adds more tones and overshadows to the green development in Kyrgyzstan.

According to Mr. SULT, the organic movement in Kyrgyzstan lacks the drive and know-how, and even the leadership necessary yet it has some good people and ideas behind it. His praise of Mr SARG's work was concise and to the point, the chief ideologist of the organic movement in Kyrgyzstan is a visionary, a guru, a philosopher. Yet, often he can be misunderstood, as many philosophers are, by the common folk who do not understand the language of the high philosophy nor is he well understood and supported enough by the corporatist interests of the managerial elites of the movement. Mr SULT says, "the people understand agrarian issues, and we can build organic not through spiritual practices and philosophy of organic, but through demonstration of material advantages of the organic agriculture". Kyrgyzstan has an opportune place in the global trends today to build "an adaptive community resilient to the climate change and it can be the Kyrgyz model of adapting".

Mr SULT believes that him and Mr SARG are the two leaders of the movement who stood there at the very origins and beginnings of it. What he has seen developing during the last 20 years in Kyrgyzstan was the predominance of the international donor community that prevents organic and local to be seeded and to grow. The donor needle or the dependence on the donor injections has become a real threat to the development of Kyrgyzstan. However, in the organic field there is a growing awareness and articulation of the risks associated with the donor dependence. Mr SULT outlined also the government and public sector as being incompetent and falling behind not only in the science and technologies of the organic agriculture, but in general management and decision-making. One of the examples he gave was the collaboration with the Ministry of Economy in writing up the Sustainble Development Strategy of the Kyrgyz Republic until 2017, and the frustration of how decisions are made in the ministries. Too much depends on the key figure of the ministry, once the minister is replaced, the entire direction, strategy, values of the institution also are forced to be reconsidered and re-drawn, there is no continuity, no transcendence of values, processes, norms, nor of any discursive practices that are conducive to organic and green growth.

Mr Sulnatkulov believes that Kyrgyzstan's vector is really at becoming the country of nature nursing, a nursery of growing food and keeping the tradition of organic, local, and natural. He mentioned a variety of interpretations of green and organic, including "Slow food principles", "permaculture", "bio-dynamic agriculture", "eco and bio organic", etc.

One of the projects, the Mr SULT enjoys telling about is the idea of Festival of Prunes' Blossom in the Ak Syi area of Jalal Abad oblast of Kyrgyzstan. He believes it to be the equivalent of the Japanese Sacura Blossoming.

And yet, there are spiritual and moral principles behind organic, that Mr SULT mentions as important to transfer and to assign value to. Namely, the honesty in trading in organic products. He told a story of a farmer who talked about the apricots that were handled with sulphur chemicals for preservation and transportation, however, the farmer said that for his own family he keeps apricots that are naturally dealt with, i.e. organic, without sulphur. The conflict of values and actions was pointed out to the farmer, and it was not accepted in good faith by the farmer. However, later on the farmer agreed that there is a conflict there, and re-vised his perceptions and handling of the apricots. Mr SULT and his newly converted organic farming follower remain friends and collaborators in the field of organic.

A similar story happened to another farmer, who has a green house where tomatoes and cucumbers are grown. For a long time he used chemical fertilised products for trading abroad, to Russia and Kazakhstan. However, later he came to Mr SULT training seminars (see Exhibit below) to confess that he has revised his practices, because he felt uncomfortable in his mind and in his heart that he was trading in goods that were inferior to organic and natural. The man transformed his entire green house operation, and makes only organic vegetables since.

Mr SULT is idealistic about organic, which is a good start. He disagrees with praising the achievements of the biological cotton exports from the Jalal Abad region of the Kyrgyzstan to Switzerland and Germany, simply because he says that if the premium products such as bio-cotton could stay in Kyrgyzstan, and clothes could be made from them to be sold at the local market to local residents – he would have considered it a real success. For as along as the bio-cotton is grown in Kyrgyzstan, sold abroad and does not get used or processed within the Kyrgyz economy he does not consider it an organic or beneficial to the communities and economy of Kyrgyzstan. "We must not be proud of illusory things; instead we need to develop things that we could feel proud about because of their benefit to the community, families, health and wellbeing of people of Kyrgyzstan. If we start with ourselves first, then we can make a much better contribution to the organic globally. At the moment our organic does not benefit ourselves nor does it benefit any significant number of people and communities anywhere in the world", says Mr SULT.

Exhibit 7.10. Information seminar on organic technologies with farmers of Jalal Abad oblast on biogumus and compost production and greenhouses technologies, July 2014:

7.7. Conclusions of the Case Study

Green Economic Belt and the Role of Organic

Building on the findings of this dissertation's research it is clear that there is an opportunity to formulate the principles of the New Silk Road's **Green** Economy Belt during a small window of opportunity, probably between 2014 and 2016, and Kyrgyzstan has an opportunity to be heard. Is there any capacity in the country's green economy to make the views confidently and articulate them to be heard? The "green" here is not accidental. In view of renovation of the Silk Road it is an opportunity to build an economy that bypasses the infrastructural legacy of the industrial and post-industrial age, and build a more sustainable culture that supports the advancement of the Green Economy in the region. This is an unprecedented opportunity to create a new culture and competence in social and environmental accounting that respects Earth, measurements, reporting and verification of the Ecological, Carbon, Water and Social Footprints.

There is a role of Kyrgyzstan in the Silk Road's Green Economy Belt due to its growing speciation in organic farming and organic food production. Besides among the comparative advantages of Kyrgyzstan the following are emerging: the organic agricultural initiatives, the project planning and management expertise, social research and analysis, the growing management and governance expertise, as well as quickly developing ICT and design

competence among Kyrgyzstan's workforce and entrepreneurs indicate some of the areas in which Kyrgyzstan could build up its comparative advantage and offer its human capital contribution to the Silk Road's Economic Belt technology, transport, and transit hubs that were mentioned in the vision of the countries' leaders mentioned earlier.

Today we can already talk about the principles that are importantly emerging in China and Kyrgyzstan at various paces and with different focuses. Yet, the emergence of at least some of them in some of the regions of these two countries allows for the green and organic transformation to rapidly conquer the consumers and producers ahead of the policy makers and standard setters:

- Greening of identity and competence development at personal and organizational level is happening;
- alignment of human and non-human (i.e., techniques and technologies) entities within organizations in relation to social environmental accounting;
- the uptake and actioning of "climate-smart" and green discourses, values, norms, and practices;
- the changes towards a life-cycle of products, services and processes, and aware, responsible 'climate-smart' consumption in organizations with social enterprising and cooperative nature, VS. the for-profit enterprises;
- reflexive competence development sourced from traditional water and natural resources saving practices and communal living VS, modern overconsumption;
- the changes towards a life-cycle of products, services and processes, and ware, responsible, 'climate-smart' consumption in organizations with social enterprising and cooperative nature, VS. the for-profit enterprises;
- reflexive competence development sourced from traditional water and natural resources saving practices and communal living VS, modern overconsumption.

The four hypotheses of the research can be interpreted here:

In regards to H1. Legitimisation of the global climate discourses leads towards more awareness and acceptance of Footprint accounting, exemplified by the standards and calculation rules of organic, such as the IFOAM standards that are being integrated at the BKG level now.

In regards to H2. Branding themselves as green (i.e., organic) creates more green and lo-carbon jobs at the organic movement, as exemplified by the growing membership and participation in the annual BKG conference, events, and organic farming fairs in Bishkek, with international participation and cross-pollination of ideas among the Kyrgyzstan's farmers as well as with those from abroad**.**

In regards to H3. It can be drawn from the semi-structured interviews that the high level of awareness of the constructed environmental truths at the IFOAM level for example does not necessarily mean that the green beahaviour and low-carbon lifestyle is only due to IFOAM, rather the connection to IFOAM was initiated by the local understanding of the need for internationally framed and tested science and technology on organic and carbon curbing.

In regards to H4. Indeed, it is evident that the decarbonisation job routines can be formulated by the managers and ideologists who formulate and conduct trainings for the members of a greening organization. It was found that BKG's key activity is organic training for the farmers of Kyrgyzstan. In their turn, all those farmers and professionals who take part in the BKG training events act as muliplicators who take the co-constructions and co-design of trainings, functions, job routines for their colleagues at the farms and farming communities to the next level, very much within the value chain.

Chapter 8. Survey of Workers' Participation in Green Footprint Competence Construction and Organizational Green Identity Development

The survey of organizations' workers and members participating in carbon transition was conducted in three organizations, the Chinese environmental solutions provider RPQ, the Kyrgyzstan's House of Confectionary KLSKY Family Traditions, and the Kyrgyzstan's Federation of Organic Agriculture Movement BKG between 2012 and 2014.

The survey consisted of two main parts:

1) survey of discursive greening practices and workers' competencies (the recognition of the "ideal type green practices" of the global green clubs, multinational corporations, organic movements, green researchers, activists and leaders. These discursive greening practices are tested for recognition, awareness, perceptions, and the discursive use in practice among the green value chain members and workers;

2) survey of workers' and members' identification with their greening organizations through perceiving themselves as part of a learning organization developing green competences.

There were several data collection stages in this survey. All RPQ surveys were collected via Limesurvey service that allows for survey data collection to be administered via an email link. A link was sent to one of the contact managers of RPQ, and it was further distributed to a list of near 200 empoyees with access to computers and internet in December 2012. The response rate was 45 surveys with only 22 of them being completed surveys.

With the HC KLSKY the survey file was sent by the HR Head of the company to the employee list of about 70 persons, 14 completed surveys were collected.

With the FOM BKG out of a total of 10 co-founding organizations with almost 100 employees and more than 20 additional small members of the Federation of Organic Movement BKG and Agrarian Platform, a total of 40 surveys were collected.

Thus, in this chapter the survey with a sample size of 76 responses from employees, workers, managers, and members of a total of 3 greening organizations in China (1 company) and Kyrgyzstan (1 company an 1 non-commercial organization) is presented.

8.1. Respondents' profile

The prevailing profile of respondents is of young high-fliers graduates of some of the best universities in China and Kyrgyzstan.

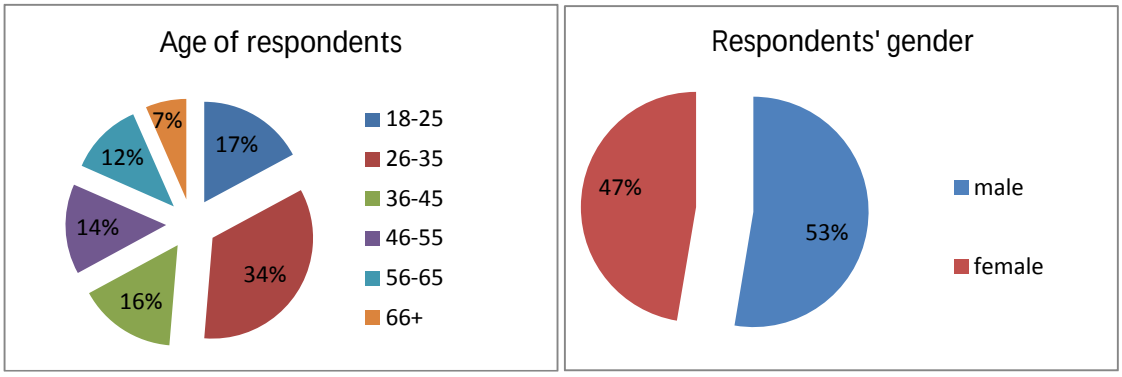
Profile: The typical respondent is a highly educated man or woman between 18 and 55 years old, married and has children, owns a house or flat in which he/she lives, and owns a car or a bicycle, travels to work by public transport and occasionally by car, fuel motorcycle, or bicycle. Saves energy everywhere. Also the typical worker of the studied organizations was someone who started working for the organization less than 8 years ago, with a total of 57.3% respondents having joined their organizations less than 2 years ago.

8.2. Age, Gender, Education, Houshold type

More than half of the respondents were between the age of 18 and 35 (51%), while 30% of people were between the age of 36 and 55, there were only 19% of respondents older than 56 years of age.

There were more male respondents than female (53% male vs. 47% female).

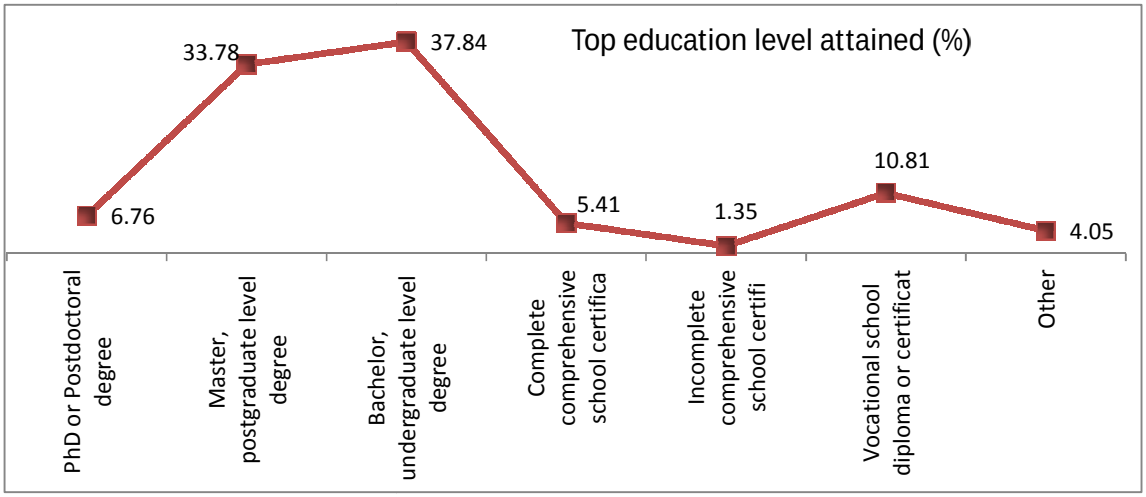
Figure 8.2.1. Age and Figure 8.2.2. Gender



Among the respondents the majority were highly educated people (72%), attained education level being mostly at the Bachelors/Undergraduate level (38%) and Master's degree level

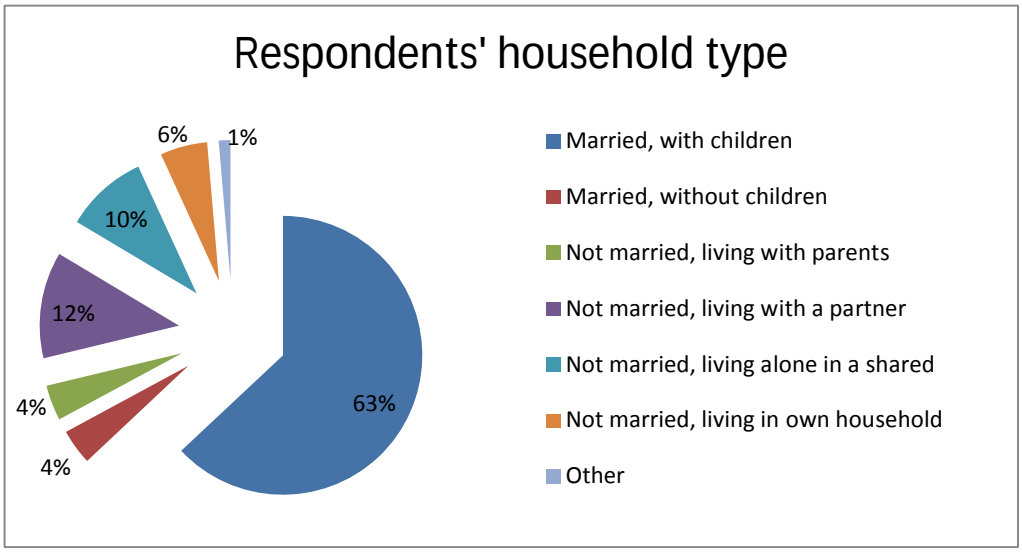
(34%). There are also some doctoral level educated respondents (7%). Importantly, there were 11% of respondents educated at the vocational and technical schools.

Figure 8.2.3. Education level.



There are 63% married respondents who have children, 4% of respondents are married but do not have children. Thre rest of the respondents are unmarried. There are 4% of respondents who are living with their parents, and 12% of respondents who are unmarried but living with their partners, while 10% - live alone in a shared household. There are 6% of respondents who are unmarried and live in their own household.

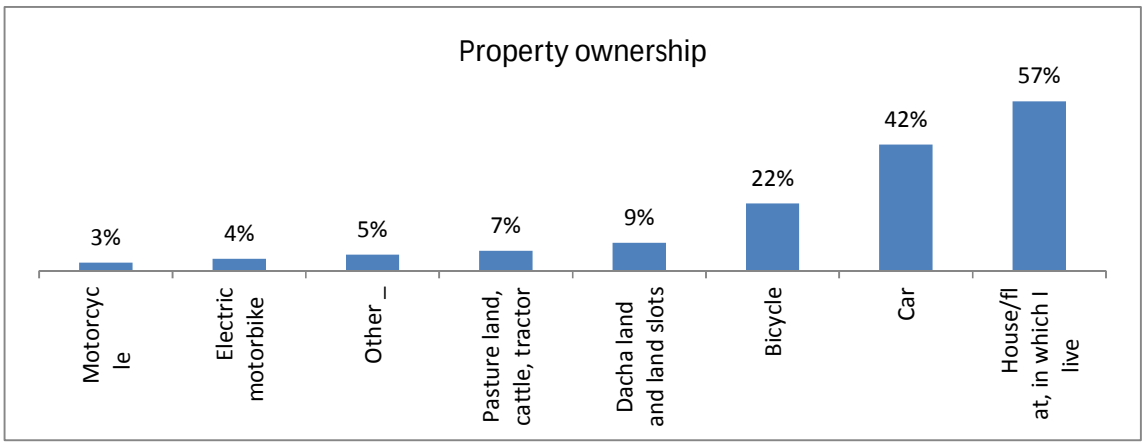
Figure 8.2.4. Household type



8.3. Property ownership and resource use and saving preferences

57% own their houses/flats in which they live, 42% own cars, and 22% own bicycles. About 16% respondents own land, pastures, and dachas (summer house with a land slot attached). Only 4% own electric bike, while 3% own a motorbike.

Figure 8.3.1. Property ownership



26% of respondents actually use car to get to work, and only 9% cycle to work. 42% drive a fuel motorcycle (most probably rented one and these respondents are mostly those from the Chinese company researched here). Important, 46% of respondents use public transport to get to work. Between 62% and 100% of respondents save energy in one way or another, mostly people save energy at home (100%), at work (88%), and 8% do not save energy at all.

Figure 8.3.2. Resource preferences: Getting to work from home

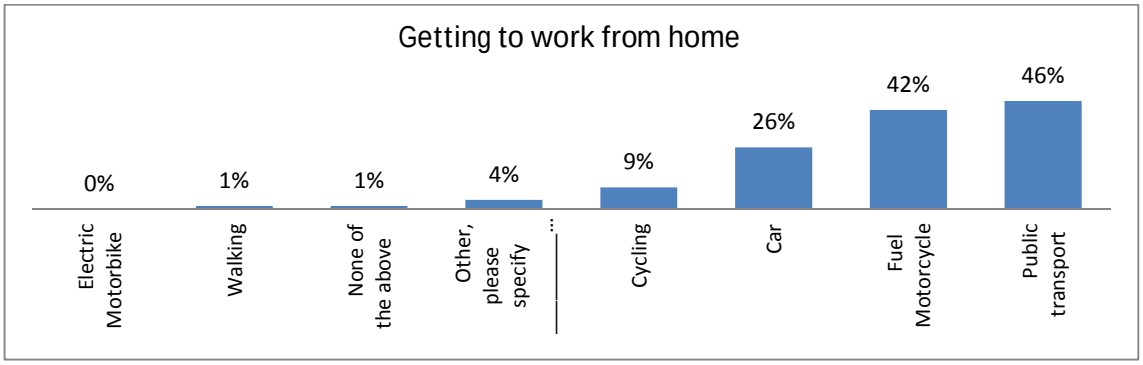
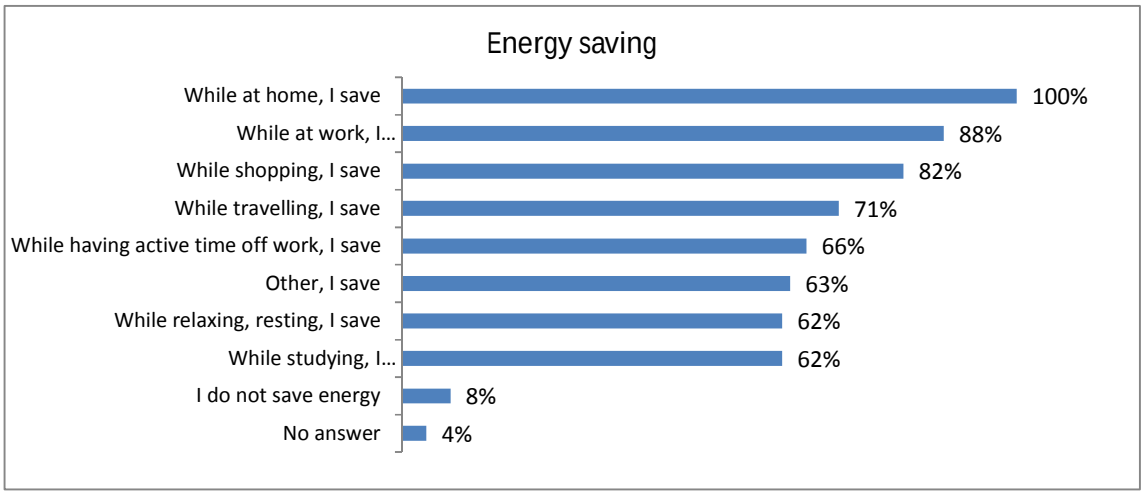


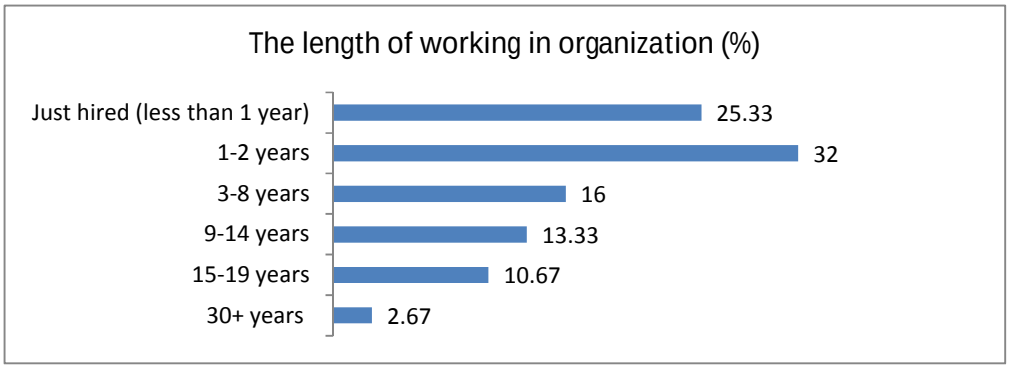
Figure 8.3.3. Resource preferences: declared energy saving patterns



8.4. Since when and where in the organization, with which departments dealing most

The majority of respondents, around 57% of respondents actually worked in the organization for less than 3 years, 43% of respondents have worked in their organizations for longer than 3 years.

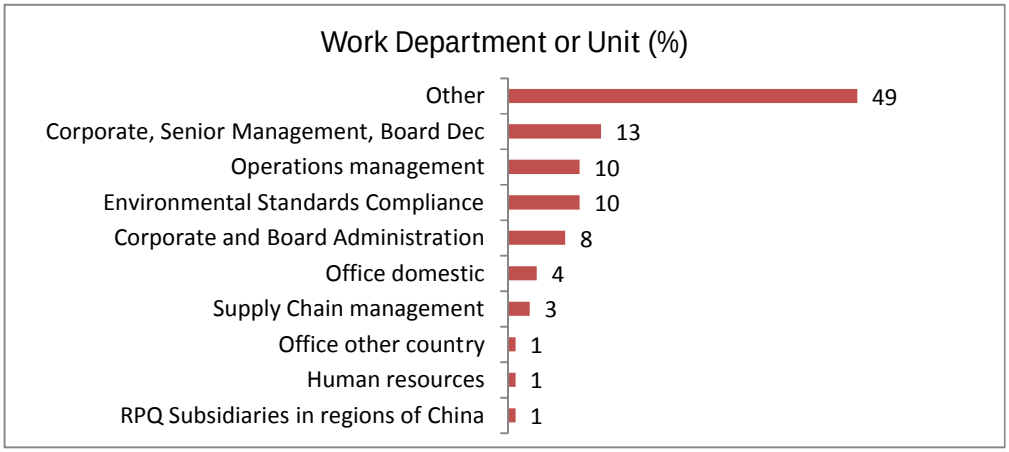
Figure 8.4.1. Length of working in organization



The majority of the respondents could not identify their working departments or units within the organization from the list proposed (49%), which is perhaps related to the fact that the organizations are still in transition, new, or also because the workers who took part in the survey were newly hired. 13% of respondents are decision-makers at the Corporate, Senior management and Board level, 10% in operations management, 10% in the Environmental compliance, 8% are administrators at the corporate and board level, 4% work at the domestic office (mostly RPQ China workers) and 1% (RPQ subsidiaries in regions of China).

Importantly 3% of respondents work in Supply chain management units of their organizations. Only 1% of respondents work in human resource management.

Figure 8.4.2. Work department or unit within the organization



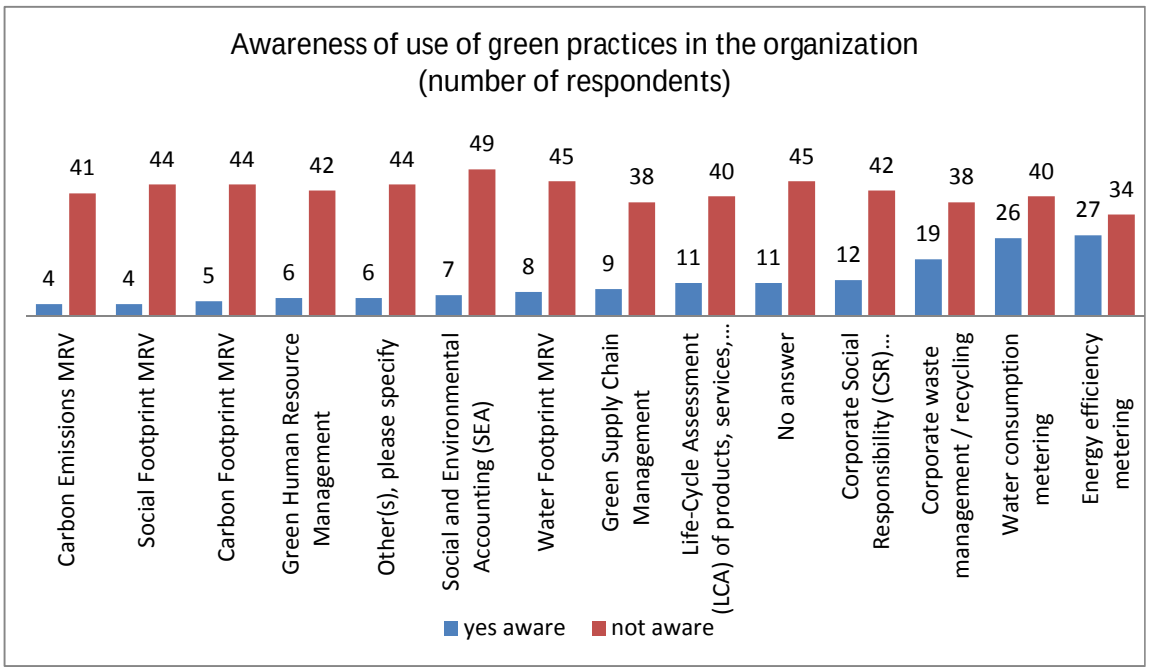
Out of the total 76 respondents the following were the levels and units of their organizations that they deal most with: middle-level management (31 respondents), departments that deal with customers (30 respondents), senior management and board (23 respondents), experts of the company (17 respondents), administration (15 respondents), suppliers, industry bodies, community of practice (14 respondents). Only a few of the respondents were from the special units and departments that deal with environmental issues, emissions or environmental agencies (at total of 11 respondents).

Figure 8.4.3. Cooperation with departments and units within the organization(s)

8.5. Awareness of use of green practices in the organization

There has been a unique insight into the awareness of workers of greening organizations in regards to green practices used within the organization. The awareness was measured through recognition of some of the most common green discursive practices. In the case of the studied companies in China and Kyrgyzstan "the green practices used in the organization" are exemplified mostly by metering of the energy efficiency (27 respondents), of water consumption (26 respondents), corporate waste management and recycling (19 respondents), Corporate Social Responsibility (12 respondents), Life-Cycle Assessment (11 respondents), Green supply chain management (9 respondents), Environmental footprints, like Water footprint (8 respondents), Carbon footprint (5 respondents) and Carbon emissions MRV (4 respondents), and Social footprint (4 respondents). There is also a very unlikely answer of 6 respondents who recognized "Green human resource management" as one of the practices of their organization.

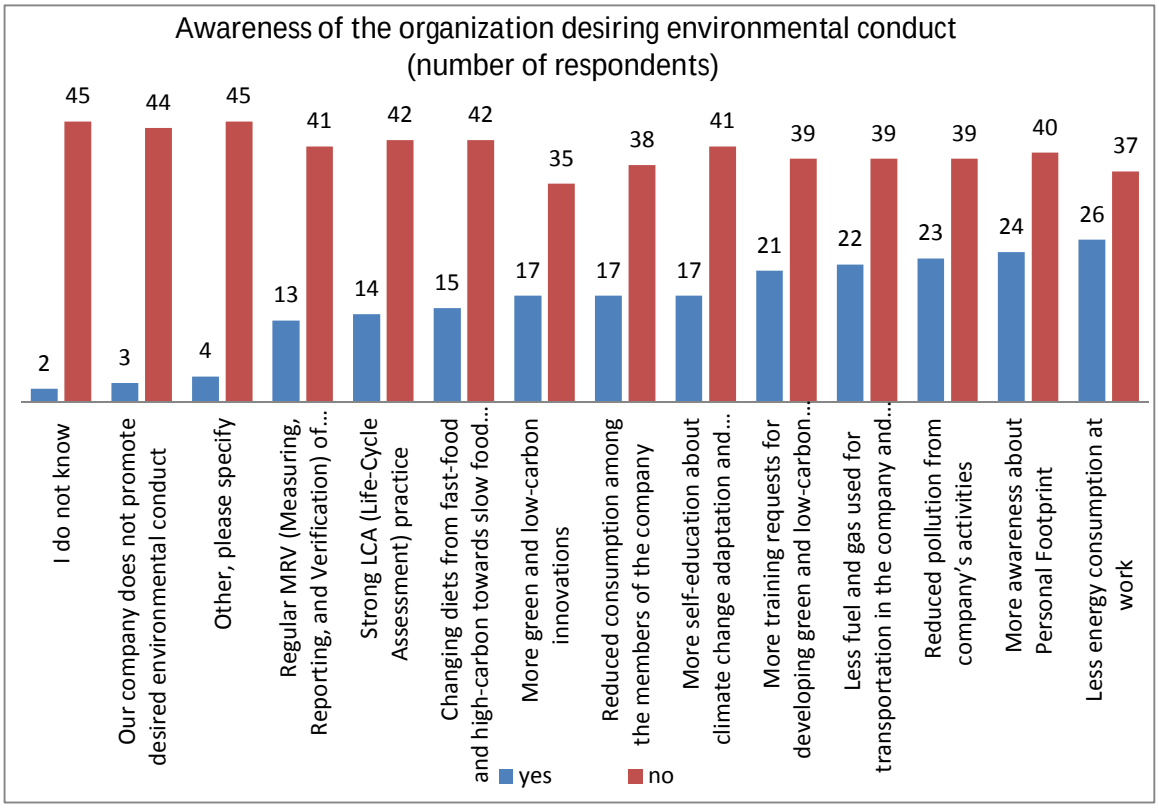
Figure 8.5.1. Respondents' awareness of use of green practices by organization



The respondents' awareness of the kind of conduct that is considered desirable at their organization is similar to the selected list of ideal green practices as they are perceived to be used by their organization. For example, the largest proportion of respondents aware of their organization's preferred conduct to do with reducing consumption, waste, and pollution, i.e.,

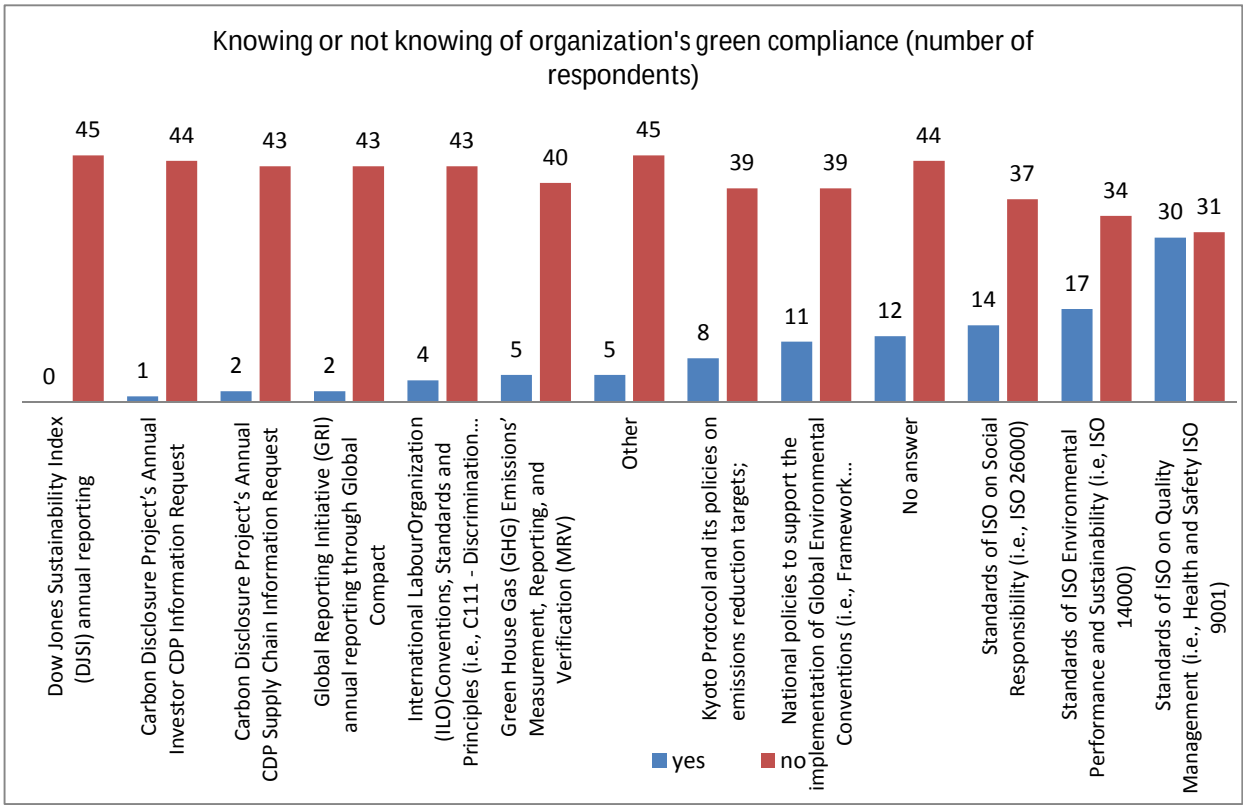
"Less energy consumption at work" (26 respondents), "Less fuel and gas used for transportation by the company" (23 respondents), "Reduced pollution from company activities" (23 respondents), "Reduced consumption from the members of the company" (17 respondents). Also "More green and low-carbon innovations" ("More awareness about Personal Footprint" (24 respondents) and "More self-education about climate-change adaptation and mitigation" (17 respondents) and "More training requests for developing green competences" (17 respondents), and "More green and low-carbon innovations" (17 respondents). And there are quite a few respondents who selected Emissions footprint monitoring and reporting as something they are aware of when it comes to their organization desiring from its employees on the "Green road". Thus, 14 respondents selected "Strong LCA practice" and 13 respondents selected "Regular Emissions MRV". And most importantly from consumer perspective, "Changing diets from fast-food and high-carbon towards slow food and mostly organically grown food.

Figure 8.5.2. Respondents' awareness of their greening organization desiring green conduct



Among the organizational compliance the respondents recognize mostly the compliance with the ISO Standards 9001, Health and Safety of Employees (30 respondents), 14001 Environmental performance and Sustainability (17 respondents), and 26000 Corporate Social Responsibility (15 respondents). Just really very few people in the organizations knew of their organizations' compliance according to any of the carbon emissions MRV, or Dow Jones Sustainability Index, which is really the domain of the multinational corporations and not of their supply chain member yet.

Figure 8.5.3. Respondents' knowledge of their organizations' green compliance

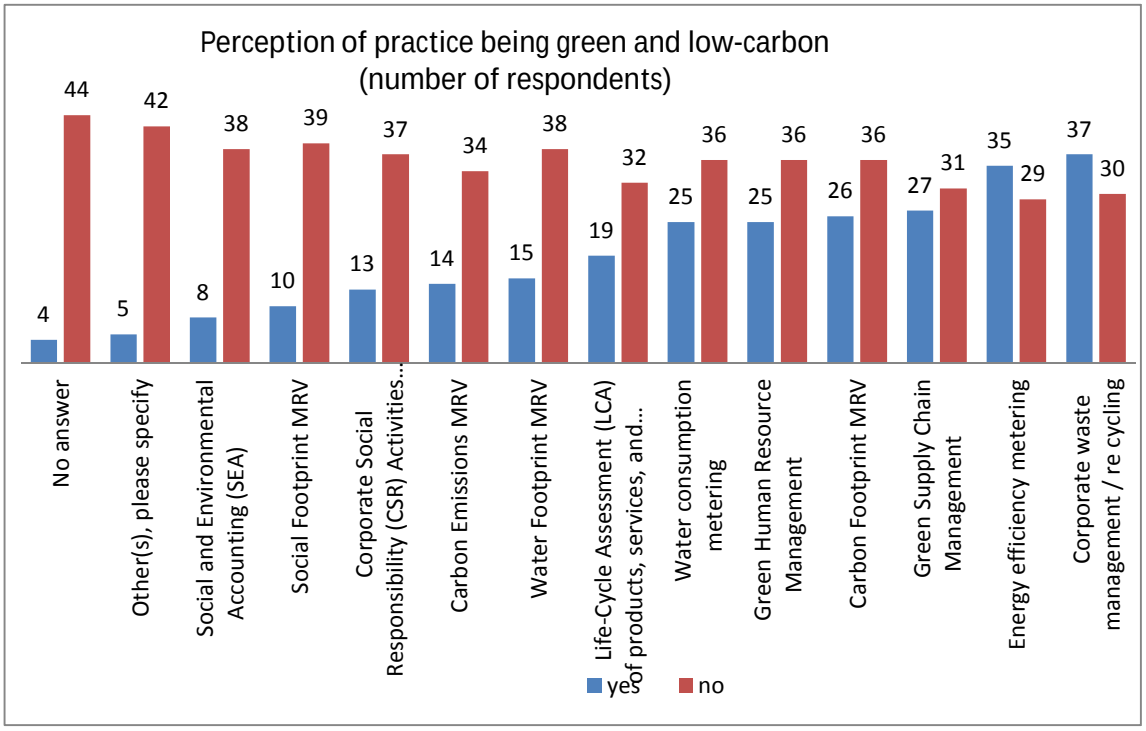


8.6. Perceptions of practices as "green" and "low-carbon" and organizational green investments

Respondents' perceptions of the proposed list of practices being as green or low-carbon favoured Corporate Waste Management (37 respondents), Energy efficiency metering (35 respondents), and Green Supply Chain Management (27 respondents), Carbon Footprint MRV (26 respondents), Green Human Resource Management (25 respondents), Water Consumption Metering (25 respondents), Life-cycle Assessment of products, services, and processes (19 respondents). Only 10 respondents perceive Corporate Social Responsibility

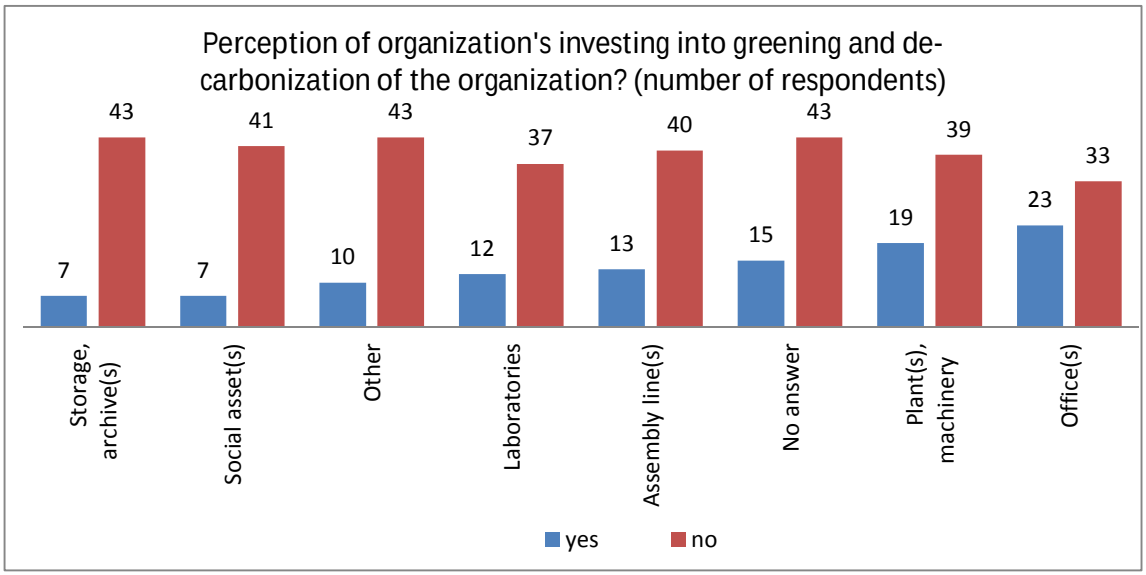
activities as green and low-carbon practices, with only 8 respondents recognizing Social and Environmental Accounting as a perceived green and low-carbon practice.

Figure 8.6.1. Are these practices green and/or low-carbon?



Less than one third of the respondents noted that they perceive any investments by their organization into greening and de-carbonization of their organization, including - of their offices (23 respondents), plants machinery (19 respondents), Assembly lines (13 respondents), Laboratories (12 respondents), Social assets and storage, archives (7 respondents each).

Figure 8.6.2. Is your organization investing in green and low-carbon practices?

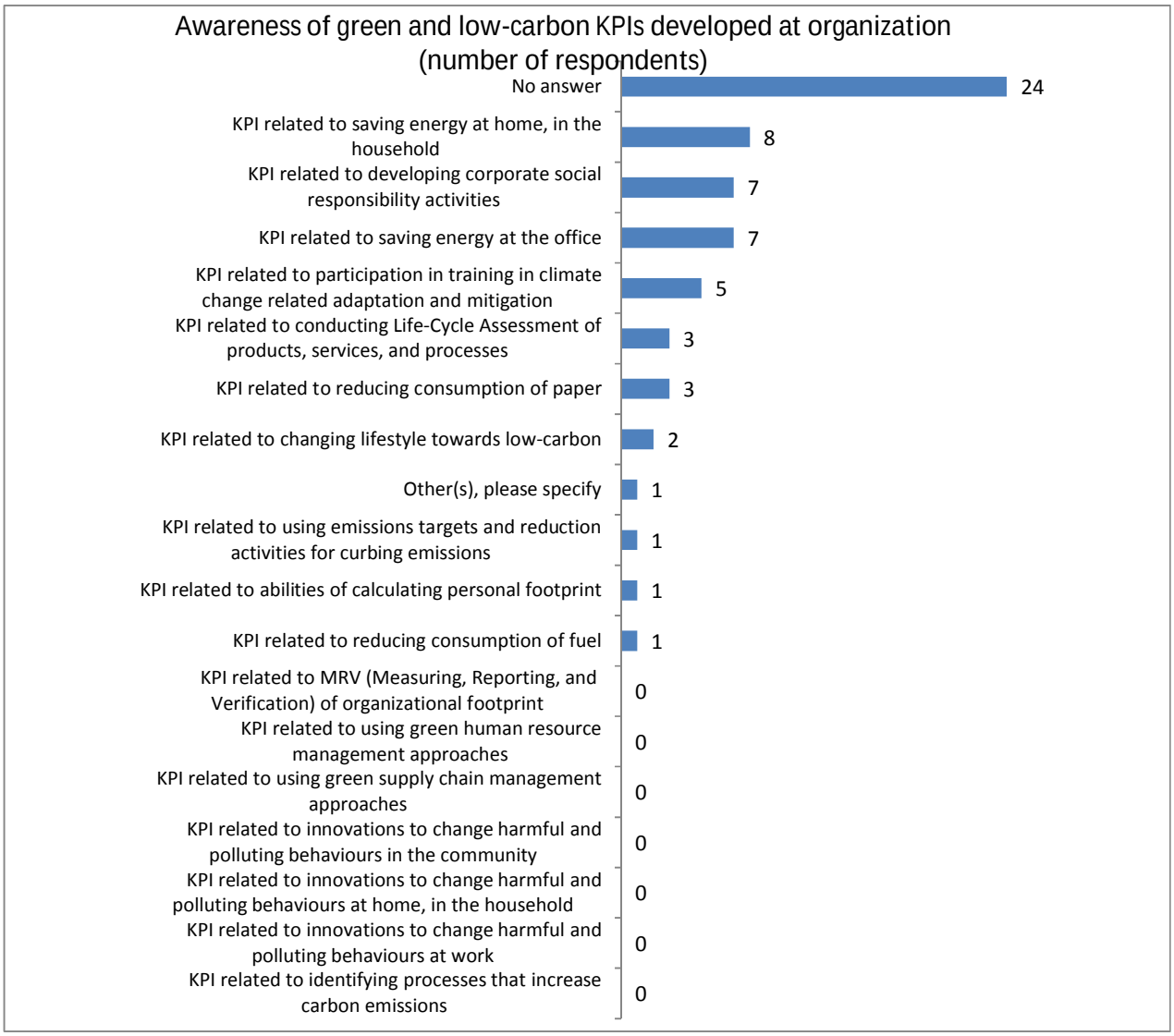


8.7. Awareness of organization's KPIs policy linked to "greening" and de-carbonization

There were only a few respondents who indicated that there are KPIs in their organization that are linked to greening and decarbonisation, or in other words linked to green jobs and competences. 8 respondents indicated that there are "KPIs related to saving energy at home"; 7 respondents indicated that there are "KPIs to developing corporate social responsibility activities"; 7 respondents indicated that there are "KPIs related to saving energy in the office"; 5 respondents indicated that there are "KPIs related to participation in training on climate change adaptation and mitigation"; 3 respondents indicated the availability of "KPIs related to Life-Cycle Assessment of products, services, and processes"; 3 respondents indicated the availability of "KPIs related to consumption of paper".

There were only 1 or 2 responses on KPIs on fuel consumption, emissions targets, curbing emissions, changing lifestyles to low-carbon, and calculating personal footprint. And there were seven types of KPIs that were not indicated as available at the studied organizations at all (see Figure 8.7.1.).

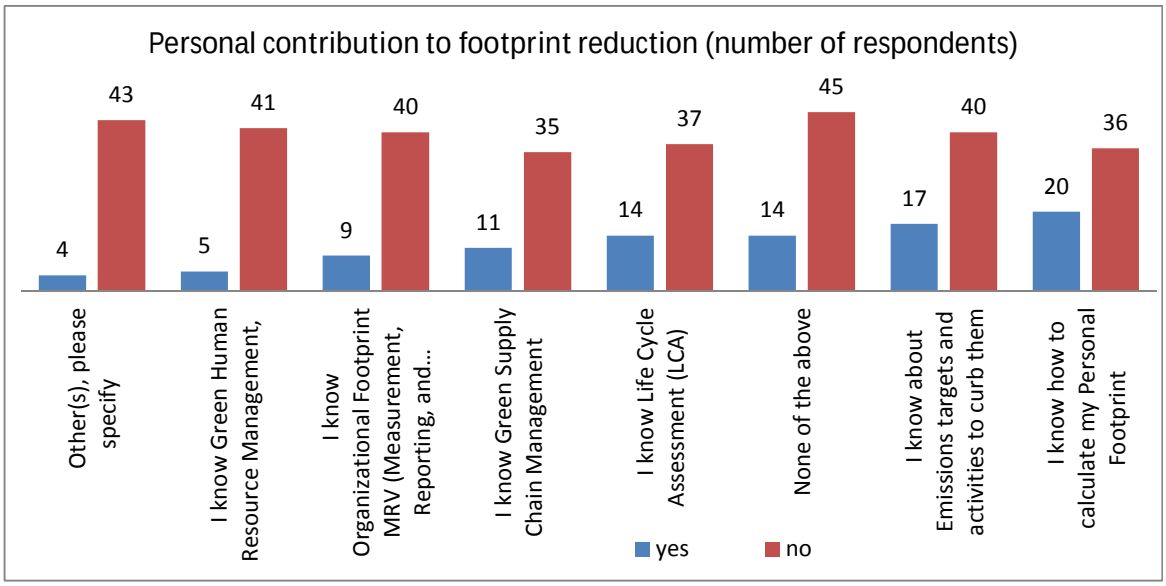
Figure 8.7.1. Just a few Key Performance Indicators at the organizations



8.8. Perception of personal contribution to "greening" and de-carbonization

Less than one forth (less than 25%) of the respondents have anything to mention of their personal contribution when it comes to reducing carbon emissions. There were 20 respondents who chose "I know how to calculate my Personal Ecological Footprint", 17 respondents who chose "I know about emissions targets and activities to curb them", 14 respondents who chose "I know life-cycle assessment (LCA)", 11 respondents who chose "I know Green Supply Chain Management", 5 respondents who chose "I know Green Human Resource Management".

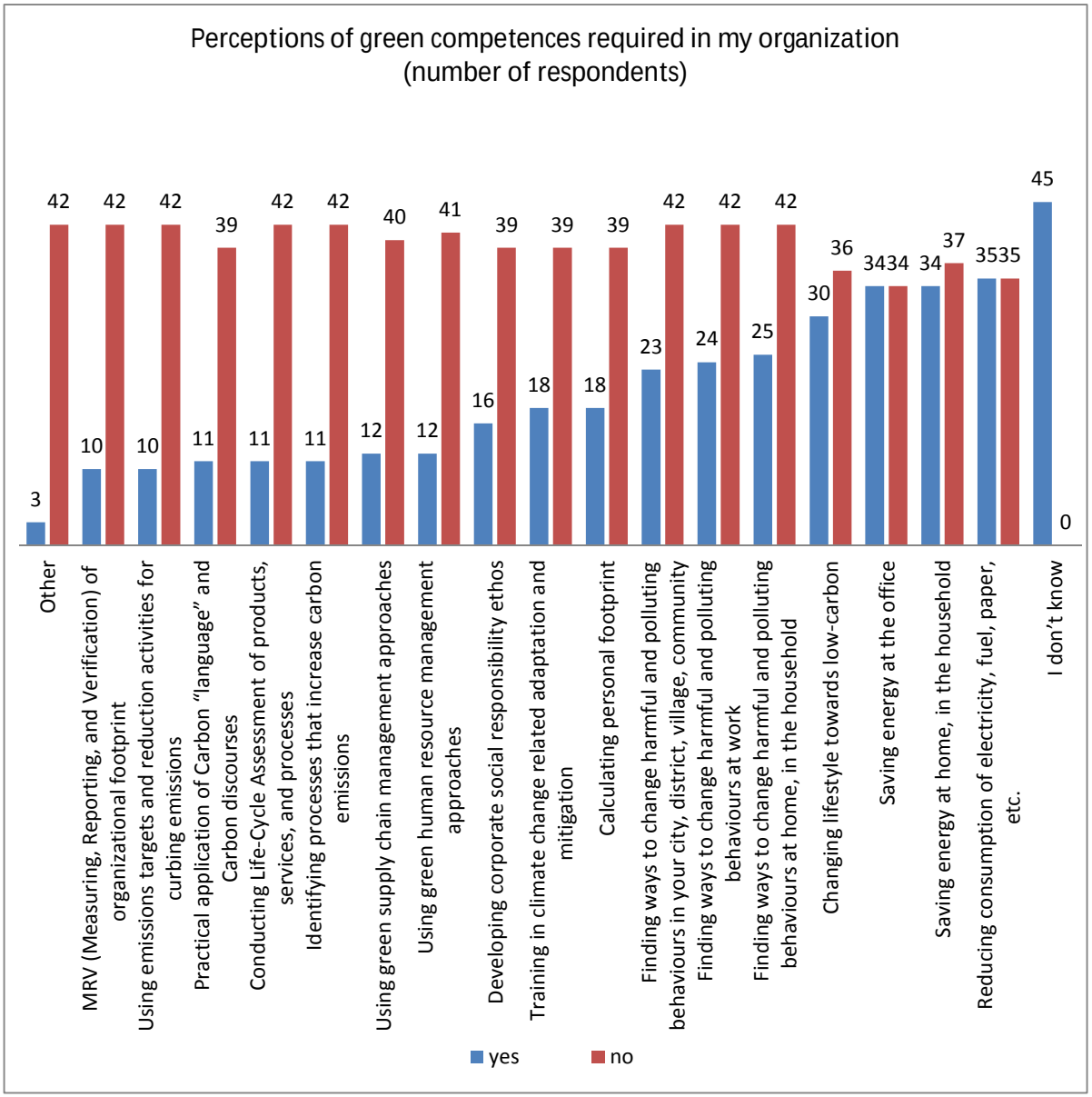
Figure 8.8.1.Workers' and members' personal contribution to emissions reductions



8.9. Perceptions of the required "green competences" in their organizations

More than half of the respondents selected "I do not know" answer when they were asked of their perceptions of the green competences required in their organization (45 respondents). At the same time there were 35 respondents who selected "Reducing consumption of electricity, fuel, paper, etc." There was equal number of respondents that selected "Saving energy at home" and "Saving energy in the office" (34 people, probably the same people in both cases). There were a surprising high number of people (30 respondents) who selected "Changing life-style towards low-carbon". Almost the same number of people selected competences such as Finding ways to change harmful and polluting behaviours at the household (25 respondents), at work (24 respondents), and in your city, district, village, community (23 respondents). There were 18 respondents who selected "Calculating personal ecological footprint" and "Training in climate change adaptation and mitigation". There were 16 respondents who pointed at "Develop corporate social responsibility ethos". 12 respondents pointed at "Using green supply chain management" and "Using green human resource management". There were 11 respondents who selected "Identifying practices that increase carbon emissions", "Conducting life-cycle assessment of products, services and processes", and "Practical application of carbon language and carbon discourses". And then there were 10 respondents who chose "Using emissions targets and reduction activities to curb emissions" as well as "Measuring, reporting and verification of organizational carbon footprint".

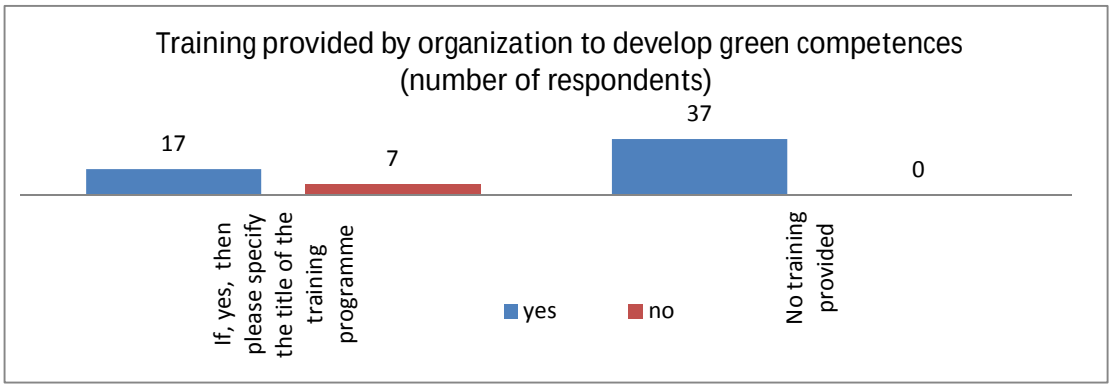
Figure 8.9.1. Workers and members of studied organizations perceive green competences required in their organizations



8.10. Organizations providing training on "greening" and de-carbonization

Only 17 respondents indicated that their organization provided training for the employees on developing green competences in the organization (Figure 8.9.1).

Figure 8.10.1. Training for developing green competences



There were less than one fifth of the respondents answering the question about the priority training required in their organization to develop green competences. Respondents indicated their preferred training for developing green competences among workers and members of the organizations. Among the perceived priorities in terms of training in de-carbonization are the following:

Priority training number 1: "Reducing consumption of electricity, fuel, papers etc." was marked as number 1 priority by 10 respondents. "Saving energy at home" and "Conducting life-cycle assessment of products, services and processes in the organization" were marked as number 1 priorities for training in green competences by 6 respondents. There were 5 respondents who marked "Practical application of Understanding Carbon and Carbon discourses" as number 1 priority for training in green competences.

Priority training number 2: There were 9 respondents who marked "Changing life style towards low-carbon" as their number 2 priority. "Saving energy at home" was marked as number 2 priority by 7 respondents. "Developing corporate social responsibility ethos" was marked as number 2 priority by 6 respondents.

Priority training number 3: "Finding ways to change harmful and polluting behaviours at work" was marked as number 3 priority training by 7 respondents. "Training in climate change related adaptation and mitigation" was prioritised as number 3 priority by 2 respondents.

Priority training number 4: “Finding ways to change harmful and polluting behaviours at home” was marked as number 4 priority training by 5 respondents. “Calculating personal ecological footprint” was marked as priority number 4 by 3 respondents.

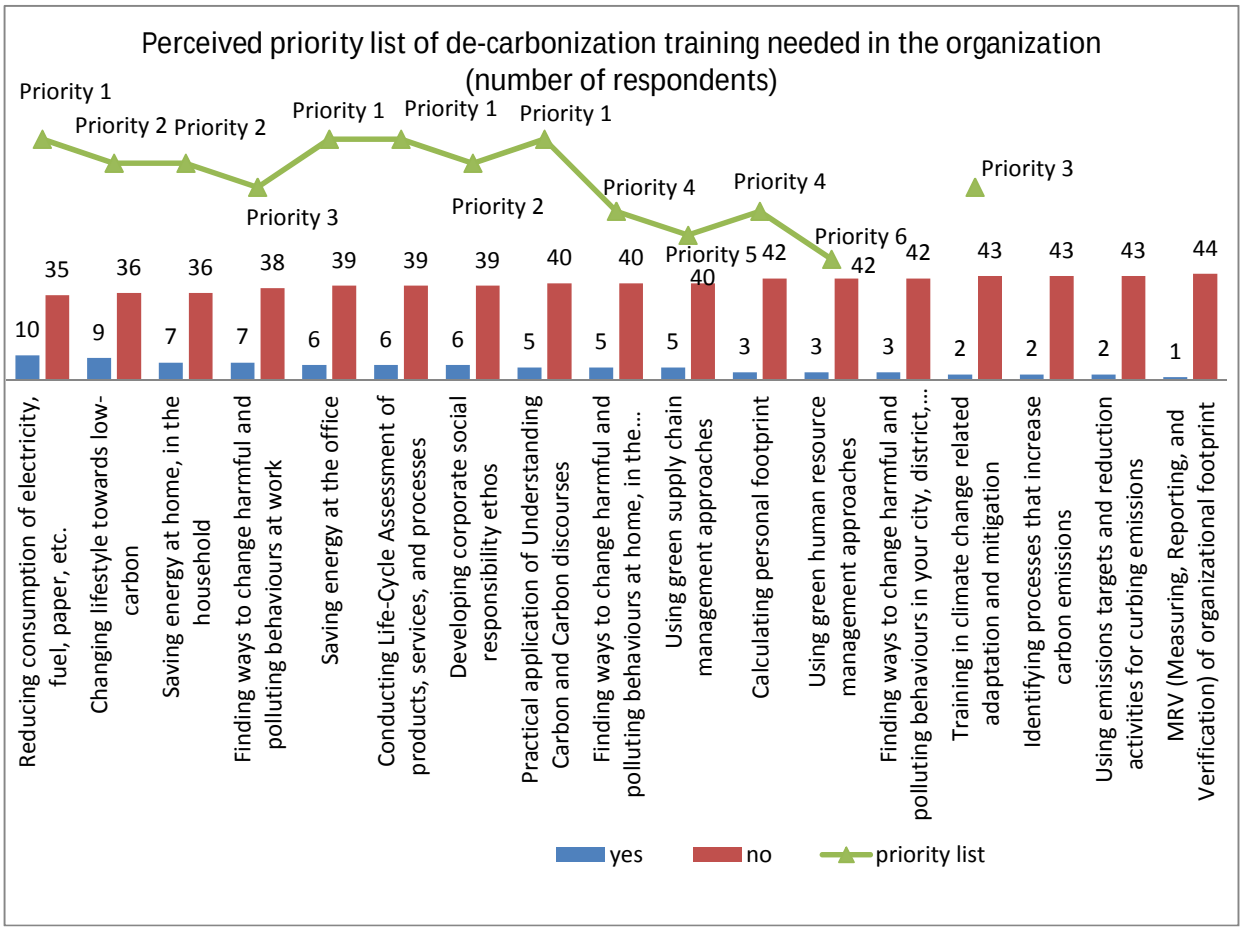
Priority training number 5: “Using green supply chain management approaches” was marked as number 5 priority training by 5 respondents.

Priority training number 6: “Using green human resource management approaches” was marked as number 6 priority training by 3 respondents.

As required training the following have been noted:

There were 3 respondents who picked “Finding ways to change harmful and polluting behaviours in the city, district, and community”. Only 2 respondents picked “Identifying processes that reduce carbon emissions” and “Using emissions targets and reduction activities for curbing emissions”, and only an odd one respondent picked “Measuring, reporting, and verifying emissions”.

Figure 8.10.2. Perceived priority list of de-carbonization training needed

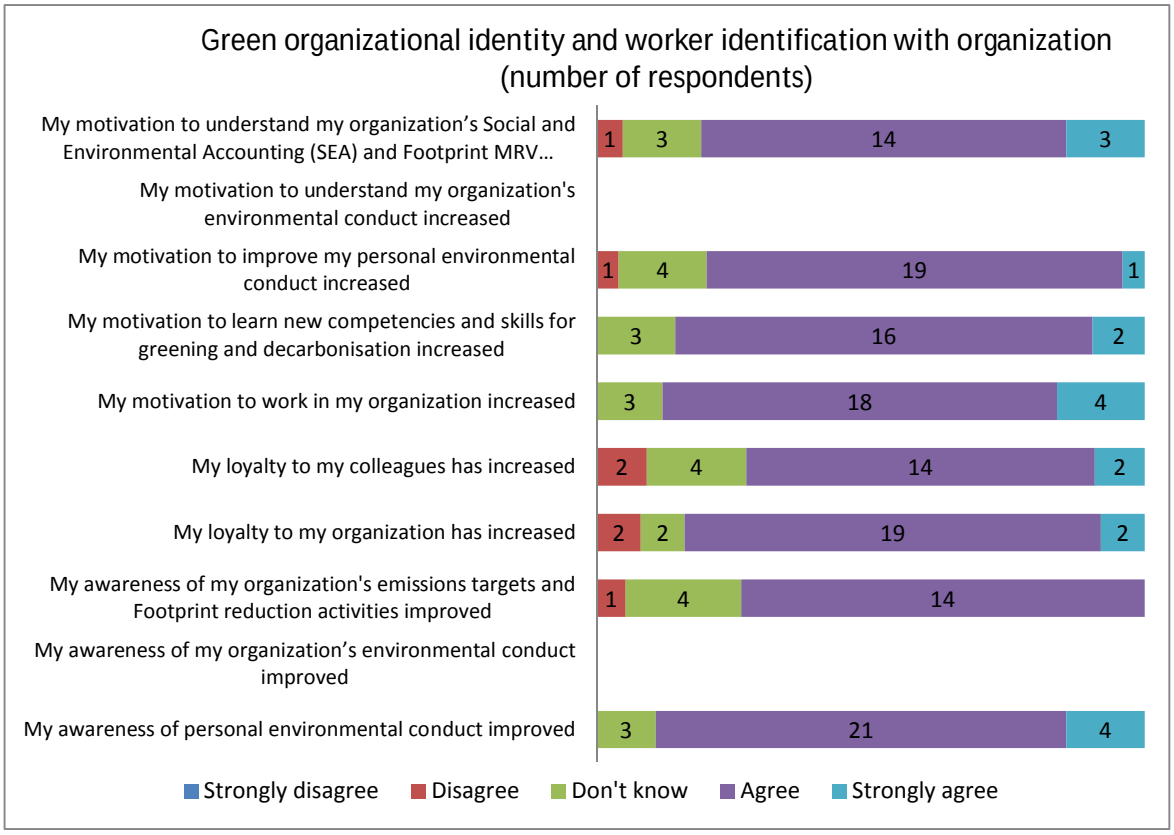


8.11. Organizational "green identity" and workers' identification with their organizations

The respondents' answers seem to be more numerous (more people agree) when it comes to personal conduct and personal identity. However, when it comes to something concerning a wider and more abstract idea about the organization, respondents tend to shy away. For example, personal and dependent only on respondents were "My awareness of personal environmental conduct improved" (25 respondents), "My motivation to work in my organization increased" (22 respondents), "My loyalty to my organization increased" (21 respondents), and "My motivation to improve my personal environmental conduct improved" (20 respondents).

While the following are dependent on the organization's structure, culture, and management skills, and thus are less influenced by individual workers: i.e., "My motivation to learn new competences and skills for greening and de-carbonization increased" ("agree" and "strongly agree" 18 respondents), "My motivation to understand my organization's Social and Environmental Accounting and Footprint MRV increased" ("agree" and "strongly agree" 17 respondents), "My loyalty to my colleagues increased" ("agree" and "strongly agree" 16 respondents), and "My awareness of my organization's emissions' targets and footprint reduction activities improved" ("agree" and "strongly agree" 14 respondents).

Figure 8.11.1. Green identity of organizations and workers' and members' identification with their organizations



8.12. Respondents understanding and/or defining "green jobs" and "green competences"

Respondents' understanding of definition and meaning of green jobs were measured by their agreement or disagreement with a list of definitions drawn from the ILO and UNEP definitions of green jobs. The respondents scored the definitions as follows:

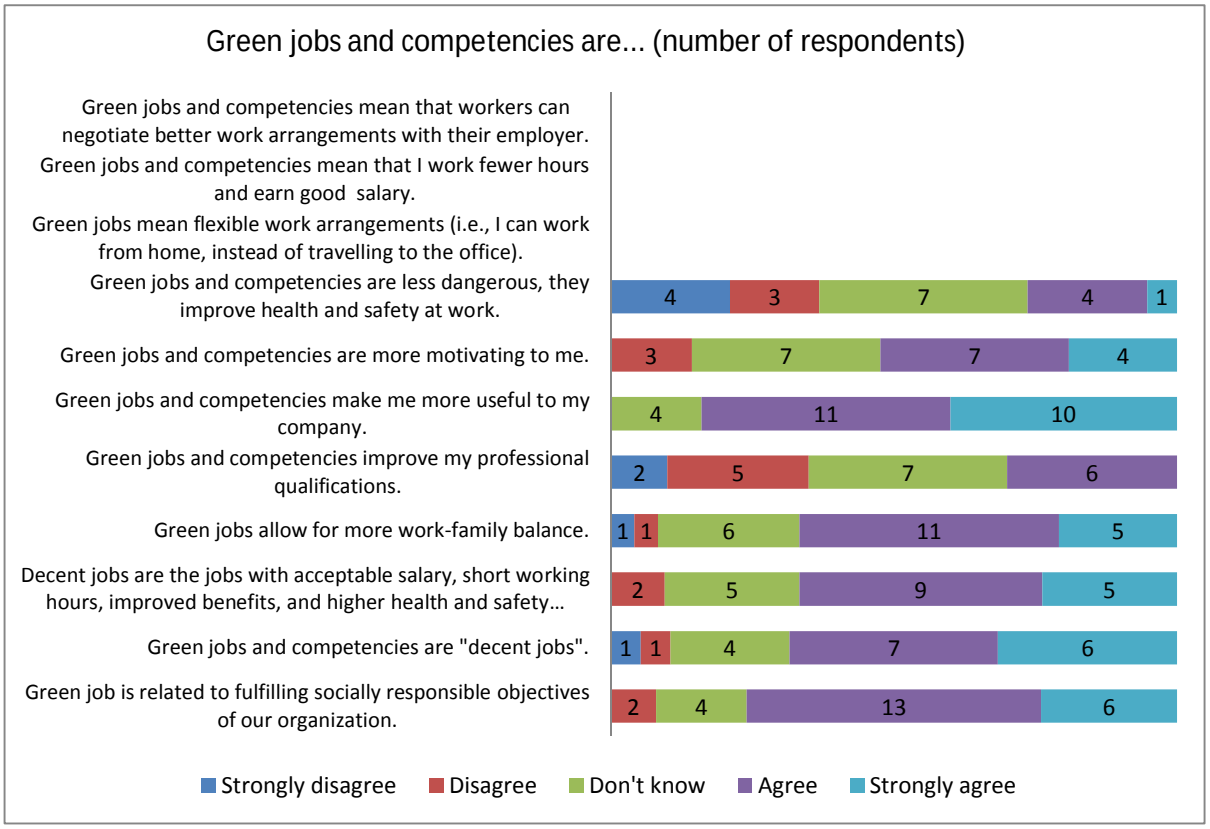
"Green jobs and competencies make me more useful to my organization" ("agree" and "strongly agree" 21 respondents). "Green job is related to fulfilling socially responsible objectives of our organization" ("agree" and "strongly agree" 19 respondents). "Green jobs allow for more work-family balance" ("agree" and "strongly agree" 16 respondents). "Decent jobs are the jobs with acceptable salary, short working hours, improved benefits, and higher health and safety" ("agree" and "strongly agree" 14 respondents). "Green jobs and competencies are decent jobs" ("agree" and "strongly agree" 13 respondents). "Green jobs and competencies are more motivating to me" ("agree" and "strongly agree" 11 respondents).

Respondents mostly disagreed with definitions of green jobs and green competencies being "Green jobs and competencies are less dangerous, they improve health and safety at work" ("strongly disagree" and "disagree" 7 respondents); "Green jobs and competencies improve my professional qualifications" ("strongly disagree" and "disagree" 7 respondents).

Respondents did not comment at all on 3 definitions of green job, even though these are considered the definitions of green jobs by the UN organizations promoting this new terminology:

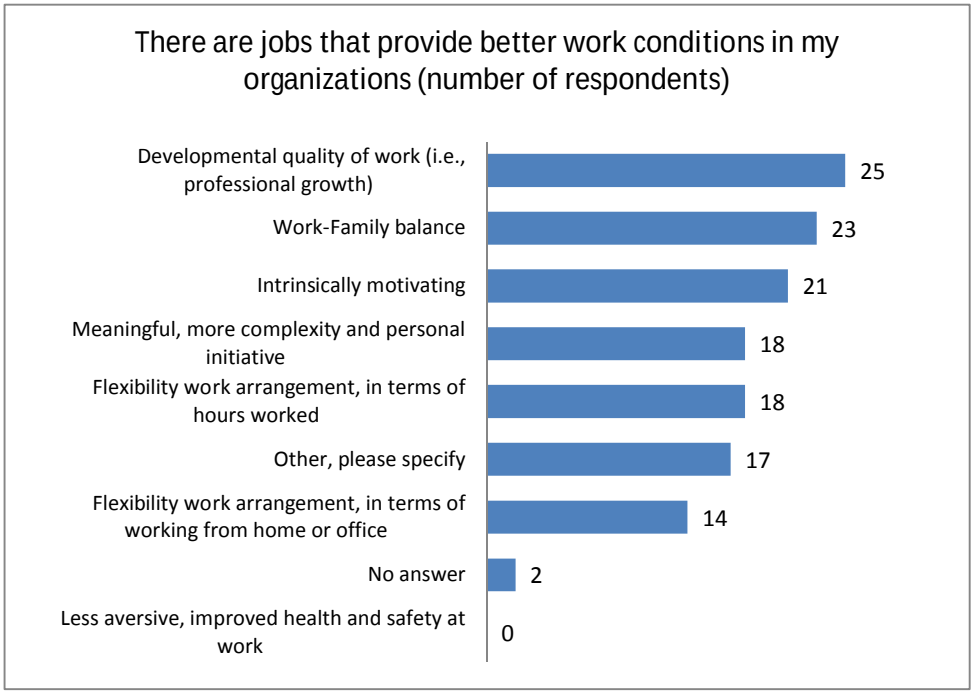
- "Green jobs and competencies mean that workers can negotiate better work arrangements with their employer";
- "Green jobs and competencies mean that I work fewer hours and earn good salary",
- "Green jobs mean flexible work arrangements (i.e., I can work from home, instead of travelling to the office)".

Figure 8.12.1. What are green jobs and green competencies?



To further the querying about "green job" availability in the studied organizations the question about "jobs that provide better work conditions" availability in the respondents' organizations was asked. There were 25 respondents who marked availability of "Developmental quality of work (i.e., professional growth)" at their organization; 23 respondents marked jobs that provide "work-family balance" available at their organization. 21 respondents marked "Intrinsically motivating" jobs available at their organization. 18 respondents marked the following improved qualities of the jobs at their organizations "Meaningful, more complexity and personal initiative" as well as "Flexibility work arrangements, in terms of hours worked". 14 respondents marked the improved qualities of the jobs in their organization as "Flexibility work arrangement, in terms of working from home or office".

Figure 8.12.2. Jobs that provide better work conditions in my organization



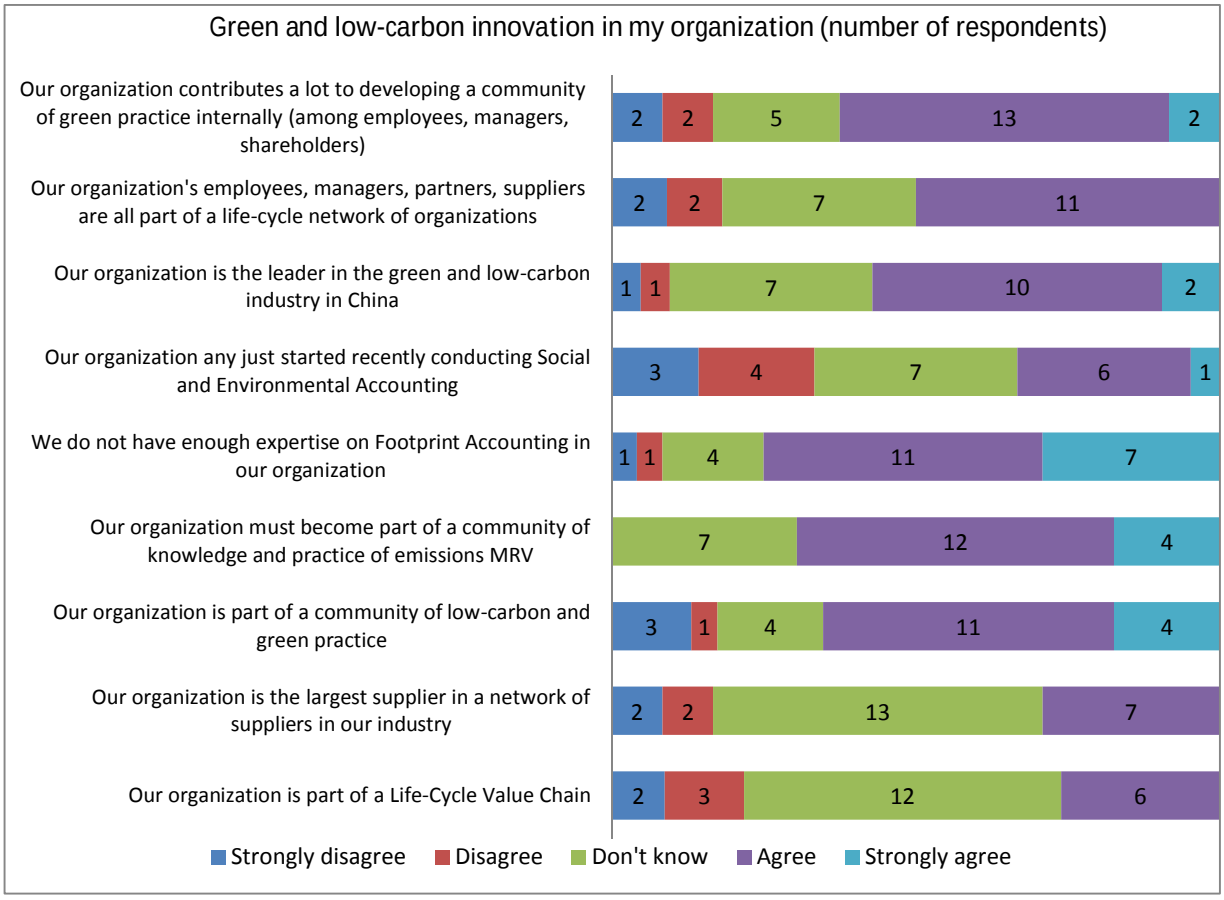
8.13. Green and low-carbon innovation

Activity on this question was a little bit higher than the others. Thus there were 18 respondents who agreed and strongly agreed with the statement "We do not have enough expertise on Footprint Accounting in our organization". 16 respondents "agree" and "strongly agree" with the statement "Our organization must become part of a community of knowledge and practice of emissions MRV". 15 respondents "agree" and "strongly agree" with the

statement “Our organization contributes a lot to developing a community of green practice internally (among employees, managers, shareholders). 15 respondents “agree” and “strongly agree” with the statement “Our organization is part of the community of green and low-carbon practice”. 12 respondents “agree” and “strongly agree” with the statement “Our organization is the leader in the green and low-carbon industry in our country”. 11 respondents “agree” and “strongly agree” with the statement “Our organizations managers, employees, partners, suppliers are all part of the life-cycle network of organizations”.

There were 13 respondents who indicate that they did not know whether to agree or disagree with the statement “Our organization is the largest supplier in the network of suppliers in our industry”. And there were 12 respondents who did not know whether agree or disagree with the statement “Our organization is part of a Life-Cycle Value Chain”.

Figure 8.13.1. Green and low-carbon innovation in my organization



8.14. Perceived organizational support

Overall, there seemed to be strong perceptions of organizational support among the respondents. 28 respondents "agree" and "strongy agree" with the statement "The organization strongly considers my goals and values". 25 respondents "agree" and "strongly agree" with the statement "The organization would understand a long absence due to my illness". 23 respondents "agree" and "strongly agree" with the statement "The organization is willing to extend itself in order to help me perform my job to the best of my ability". 20 respondents "agree" and "strongly agree" with the statement "Help is available from the organization when I have a problem". At the same time 12 respondents indicated that they "agree" and strongly agree" with the statement "If the organization found a more efficient way to get my job done they would replace me".

Respondents "strongly disagree" and "disagree" with the following statements about their organization:

-"The organization would ignore any complaint from me" (20 respondents)

- "The organization disregards my best interests when it makes decisions that affect me" (19 respondents)

- "The organization fails to appreciate any extra effort from me" (19 respondents)

- "If the organization could hire someone to replace me at a lower salary it would do so" (19 respondents)

- "The organization would fail to understand my absence due to a personal problem" (13 respondents "disagree")

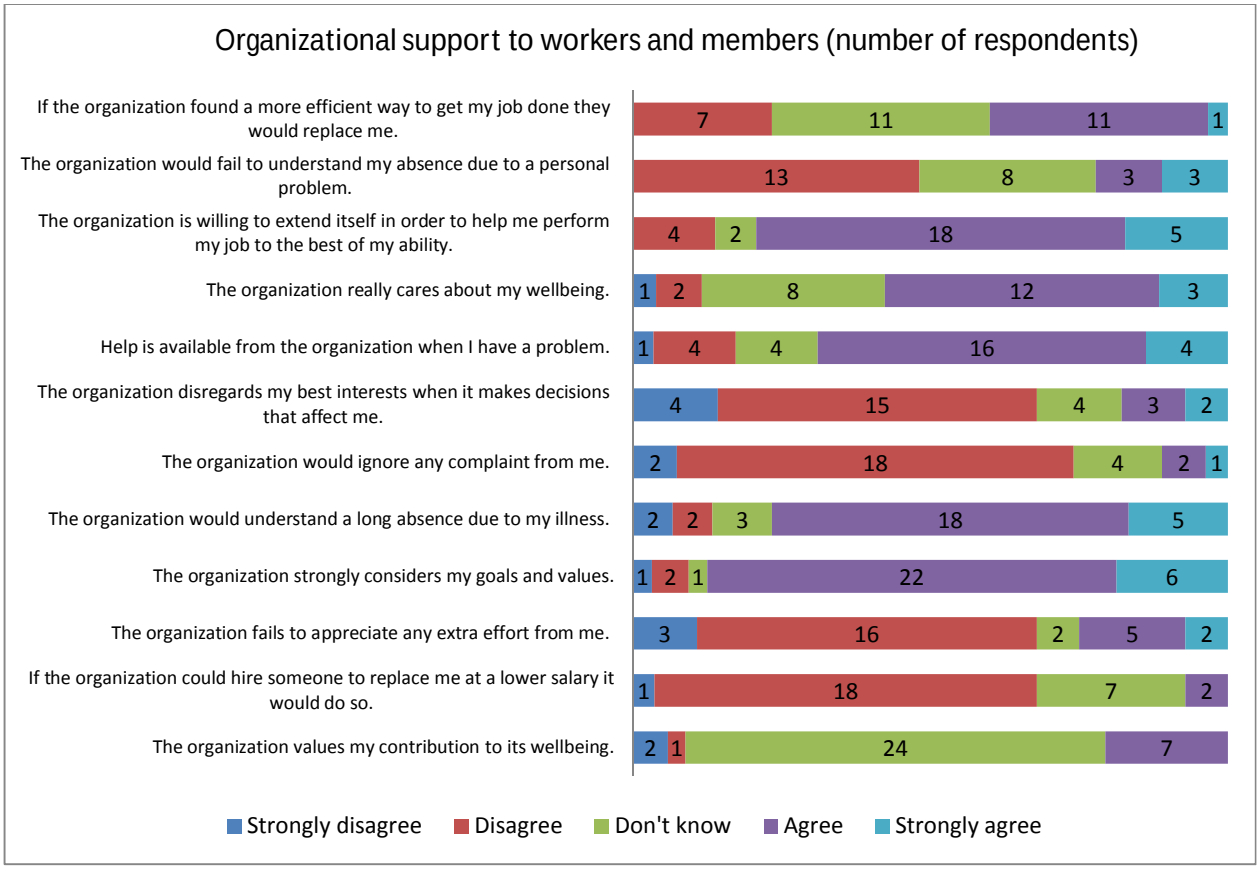
- "If the organization found a more efficient way to get my job done they would replace me" (7 respondents "disagree")

There is a strong signal to organizations in the answers to the following two statements:

- 24 respondents indicated that they did not know whether to agree or disagree with the statement "The organization values my contribution to its wellbeing".

- 11 respondents indicated that they did not know whether to agree or disagree with the statement "If the organization found a more efficient way to get my job done they would replace me". While 12 respondents indicated that they "agree" and strongly agree".

Figure 8.14.1. Organizational support to workers and members



8.15. Identification of workers with their "greening" and de-carbonizing organizations

There were many responses associated with the statements for measuring self-identification with their organizations by workers and members. 27 responses indicated "agree" and "strongly agree" with the following statements:

- "Working at my organization has a lot of personal meaning to me",

- "I am proud to tell others that I work for my organization".

There were 20 respondents who indicated that they "agree" and "strongly agree" with the statement "I feel emotionally attached to my organization". There were 19 respondents who indicated that they "agree" and "strongly agree" with the statement "I feel a strong sense of belonging to my organization".

There were 17 respondents who indicated that they "agree" and "strongly agree" with the statement "My supervisor at my organization gives me a lot more recognition when I get a lot of work done".

There were 15 responses of "agree" and "strongly agree" with the following statements:

- "Completing my work on time gets me greater approval by my immediate supervisor at our organization",
- "I really feel that any problems faced by my organization are also my problems",
- "I would be happy to work at my organization until I retire".

There were 12 responses indicating "agree" and "strongly agree" with the following statements:

- "If I get my job done on time, I have more influence with my immediate supervisor at my organization".
- "Getting work done on time is rewarded with high pay in my organization"
- "Getting work done quickly at my organization is rewarded with a pay rise or a promotion"

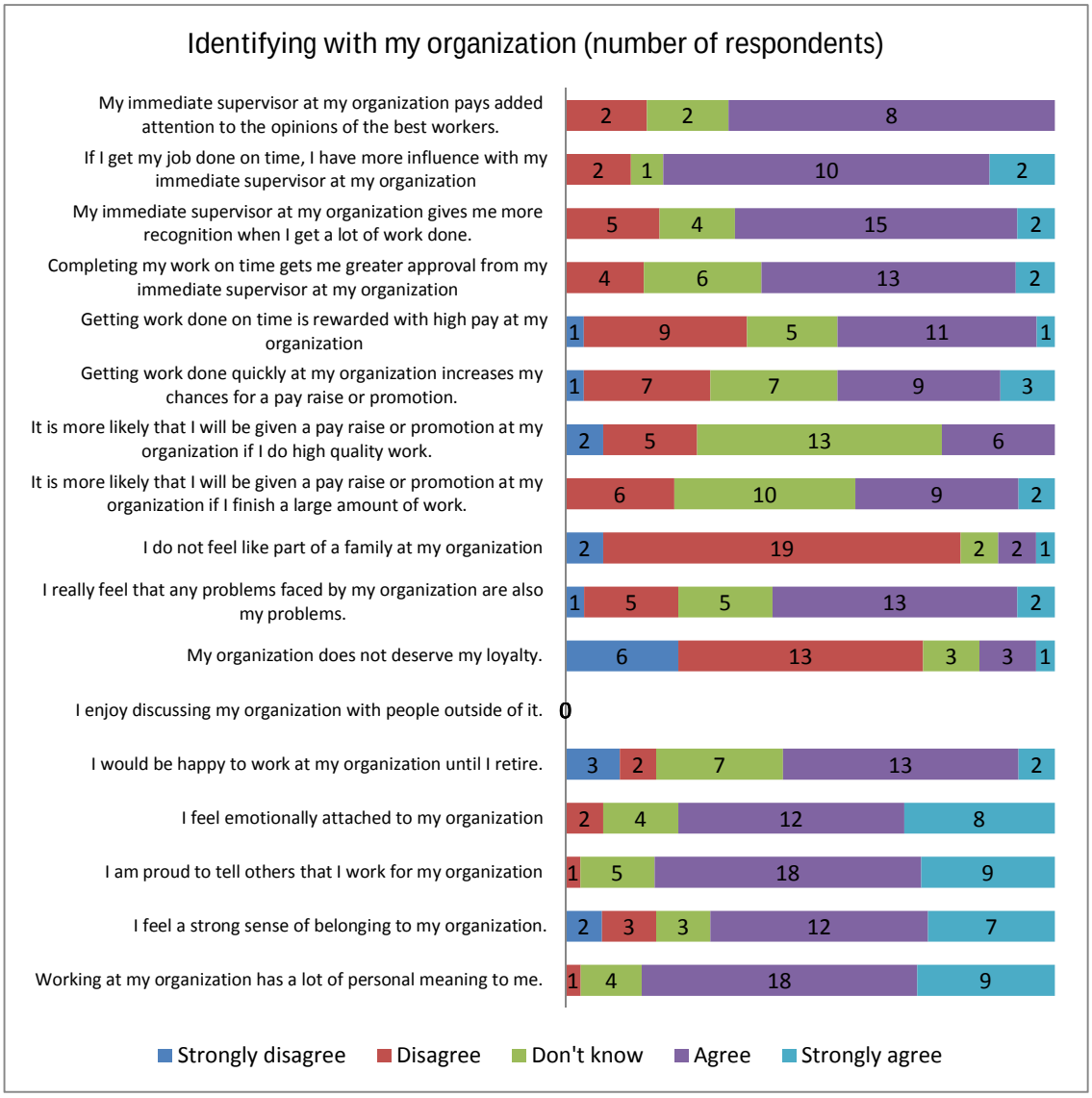
There were several indications of disagreeing with negative statements about the respondents' organizations, for example:

- 21 respondents "strongly disagree" and "disagree" with the statement "I do not feel like part of a family in my organization".
- 19 respondents "strongly disagree" and "disagree" with the statement "My organization does not deserve my loyalty".

Among the most notable answers, there were 13 respondents who indicated that they did not know whether to agree or disagree with the statement "It is more likely that I would be given a pay rise or a promotion at my organization if I do high quality work". This is very much in line with the question asked about KPIs in the organization, that yielded very few answers, and most of them were related to activity other than green or low-carbon.

Interestingly, there was an almost equally opposite views on the following: while, 12 respondents "agree" and "strongly agree" with the statement "Getting work done on time is rewarded with high pay in my organization", 10 respondents "strongly disagree" and "disagree" with the same statement.

Figure 8.15.1. Is there organizational identification and sense of belonging to the organization?



8.16. Conclusions of the survey

Among the key conclusions of the survey are the following:

- The workers of the greening enterprises are among the middle-class and the wealthy people, well educated and owning properties and having opportunities to choose work that they feel intrinsically motivated to do;

- Workers of the organizations' studied have indicated an overall strong understanding of the de-carbonization and greening discourses, however when it comes to competent knowledge or recognition of the terminology of green, they feel unsure;
- Workers of the greening and de-carbonizing organizations are aware of the managements' effort to be "green", however they are not familiar with the company strategies concerning green and low-carbon;
- Workers and managers of the greening organizations tend to have healthy habits in terms of use of transport (public transport and bicycles), and they save energy everywhere, including home, office, during studying and travelling, while relaxing and while actively spending time off work.
- The workers and members of the greening organizations in Kyrgyzstan and China do not get enough training on environmental compliance, de-carbonization, what is to be green, what green jobs are, de-carbonization strategies of the organizations, being and working in the emerging "green economy", however they perceive that such trainings are needed.
- There is a more or less strong identification that the workers and members of the studied organizations have towards their organizations; however it is not as much to do with the "greening" and "de-carbonization" but with some other aspects of their organizations.
- The lack of awareness among the respondents about the KPIs linked to "greening" in their organizations indicates that the organizations do not have them, or if they do, then the workers and members of the organizations are not involved in the practices of productivity linked to being low-carbon or green. Many respondents do not know if there is any material or non-material award for being "green" in their organizations.
- Respondents indicated the list of priorities for the "green" and "low-carbon" training including the following:

Priority training list:

1. "Reducing consumption of electricity, fuel, papers etc."
2. "Saving energy at home"
3. "Conducting life-cycle assessment of products, services and processes in the organization"

4. “Practical application of Understanding Carbon and Carbon discourses”
5. “Changing life style towards low-carbon”
6. “Saving energy at home”
7. “Developing corporate social responsibility ethos”
8. “Finding ways to change harmful and polluting behaviours at work”
9. “Training in climate change related adaptation and mitigation”
10. “Finding ways to change harmful and polluting behaviours at home”
11. “Calculating personal ecological footprint”
12. “Using green supply chain management approaches”
13. “Using green human resource management approaches”
14. “Finding ways to change harmful and polluting behaviours in the city, district, community”
15. “Identifying processes that reduce carbon emissions”
16. “Using emissions targets and reduction activities for curbing emissions”
17. “Measuring, reporting, and verifying emissions”.

- Respondents indicated that in their organizations there are jobs that have improved work conditions (i.e., professional growth, work-family balance, intrinsically motivating); however for the workers they are in no way linked to the definition of “green jobs”.
- Also being competent in a green and/or low-carbon practice (i.e., is not in any way linked to performing a job that is “green” and/or low-carbon.

Chapter 9. The Concluding Discussion, Implications and Extensions

> *"Systems of provision – whether of food, water, and energy - are assumed to constitute more than the context in which consumer choices are made, "certain forms of demand are unavoidably inscribed in the design and operation of electricity and water infrastructure, and in the details of domestic architecture. This way of thinking suggests that transitions toward sustainability depend on societal innovation in which contemporary rules of the game are eroded, in which the status quo is called into question and in which less resource-intensive regimes, routines, forms of know-how, conventions, markets and expectations take root". (Shove 2010, p 281).*

This dissertation research was started out in 2009 with the author's interest in the emerging studies of the Ecological Footprint as part of the Global Climate Change research. From the perspective of a social scientist mostly trained in sociology, political economy, and anthropological approaches there was an exciting opportunity to conduct an inter-disciplinary research. Thus, the variety of research schools read and analysed for this study was overwhelming, while the narrowing down of the significant literature was not an easy task. The narrowing resulted in the theoretical base of this research grounded in discourse theory, institutional theories, science and technology studies and actor-network theory approaches, post-structuralist and constructivist approaches, organization studies. A critique of the Ecological Modernisation and Industrial ecology approaches was attempted from the perspective of their omission of social systems analysis to engender social change through participative footprint accounting standards development and the associated work routines and disciplining.

The hypotheses were tested despite just a few quantitative data collected, however, the picture has emerged and the various elements took shape showing their importance while analyzing the emergent markets and newly formulated rules of the game, such as the green economy or the low-carbon future, for countries like Kyrgyzstan and China.

Before conducting this concluding discussion I would like to remind of the research questions that were set for this dissertation research:

Research Question 1: What are the green and carbon discourses and how are they implicated in the policy articulations and norm legitimisation of organizational (i.e., corporate) emissions reduction and green supply chain management?

Research Question 2: What are the implications of the environmental management discourses of Carbon Footprint legitimised in organizations in relation to the workers' and members' habits or awarenesses of the emissions MRV, social and environmental accounting, and actual engaging of the workers and members of organizations in the practice of a more conscious consumption of Earth resources?

Research Question 3: How do the "green" and "low-carbon" values, norms, policies legitimised at the organizational level actually contribute to the shaping of the workers' personal and professional "green" and "low-carbon" competencies?

These research questions have been addressed in every case study, as well as in the workers' survey, the results are summarised further on. In addition, the contextualization of this research findings is conducted in the final subchapter of this Concluding chapter.

In order to stabilise an artefact, such as "climate change mitigation and adaptation" or "greening", "low-carbon lifestyle", "footprint moderation", etc. it was hypothesised that there have to be conditions for allowing a certain degree of organizing, certain elements of learning and competence development in order for relations to be established between discursive and material practices, as well as accounting and accountability of these practices.

9.1. Discussion on four hypotheses

H1. The legitimisation of global climate discourses through local organizations engenders the awareness and acceptance of the footprint accounting methods among the members of the greening organizations.

In regards to H1 case studies demonstrated the following. Legitimisation of the global climate discourses at RPQ through its cooperation in the supply chain of Siemens leads towards more awareness and acceptance of Footprint accounting indeed, exemplified by the energy-efficiency standards and monitoring. Legitimisation of the global climate discourses at the level of Lubeca is clearly visible in the institutionalization of these discourses at the KLSKY organizational level too. The awareness and acceptance of Lubeca's approaches at KLSKY, especially towards certain industry standards (i.e., one of a variety of instruments for the "Footprint accounting"), and the subsequent integration of the labour, product, and supplier partnership standartization required by the larger partner in the supply chain confirms this hypothesis being valid for KLSKY's management green legitimisation. While the legitimisation of the global climate discourses at the IFOAM leads towards more awareness and acceptance of Footprint accounting, exemplified by the standards and calculation rules of organic, such as the IFOAM standards that are being integrated at the BKG in the last 2 years.

The survey of workers and members of the studied organizations demonstrated workers of the organizations' studied have indicated an overall strong understanding of the de-carbonization and greening ethos and discourses behind it, however when it comes to competent knowledge or recognition of the terminology of green, they feel unsure.

Workers of the greening and de-carbonizing organizations are aware of the managements' effort to be "green", however they are not familiar with the company strategies concerning green and low-carbon.

The workers and members of the greening organizations in Kyrgyzstan and China do not get enough training on environmental compliance, de-carbonization, what is to be green, what green jobs are, de-carbonization strategies of the organizations, being and working in the emerging "green economy", however they perceive that such trainings are needed. Respondents indicated priorities for the "green" and "low-carbon" training as follows:

1. "Reducing consumption of electricity, fuel, papers etc."
2. "Saving energy at home"
3. "Conducting life-cycle assessment of products, services and processes in the organization"
4. "Practical application of Understanding Carbon and Carbon discourses"

5. “Changing life style towards low-carbon”
6. “Saving energy at home”
7. “Developing corporate social responsibility ethos”
8. “Finding ways to change harmful and polluting behaviours at work”
9. “Training in climate change related adaptation and mitigation”
10. “Finding ways to change harmful and polluting behaviours at home”
11. “Calculating personal ecological footprint”
12. “Using green supply chain management approaches”
13. “Using green human resource management approaches”
14. “Finding ways to change harmful and polluting behaviours in the city, district, community”
15. “Identifying processes that reduce carbon emissions”
16. “Using emissions targets and reduction activities for curbing emissions”
17. “Measuring, reporting, and verifying emissions”.

In terms of organizational innovation, respondents indicated that lack of enough expertise on Footprint Accounting in there and the necessity for the organization to become part of a “community of knowledge and practice of emissions MRV”.

There is not enough perception among the workers that their organization belongs to any of the supply or value chains, and more so they do not see supply and value chains as networks in which they could strive.

Among the organizational compliance the respondents recognize mostly the compliance with the ISO Standards 9001, Health and Safety of Employees (40%), 14001 Environmental performance and Sustainability (22 %), and 26000 Corporate Social Responsibility (19%).

Very few people in the organizations knew of their organizations’ compliance according to any of the carbon emissions MRV, or Dow Jones Sustainability Index, which is really the domain of the multinational corporations and not of their supply chain member yet.

H2. The likelihood of more green and low-carbon jobs created within organizations increases as they brand themselves as green and/or low-carbon or environmentally and socially responsible.

In regards to H2 case studies demonstrated the following. Branding themselves as environmental solutions provider RPQ has been hiring rapidly as well as developing rapidly the green human resources terms of references, as exemplified by the growing labour force, their growing salaries, as well as their growing carbon sensitivity, energy saving regimes, as well as low-carbon lifestyles tastes and aspirations, i.e., exemplified by the top managers' charismatic leadership of green training and keen interest in low-carbon building nuances, industry interaction and the active participation in the community of practice of energy efficiency, innovation of the ice-storage boxing and other patented inventions becoming popular in the circular economy of China. Although KLSKY does not directly brand itself as green (i.e., natural product and lean management) it still serendipously creates more green and low-carbon jobs, as exemplified by the Human Resources department's policies and the vision of the founders and top management of the company. The continuous investment in improvement of labour conditions, safety, family and work balance, as well as the training of the employees KLSKY creates unprecedented environment for the labour to develop loyalty towards the company due to the "greening" and de-carbonisation of the labour and work processes at the company. Workers feel heard and actively participate in feedback, very much in line with the Japanese and Germany management styles introduced at the HR and Supply chain management levels. Branding themselves as green (i.e., organic) creates more green and lo-carbon jobs also at the organic movement, as exemplified by the growing membership and participation in the annual BKG conference, events, and organic farming fairs in Bishkek, with international participation and cross-pollination of ideas among the Kyrgyzstan's farmers as well as with those from abroad**.**

In regards to H2 the following conclusions were supported by the survey:

Respondents indicated that in their organizations there are jobs that have improved work conditions (i.e., professional growth, work-family balance, intrinsically motivating); however in their perceptions they are in no way linked to the definition of "green jobs".

There was very little understanding of definition and meaning of green jobs, mostly green jobs meant the following "Green jobs and competencies make me more useful to my organization", "Green job is related to fulfilling socially responsible objectives of our organization". "Green jobs allow for more work-family balance".

Alarming is the finding that respondents mostly disagreed with definitions of green jobs and green competencies being "Green jobs and competencies are less dangerous, they improve health and safety at work" and "Green jobs and competencies improve my professional qualifications".

Also, "green" are those jobs that have "developmental quality (i.e., professional growth)", jobs that provide "work-family balance", "intrinsically motivating", "meaningful jobs with more complexity and personal initiative" as well as jobs with "flexible hours worked" and "flexible working from home or office".

Also being competent in a green and/or low-carbon practice somehow is not in any way linked to performing a job that is "green" and/or low-carbon. More than half of the respondents selected "I do not know" answer when they were asked of their perceptions of the green competences required in their company. While the rest answered that the following competences are required to perform their jobs:

- 46% selected as required competences "Reducing consumption of electricity, fuel, paper, etc.", "Saving energy at home" and "Saving energy in the office". 39% selected "Changing life-style towards low-carbon".
- One third of the respondents selected among the required competences "Finding ways to change harmful and polluting behaviours at the household, at work, and in your city, district, village, community".
- "Calculating personal ecological footprint" and "Training in climate change adaptation and mitigation", and "Develop corporate social responsibility ethos" were selected by one fifth of the respondents.

Interestingly, the quality of work done is not directly linked to the pay rise in respondents' perceptions, instead it is the speed and timeliness that brings rewards to workers in half of the cases in the studied organizations: Only 16% of respondents agreed with such statements as "If I get my job done on time, I have more influence with my immediate supervisor at my organization", "Getting work done on time is rewarded with high pay in my organization", "Getting work done quickly at my organization is rewarded with a pay rise or a promotion".

A little bit more than 16% disagreed that they "would be given a pay rise or a promotion at my organization if I do high quality work". This is very much in line with the question asked

about KPIs in the organization, that yielded very few answers, and most of them were related to activity other than green or low-carbon.

The lack of awareness among the respondents about the KPIs linked to "greening" in their organizations indicates that the organizations do not have them, or if they do, then the workers and members of the organizations are not involved in the practices of productivity linked to being low-carbon or green. Many respondents do not know if there is any material or non-material award for being "green" in their organizations.

H3. The likelihood of workers and members of green and low-carbon organizations behaving "green" and "low-carbon" is higher, the more they exhibit environmental knowledge (i.e., the knowledge of Footprint accounting and its constructed nature, green discourses and discursive practices, norms, and values such as energy saving, finding and eliminating wasteful and harmful activity in the organization's production, low-carbon lifestyle changes pursued).

In regards to H3 case studies demonstrated the following. The compliance with the Chinese national regulation on energy efficiency and circular economy demonstrate the link into the global climate concern, yet with a Chinese signature and specifics. RPQ's employees demonstrate strong understanding of the environmental standards and calculations involved in their professional work of environmental solutions provision in the construction sector to the extent that their skills are in demand abroad (i.e., in Malaysia). A clear example of not only calculation but qualculation is evident at RPQ and thus more environmental and low-carbon conversion is underway. In Kyrgyzstan , the exposure of the KLSKY's founders and top management to the ideas about harmonious development, spiritual practices and "loving the job" rather than being one of the many workers of a faceless company, becomes contagious and inspiring for the workers, at least to those who share these views. The HR department monitors closely the conversion rate into the founders' and top managements' values. Untill these values remain universal and humanitarian, there is a strong chance the workers will continue integrating them and that they eventually become translated into more of a low-carbon and green values, norms, and practices. When it comes to the organic movement in Kyrgyzstan it can be drawn from the semi-structured interviews that the high level of awareness of the constructed environmental truths at the IFOAM level for example does not necessarily mean that the green beahaviour and low-carbon lifestyle is only due to IFOAM,

rather the connection to IFOAM was initiated by the local understanding of the need for internationally framed and tested science and technology on organic and carbon curbing.

In regards to H3 the following conclusions were supported by the survey.

Less than 25% of the respondents have anything to mention of their personal contribution when it comes to reducing carbon emissions. There were 26% of respondents who chose "I know how to calculate my Personal Ecological Footprint", 22% chose "I know about emissions targets and activities to curb them",

Nevertheless, workers and managers of the greening organizations tend to have healthy habits in terms of use of transport (public transport and bicycles), and they save energy everywhere, including home, office, during studying and travelling, while relaxing and while actively spending time off work.

In terms of changing patterns towards a low-carbon lifestyle and by-passing infrastructural problems here are some figures that give hope:

- 9% or respondents cycle to work and 46% of respondents use public transport to get to work.
- between 62% and 100% of respondents save energy in one way or another, mostly people save energy at home (100%), at work (88%), and 8% do not save energy at all.
- the largest proportion of respondents aware of their organization's preferred conduct to do with reducing consumption, waste, and pollution, i.e., "Less energy consumption at work" (34%), "Less fuel and gas used for transportation by the company" (30%), "Reduced pollution from company activities" (30%), "Reduced consumption from the members of the company" (22%). Also "More green and low-carbon innovations" ("More awareness about Personal Footprint" (34% respondents) and "More self-education about climate-change adaptation and mitigation" (22%) and "More training requests for developing green competences" (22%), and "More green and low-carbon innovations" (22%). "Changing diets from fast-food and high-carbon towards slow food and mostly organically grown food" (18%).

H4. The likelihood of workers being more committed and supportive of their company's greening is higher, the more they are involved in the co-constructing and co-design of decarbonisation job routines.

In regards to H4 case studies demonstrated the following. Although, there is no evidence that workers understand such practice as green jobs and routines design and co-design, yet within the elite engineering, installation and maintenance, sales and supply chain departments of RPQ the flat structure is evident, collaboration among departments and within the management-subordinate hierarchies are preferred, and thus enforced, making the interaction within the company mobile and alert. These are the key ingredients of successful sales and maintenance provision to the clients, as it is believed by the company's top management. Also the employees are officially recognised as the key stakeholders in the company policies. This makes them forthcoming and willing to feedback, provide ideas, and solutions. Especially, with a high percentage of women engineers in the top management positions, the gender and age equality seem to create more democratic and flat managerial and organizationsl structures. There is a great deal of spaciousnouss and collaboration, teamwork and mutual reliance within the company's culture as it is evident from the semi-structured interviews and visits to the company's headquarters. There are all conditions for job co-design and green routines co-creation, and most probably it I happening already.

At the same time, the workers of KLSKY do not have much chance to formulate "green" job routines, as the processes at KLSKY are very simply broken down and most innovation is done at the top management level. However, the rather flat structure of the company's management makes the company into a learning organization in which conveyer belt workers can easily feedback to the top management, and the managers can learn very quickly of the problematic and bottle-neck areas of the production, sales, and supply areas. Thus, workers are autonomous enough and yet are well trained and tamed to be within the Kulkovsky structure and feel loyal and integrated, especially if the company will continue to exhibit and articulate its employee-friendly atmosphere that gives them a competitive edge compared to other similar companies in the country.

While at the BKG indeed, it is evident that the decarbonisation job routines can be formulated by the managers and ideologists who formulate and conduct trainings for the members of a greening organization. It was found that BKG's key activity is organic training for the farmers

of Kyrgyzstan. In their turn, all those farmers and professionals who take part in the BKG training events act as muliplicators who take the co-constructions and co-design of trainings, functions, job routines for their colleagues at the farms and farming communities to the next level, very much within the value chain.

In regards to H4, the following conclusions were supported by the survey:

The survey has demonstrated that the workers of the greening enterprises are among the middle-class and the wealthy people, well educated and owning properties and having opportunities to choose work that they feel intrinsically motivated to do.

There is a more or less strong identification that the workers and members of the studied organizations have towards their organizations; however it is not as much to do with the "greening" and "de-carbonization" but with some other aspects of their organizations.

There is a strong perceptions of organizational support among the respondents as more than a third of the respondents agreed and strongly agreed with the statements such as "The organization strongly considers my goals and values", "The organization would understand a long absence due to my illness", "The organization is willing to extend itself in order to help me perform my job to the best of my ability". "Help is available from the organization when I have a problem".

There is a strong signal to organizations in the answers to the following two statements:

- one third of the respondents indicated that they did not know whether to agree or disagree with the statement "The organization values my contribution to its wellbeing".

- more than one third of respondents said strongly that "Working at my organization has a lot of personal meaning to me" and "I am proud to tell others that I work for my organization".

9.2. Discussion on Discourses Influencing Green institutionalization and Workers' and Members Routine (Job) Environments

This research has demonstrated that the climate discourses can be directly implicated in the ongoing change in the organizational structures and cultures towards low-carbon, green and resource-saving. The legitimization of a variety of "green" and de-carbonizing concepts is taking place, as the case studies have demonstrated, including the following important discursive concepts and discrursive practices:

- carbon footprint measurement, ecological footprint, energy saving metering, water metering, clearer definitions of work ethics that are linked to organic and low-carbon lifestyles, working habits, and work conditions and environments, infrastructural limitations for low-carbon practices, and the definitions of the new rules for calculation and qualculation of the inputs and outputs in the organization's activities and its projection of an identity onto its workers, members, shareholders, markets, and the entire supply or value chain network.

9.2.1. RPQ in China

In the emerging low-carbon economy in China the domestic Chinese enterprises are yet to integrate and take advantage of the green management norms and policies. Combining energy saving objectives and metrics with emissions targets and reduction methods at the worker's level, linking organizational objectives to the employees' terms of references, greening of jobs and competencies through normative tools seems to be the priority. The lacking link between the Key performance indicators and the workers' motivation and perception of a job as green needs to be rectified through introducing Key Performance indicators and linking them to specific positions in the company; as well as through developing skills and competencies for using new emissions metering and reducing tools through Green/Low-Carbon management. Understanding existing bottlenecks in implementing emissions and resource consumption tools is really about understanding how to make life-styles and work processes low-carbon. In fact, situated analysis and designing a system of bottom-up (i.e., idiosyncratic) design of jobs and competencies by those who have more knowledge in the organization could be one way to de-carbonizing the work practices. Co-designing jobs, competencies, tasks that develop, accomplish, and scale-up the essential greening,

sustainability, environmental performance, and social and environmental accounting and accountability in the company and its life-cycle clusters.

Articulating the change process from energy-saving practices towards footprint and emissions awareness and action practices seems to be a good way towards formulating indicators for the green / low-carbon practice as embodied through workers who learn to use Green management tools, and help reduce company footprint. Also, the company management has to build awareness of individual green competencies vs. systemic legacy barriers in material and structures and associated struggles.

9.2.2. HC KLSKY in the Kyrgyz Republic

Eclectic and smart leadership in selecting management tools to use for various hierarchies and interactions at KLSKY seem to be the governing mode at this company. German and Japanese management, French and German product development, and distinctions (i.e., tastes) have been detected at KLSKY. The charismatic leadership of the founders is inserted and imprinted in all visual and written documentation of the company, including the Book of Employee.

The unintended green competences development at KLSKY was a key finding, while they do want to be a key player in the emerging Green Economy of Kyrgyzstan and the Central Asian region, they do not have a clear picture of what "green" really means. The word "natural" seems to prevail in most company policy messages, however, as research of organic production demonstrates, the word "natural" does not have much meaning as such, a rather generic term that may mean anything to anybody. Nevertheless, serendipitously the "green competences" or "green identities" are developing at KLSKY. As well as the qualities of learning, and of a "learning organization", very much in the manner of Gherardi's learning and knowing organization, with the workforce having creative, spiritual, and practical de-carbonizing behaviours encouraged and to feel a belonging to a bigger cause of being more nature and team spirited, lean and conserving of resources, feedingback the visions, ideas, observations. These are all symptomatic of a strongly growing and successful organization that is examplary and a clear leader in organizational greening in Kyrgyzstan.

9.2.3. FOAM BKG

There is an opportunity to formulate the principles of the New Silk Road's **Green** Economy Belt during a small window of opportunity, probably between 2014 and 2016, and Kyrgyzstan has an opportunity to be heard. In view of renovation of the Silk Road it is an opportunity to

build an economy that bypasses the infrastructural legacy of the industrial and post-industrial age, and build a more sustainable culture that supports the advancement of the Green Economy in the region. The opportunity to re-state the way calculations about environment, economy, and trade is done. This is about a new culture and competence in social and environmental accounting that respects Earth, measurements, reporting and verification of the Ecological, Carbon, Water and Social Footprints.

There is a role of Kyrgyzstan in the Silk Road's Green Economy Belt due to its growing specilisation in organic farming and organic food production. Today the principles that are importantly emerging in China and Kyrgyzstan at various paces and with different focuses are visible.

This research has demonstrated that there is a rapid emergence of at least some of them in some of the regions of these two countries allows for the green and organic transformation to rapidly conquer the consumers and producers ahead of the policy makers and standard setters:

- Greening of identity and competence development at personal and organizational level is happening;
- alignment of human and non-human (i.e., techniques and technologies) entities within organizations in relation to social environmental accounting;
- the uptake and actioning of "climate-smart" and green discourses, values, norms, and practices;
- the changes towards a life-cycle of products, services and processes, and aware, responsible, 'climate-smart' consumption in organizations with social enterprising and cooperative nature, VS. the for-profit enterprises;
- reflexive competence development sourced from traditional water and natural resources saving practices and communal living VS, modern overconsumption;
- the changes towards a life-cycle of products, services and processes, and ware, responsible, 'climate-smart' consumption in organizations with social enterprising and cooperative nature, VS. the for-profit enterprises;
- reflexive competence development sourced from traditional water and natural resources saving practices and communal living versus modern overconsumption.

9.3 Research Findings and The Context of Existing Literature

9.3.1. Discourses stabilising "green" and de-carbonization

This research has confirmed that the largest stream of exchange in the green discourse is from top down, from global policy and economy clubs down to national governments and multinational companies, and then down the value chain or supply chains from the largest member to the smallest. However, there are discourses that are formed locally and nationally, which adds an important element that can give the green economy a chance to be more than a performative compliance but a process of real de-carbonisation and improvement of social conditions across the economic, geographic, environmental, and social spectrea. Speaking of the global green discourses, there are the greening discursive practices, or the "ideal type practices" declared by the multinational corporations that promote them as being part of their "greening toolkit", and this study demonstrated the links between the macro discourses on green economy and the organizational discursive practices that were indicated in the studied Chinese supply chain partner of a German greening multinational in China. Concurrently to the organizational discourses there are the discourses and discursive practices of the members of organizations (i.e., employees, and members of the companies' value chains) that differ from the prevailing organizational discourse, and they are implicated in the change in the workers' and suppliers' competencies, the conditions of exchange, and the workers' and suppliers' identification with the greening companies that is linked to value and valuation systems, as well as identification of "green" and attitudes and perceptions of it among organizations' members.

At the meso-level, there is the inter-organizational field in which the interactions and exchanges between the two studied companies within their supply chain network can be seen in relation to the various stakeholders of climate change transformations, i.e., governments, other businesses, watchdogs and grassroots activists being guided and responding to the discourses prevailing, and that foundations of the economic units of analysis as well as accounting, that needs to become social and environmental at its core, are dictating a completely new set of parameters by which the economic and business agencies ought to be structured and organized.

At the micro-level the discourses of the workers and managers in organizations reveal their layered identities, as they are simultaneously being employees of their company,

householders, voters, and citizens. One characteristic of these many identities, is that while being all of these the workers can be referred to as the stakeholders of their company's actions and inactions when it comes to sustainable production and consumption. This stakeholding eventually is measured in the worker's capability building in terms of being competent actors in mitigation and adaptation to climate change with accountable behaviours and capable of keeping their companies and other actors in the field accountable for their actions and inactions.

At the organizational and inter-organizational level, the discourses are articulated as the compliance to the regulation at international and national levels, not only governmental but also market based structures, i.e., green investments, green consumer pressure, socially and environmentally concerned stakeholders that are the actors and agents within the mixed markets of demand and supply, consumption and production of products, services and processes. Organizations brand themselves as green and low-carbon to fit in, to isomorph, to stay competitive, or to cater to the demands of the stakeholders. There is a very strong tendency among the private and publically held companies to report and advertise their greening and low-carbonisation; this is a process of what some commentators at the multilateral institutional level (UNEP, etc.) call climate-smartisation. While making an effort to comply with emissions reduction targets, multinational corporations realise through the measurements of their carbon footprint and life-cycle assessment of products, services, and processes that the suppliers and retailers, virtually all the partners they have in the business add to the companies emissions, which are often referred to as Scope 3 emissions (Carbon Disclosure Project's carbon MRV conventions).

9.3.2. Legitimisation of the "green" and low-carbon in a "learning organization"

The workers of the "green" companies share their "green" identities with their companies, and yet it is not articulated under the green or de-carbonizing practices, but rather through the more familiar practices of labour conditions, safety at work, training and professional development, and relationships of workers horizontally and vertically within the organization's structures and cultures. Thus, material and non-material gains received from their greening organizations are not well translated into wellbeing from the workers' perspective, in fact they do not associate wellbeing with being green or de-carbonization in personal or organizational spheres.

The construction of an identity and the interwoven construction of the workers' competences is the very process that demonstrates where exactly the negotiation nods (gains and losses, benefits and disadvantages) are in the workers' perceptions of organizational greening and the boundaries between organization's green identity and the workers' green identity.

Thus, the perspective of company's "green footprint identity" and the worker's "green footprint competence" in this dissertation are presented as the phenomena emerging often not in synchronised nor in mutually conducive way within the "learning organization". The green company's "competence" that contributes to its Green Identity and stabilises the "green economy's agent of ecological modernisation" discursive practice were studied through artefacts of online statements, visuals, texts produced by various managers of studied organizations. Its capacity to be distributed across the existing organizational networks of life-cycle of products, services and processes, and through the self-promoting "green" practice communities will be demonstrated through discursive "green" practices recognition by the workers of the Chinese environmental solutions provider and the natural products cake maker in Kyrgyzstan.

It is argued here that what emerges as a result of organizational learning are the workers and members of organization's supply chain, the "green" stakeholder with many role identities, i.e., that of a householder, a consumer, a resident of a municipality, a citizen of a nation, and thus representing the reflexivity of a generation facing climate change, and learning to deal with unthinkable uncertainties, while remaining competent and performing within the established and emerging practical sequences in their everyday life and work. We get a "learning organization par excellance". Such "learning organization" while facing the eminent climate change could be the prototype form of an emerging greening organization (the organizational form that pays less attention to problems of efficiency, order, and stability, and more attention to the reliability of its performance, to adaptive change, and to flexibility (Gherardi 1998).

The notions of relating to labour, land, and money (in Polanyian terms) as not to commodities but as shared social resources is overdue. With the growing emphasis on stakeholders of an organization, activity, actions there is a chance that the stakeholders of a Footprint accounting may also put claims in the development of its methodology and performance. With the notion of uncertain future due to rapidly depleted resources on a "Finite Planet" (nef, ecological

economics) and the growing populations becoming rapidly integrated into the urban and high emission and consumption cultures, the importance of how things are counted, what counts "in" and "out", and what counts as "needs" and "wants" (as in Schumpeter) is a strong premise to claim the participation in accounting transformation discourses, especially on the borderline between shifts from "needs" to "wants". The enlightened and socially fair/valuable discourses may have a better chance today to get embedded and institutionalised due to the emerging outlook, the elevation of the social value above the economic value, and the de-coupling of the land and labour from the capital in new ways: i.e., re-allocated priorities in development, lessons from the social movements of the past (critical mass of experience accumulated in the struggle for fairness in labour, land, and money). Thus, there is the shift back to re-visiting the fictitious commodities, and re-consider their value and produce new ways of accounting on "land, labour and money" as non-human actants that are part of a socio-technical assemblage drifting along an uncertain and arguably risky trajectory. Thus, the struggle can be justly articulated around the re-configuring of these assemblages, re-sequencing their connections and interaction within the network and allowing for the most appropriate elements and categories to be included in the "calculative devices" (i.e., work hours, work and family balance, decent work, wellbeing).

9.3.3. The transformations of calculations and broadening the calculation devices to qualculative collective distributed agencies

While the common accounting practice is to recognize that the successful organisation - in accounting terms - is thus one which maximises its impact on the biosphere, this calculation pattern has to change. There has been a substantial increase in accounting research of the environmental impact of organisations, including environmental investment; the EU's environmental management and audit scheme (EMAS); environmental reporting; accounting's role in an organisation's environmental response; and the impact of the environmental agenda on both the company's financial statements and the statutory audit of those statements as well as issues related to contaminated land, environmental liability, insurance, bank lending, waste disposal, environmental legislation and a whole raft of financial matters. Also the research on accounting and sustainability has grown and it is suggested by some authors that "Paul Hawken's identification of eco-efficiency and eco-justice as the components of sustainability, environmental accounting and reporting can attempt to address the eco-efficiency element whilst social accounting and reporting attempt to address the eco-justice issues" (Gray).

"While much of the literature in institutional theory examines the effects of institutions on organizations, or the connections between different levels of institutions (i.e., society, field, or organization), importantly, discourse analysis adds an explanation and method for understanding the process through which institutions come into being, change, and disappear. The contribution of discourse analysis is to open up the "black box" (as in Latour) of institutional processes in a way that other methods of empirical investigation cannot." This research has confirmed also that unique organizational capabilities emerge when firms proactively incorporate social and environmental issues into their corporate behaviour.

9.3.4. Green Competences of Life-Cycle Assessment of Products, Services and Processes in the Networks of Life-Cycle Product, Service, and Process

Competencies and resources of building and maintaining effective relationships with suppliers and customers held by single firms or rather by whole supply chains turn out to be preconditions of successful environmental and social collaboration in supply chains.

In Kyrgyzstan it is not yet clear if supply chain level has a much meaning as it has in China where supply and distribution management capabilities generally became corporate core competencies. There has to be much more work and capacity building done in the developing effective Green Supply Chain Management competences and practices in organizations in both countries. Especially it is true about organic farming, where investing specifically in co-specialised resources could generate relation-specific assets, which Duschek (2004, cited in Gold et al, 2010a) regards as one determinant of possible inter-organizational competitive advantage. The likelihood of firms heightening their dependence on supply chain partners in this way grows when relationships are designed to be long-term and when opportunistic behaviour within a supply chain can be largely excluded by effective supply chain governance. For green and organic to expand and become the driving logic of the next economic development decades trust has to be considered a valuable inter-organizational resource that facilitates commitment and a common vision of all supply chain actors. It could represent the lubricant for all inter-firm knowledge transfer and learning processes in core areas, such as product development or design, thus preparing the ground for inter-firm collaboration. The supply chains turn into networks of firms and organizations, communities of practice motivated by the greening and de-carbonisation costs reduction and know-how multiplication.

This research has demonstrated a great thirst and demand for green and low-carbon training. As it was demonstrated in the literature review, training is a key Green HRM (GHRM) intervention, to improve staff awareness of the environmental impact of their organizational activities, to equip staff with core skills, such as how to collect relevant waste data, and to raise the level of "eco-literacy" and environmental expertise in the firm. In China and in Kyrgyzstan the organizations are lacking enough training. The lack of GHRM practices in the organizations in China and Kyrgyzstan perhaps cannot contribute to the employee well-being in the workplace. Yet, there are practices in place, as the survey and the case studies in this dissertation research actually managed to confirm earlier findings in the literature, that unintended greening is happening in organizations at the discursive practices level, and more articulation needs to be associated with the good labour practices and the organic and green qualities of such practices and norms in place.

Literature demonstrates that using performance management (PM) in environmental management presents many challenges, not least here being how to measure environmental performance standards across different organizational departments/units, and gaining useable data on the environmental performance of these units and staff. Some firms have addressed this issue by installing corporate-wide environmental performance standards, and Green information systems/audits to gain useful data on environmental performance. However, as the survey for this dissertation has shown, there is very little practice of KPIs linked to green and low-carbon behaviour in place at the studied organization.

Attributes and modalities of changing labour relations in leaders of footprint reporting have been found also in the studied organizations in both Kyrgyzstan and China as a reflection of the green discourse institutionalisation. Indeed, personal behaviour and charismatic leadership plays a big role. This dissertation research confirms the earlier study of "how leaders' cognition shapes their firm's responses to deteriorating environmental circumstances in China finds that executives tend to champion new initiatives following personal values and principles". And the gap existing in literature today is on lower level managers, shop-floor employees, and wider labour force was closed. This dissertation's research demonstrated charismatic leadership of the Chinese RPQ at the middle-level management hierarchy and among the specialist experts such as "genius savants" and "philosopher" and "gurus" in all three studied organizations.

The charismatic leadership in turn inspires what Grunwald calls "individuals engaging themselves in shaping green boundary conditions for individual behaviour". While before the rules of the games were being drawn by the global economy clubs of the neo-liberal order, it is becoming increasingly important to democratise the process of rule setting, especially because the workers know better and can see better at the very local level. Also their very local understanding of processes and situations is important to fill the asymmetry gap that the general managers have. Thus, the permanent communication and rule-setting as a consequence will bring to a more robust change within the company from the perspective of identity greening while the competences of greening and de-carbonization grow stronger and help the organization to reduce their environmental burden and thus eventually have smaller footprint and strive for much longer sharing a more prosperous future with its members and workers.

Lucy Suchman (2000) says, *"This story of bridge-building point as well to the multiplicity of perspectives involved in such large modern projects. A view of artefact construction as heterogeneous engineering emphasizes issues of stabilization of human and non-human networks as central. Along with the contingencies of this process as seen from the perspective of engineers, however, one can catch glimpses of other perspectives, collected generally under the heading of 'residents' or 'citizens'. In a real sense there are at least two different artefacts at issue, with associated networks of stabilization that must somehow be aligned. Project engineers are immersed in a history and daily order of professional practice and practical exigencies. Their orientation is to moving the project forward according to the order of phases and timetables, toward the production of an artefact within budget and with appropriate projections of maintainability and durability. Residents, on the other hand, are working on a different order of stabilization; that of their daily lives. The timeframe of the project to them represents a period of disruptions to be minimized, while the artefact that is the object of that activity is something that they will, quite literally, have to live with long after the project is completed. These two different 'stabilizations' – or artefact, careers, professional networks on the one hand, and of daily life, property, and so forth on the other – comprise different, only partially intersecting fields of knowledge and acting."*

Just like in Suchman's bridgebuilding, the diversity of stakeholders of green economy and de-carbonization processes has to be accounted for. Their diverse experience, every day practices, and infrastructural constraints and the solutions found – is what matters to the

collective calculation device, only at this point it will address justice and equity issues as it is called upon by Paul Hawken.

Elizabeth Shove warns that "the programmes of research and intervention proceed on the basis of a remarkably stable platform of ideas about individual attitude and choice, and about the levers and drivers of change.[...] policy making is untouched by developments within social theory, narrowly defined, or by fresh ways of conceptualizing societal transitions in key areas of consumption and practice. And Shove raises as one of the fundamental limitations of climate change policies and most other international and development policies today, i.e., its rootedness in the mindset and worldviews of neo-liberal capitalism.

Bruno Latour's emphasis on human-non-human interface, is recognized by Shove as a useful approach to "embodied engagements with the materials and energies through which climate variability manifests itself in a local environment". The most important contribution of the Actor-Network approaches to the climate change theorising is in what Shove calls the "material turn":

"More abstractly, the material turn has drawn attention to the hardware through which contemporary interactions between people and their surroundings are mediated and configured, and to the social-physical legacies and attendant inequalities laid down by previous generations. As stuff comes to matter in social theory, so it comes to matter in accounts and analysis of climate change."

And another big innovation in the social theorising about the climate change is "the style of theorising that resonate with the extent and pace of climate change", i.e. the idea of "tipping points" in society (Clark 2010 cited in Shove) which requires good knowledge of accounting that includes environmental and social qualculations as was referred to the discussions by Gray, Urry, and Callon. The qualitative calculations that involve human and non-human actors in an assemblage that can be exemplified by supply chain network interconnected and interwoven with the threads of green job routines, low-carbon consumption, and lean management aimed at reducing the overall footprint and thus is capable of moving the society away from the tipping point of the climatic change.

Shove provides examples of how her own social theorising about climate change actively engages with the practical matters of response and adaptations to weather changes, through

two lenses. Shove juxtaposes her own lense on "Transitions and Transitions Management" to "Environmental Management" of the ecological modernist perspectives. Secondly, Shove's "Consumption and Practice" lense is more fruitful than "Sustainable Consumption and Production" perspective of the industrial ecologists also is a more helpful lens.

Shove celebrates the attempts to understanding "problematic ways" in companies, though the measurements and verifications of their environmental impact, as well as through the understanding of the existing practices' and how they are "problematic" or "could potentially be problematic" from the perspective of emissions and consumption. From the perspective of being able to detect the problems through accounting mechanisms, precludes that the accounting systems are not blind to these kinds of "problematic ways". So the question in the companies is how to make the accounting systems to account on these. Secondly, from the perspective of prevailing practices and norms, it is important how the norm and practice emergence happens in the companies, especially from the perspective of re-production and change of problematic practices and norms". For example, the practices to do with air travel in companies, or commuting to work, the use of electricity and paper, as well as energy (i.e., rationing the use of air conditioners and heating, saving modes and sensor equipment for the detection of over-use, etc.).

The overall conclusion of this dissertation is the following. Despite the pre-dominant neo-liberal discourses having taken over the green climate and organic movements, and relatedly the organizational greening, the tendency towards a profound transformation of values in terms of mass market and traditional consumption towards selective, low-carbon, and energy-saving patterns at individual and corporate levels is visible. While in organizations this process is driven by charismatic leaders and/or the global climate discourses, at the individual and personal level the drive is to learn to be practical and train in re-newed and trendy skill of being lean, mobile, energy-efficient, zero-waste, and ultimately a distinct individual with a taste for low-carbon and green, that is perceived more democratic as it provides more resources for a greater re-distribution and greater flexibility in working, home-life, family-life, and social status.

There is the available accounting of use and consumption of certain categories of products, while it is the embodied use (i.e., use of certain elements unaccounted in the final products, i.e., chemicals or proteins in certain products, etc.) that ought to be broken down into the life-

cycle of the elements it is made of in order to trace the product's, the service's, and/or the processes' cycle from cradle to grave, as the life-cycle assessment (LCA) experts call it, the ultimate Green or Sustainable Footprint.

Thus, the existing collective calculative devices within organizations today have a chance to become the collective qualculative devices in a learning organization and thus may be among the most innovative re-designs taking into account not only who matters, but what matters, and especially the voiceless and the exploited, like the Nature, the worker, and the carbon that has very little choice but being emitted without much oversight until a competence to catch and curb it is developed and normalized. At the same time the infrastructure and ecology of work place and life-style de-carbonization has a chance to happen at the personal footprint and organizational footprint awareness level. This is when the demand for a "green" and low-carbon infrastructure and its appreciation become the matter of taste for individuals and fuel for collectives, as well as an intrinsic motivation for greening and de-carbonization of individuals and organizations.

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Abbreviations

BAU	Business-as-usual scenarios
EM	Environmental Management
EMS	Environmental Management System
EMT	Ecological Modernization Theory
EU	European Union
GHRM	Green Human Relations Management
GSCM	Green Supply Chain Management
IE	Industrial Ecology
IPCC	International Panel on Climate Change
ILO	International Labour Organization
ISO	International Standards Organization
KPI	Key performance indicators
KR	Kyrgyz Republic
LCA	Life-Cycle Assessment, Life-Cycle Analysis
LCPSPN	Life-Cycle Product, Service, and Process Network
MRV	Measurement, Reporting, and Verification (in relation to Footprint, Emissions, Environmental Compliance)
PM	Performance management
PRC	People's Republic of China
UNEP	United Nations Environmental Programme
UNIDO	United Nations Industrial Development Organization

Annexes

Annex 1. RPQ (China) Workers' Survey Questions (to be administered online via Limesurvey.com)

Version 9122012, NB: a slightly modified version of the questionnaire was used in survey of other organizations

First Page Greeting and Instructions:

"Dear Respondent, We are conducting this anonymous survey on how RPQ and its workforce use environmental policies and standards, develop green skills of workers and managers, and how low-carbon behaviour becomes a norm among the workers. Please complete this survey and provide you email address for a draw to win 1 of 3 gift certificates from Amazon.com. Your email address will be treated with confidentiality and will not be linked to the answers that you give to the survey. Thank you for your interest and support! Your Survey Team :)"

Section 1.Respondent's Demographics

D1. In which of the following age categories are you?

o 18 -25

o 26-35

o 36-45

o 46-55

o 56–65

o 66 +

D2. What is your gender?

o Male

o Female

D3. What is the highest professional degree you achieved, please specify from which institution?

o PhD or Postdoctoral degree, please indicate from where_____

o Master, postgraduate level degree, please indicate from where_____

o Bachelor, undergraduate level degree, please indicate from where_____

o Complete comprehensive school certificate, please indicate from where_____

o Incomplete comprehensive school certificate, please indicate from where_____

o Vocational school diploma or certificate, please indicate from where_____

o Other, please indicate from where_____

D4. For how long have you worked in your company full-time?

o 30+ years

o 20-29 years

o 15-19 years

o 9-14 years

o 3-8 years

o 1-2 years

o Just hired (less than 1 year)

o Non-permanent worker/Part-time

o Other _____

D5. In which department or unit of the company are you employed (CHANGE TO FIT RPQ ORG CHART):

o RPQ Subsidiaries in regions of China, other than Zhejiang

o (1) Corporate, Senior Management, Board Decision-maker

o (2) Corporate and Board Administration

o (3) Environmental Standards Compliance and Sustainability Reporting

o (4) Operations management

o (5) Human resources

o (6) Supply Chain management

o (7) Other, please specify _____

D6. With which of the following do you interact to complete your work on a regular basis:

 (1) Senior management, Company Board

- (2) Middle-level management
- (3) Heads of departments and units
- (4) Special units and departments with environmental performance mandate
- (5) Special taskforce spread across the company with emissions and/or consumption metering and reporting mandate
- (6) Experts in the company
- (7) Wider labour force, administration support
- (8) Wider labour force, shop floor and assembly line
- (9) Clients, customers
- (10) Suppliers, partners, industry bodies, community of practice
- (11) Government agencies, environmental agencies, fiscal and regulatory authorities
- (12) Media, external publics, communities and NGOs
- (13) Other, please specify _____
- None of the above

D7. Please give details of your household:

- o Married, with children
- o Married, without children
- o Not married, living with parents
- o Not married, living with a partner
- o Not married, living alone in a shared household
- o Not married, living in own household
- o Other
- o No answer

D8. Do you own any of the following:

- House/flat, in which I live
- Car
- Bicycle
- Electric motorbike

- Motorcycle
- Other _____

D9. How much do you pay on average for electricity and any energy use (i.e., household gas, household hot water, household heating, fuel, etc.), please specify the amount and time period, (i.e., RMB/month)

- Household electricity
- Household gas
- Household hot water
- Household heating
- Fuel
- Other, please specify

D10. Do you make an effort to save any energy and fuel? If so, how much do you estimate you save per month? Please indicate the saving in monthly kWt of energy or monetary saving per month in RMB

- While at home, I save_____
- While at work, I save_____
- While studying, I save_____
- While shopping, I save_____
- While travelling, I save_____
- While having active time off work, I save_____
- While relaxing, resting, I save_____
- Other, I save _____
- I do not save energy
- No answer

D11. How do you get to work from home:

- Cycling
- Public transport
- Electric Motorbike
- Fuel Motorcycle

- Car
- Walking
- Other, please specify _____
- None of the above

D12. In which of the following teams/units/departments are you employed:

- o TES Division
- o R&D Center
- o Hot Water TES Team
- o ICE TES Team
- o Chilled Water TES Team
- o Technology Center
- o Service Center
- o TES Auto-control System Designing & Integrating Team
- o Project Renovation Team
- o After-sale Service & Maintaining Team
- o Engineering Consulting & Designing Team
- o Engineering Bid Team
- o Project Center
- o Project Commission-ing Team
- o Project Construction Team
- o Marketing Center
- o Marketing Team
- o Other, please indicate _____

Section 2: Awareness, perceptions, and motivations in regards to the "ideal type greening discursive practices, norms, values, jobs, competencies"

1. Are you aware that any of the following environmental protection measures and management techniques are used at RPQ?

- Social and Environmental Accounting (SEA)

- Energy efficiency metering
- Water consumption metering
- Carbon Emissions MRV
- Carbon Footprint MRV
- Water Footprint MRV
- Social Footprint MRV
- Life-Cycle Assessment (LCA) of products, services, and processes
- Corporate Social Responsibility (CSR) Activities and Reporting
- Green Supply Chain Management
- Green Human Resource Management
- Corporate waste management / recycling
- Other(s), please specify _____
- No answer

2. Do you know if your company complies with any of the following:

- National policies to support the implementation of Global Environmental Conventions (i.e., Framework Convention on Climate Change);
- Kyoto Protocol and its policies on emissions reduction targets;
- Green House Gas (GHG) Emissions' Measurement, Reporting, and Verification (MRV)
- Standards of ISO Environmental Performance and Sustainability (i.e, ISO 14000)
- Standards of ISO on Social Responsibility (i.e., ISO 26000)
- Standards of ISO on Quality Management (i.e., Health and Safety ISO 9001)
- International LabourOrganization (ILO)Conventions, Standards and Principles (i.e., C111 - Discrimination (Employment and Occupation) Convention, C155 - Occupational Safety and Health Convention)
- Carbon Disclosure Project's Annual Investor CDP Information Request
- Carbon Disclosure Project's Annual CDP Supply Chain Information Request
- Global Reporting Initiative (GRI) annual reporting through Global Compact
- Dow Jones Sustainability Index (DJSI) annual reporting

- Other_____
- No answer

3. In your opinion, which of the following are considered green and low-carbon practice?

- Social and Environmental Accounting (SEA)
- Energy efficiency metering
- Water consumption metering
- Carbon Emissions MRV
- Carbon Footprint MRV
- Water Footprint MRV
- Social Footprint MRV
- Life-Cycle Assessment (LCA) of products, services, and processes
- Corporate Social Responsibility (CSR) Activities and Reporting
- Green Supply Chain Management
- Green Human Resource Management
- Corporate waste management / re cycling
- Other(s), please specify
- No answer

4. Has any of the following changed in your company during the last few years towards saving energy and being low-carbon?

- Office(s)
- Plant(s), machinery
- Laboratories
- Assembly line(s)
- Storage, archive(s)
- Social asset(s)
- Other _____
- No answer

5. Which of the following are practiced in your company?

- Social and Environmental Accounting (SEA)
- Energy efficiency metering
- Water consumption metering
- Carbon Emissions MRV
- Carbon Footprint MRV
- Water Footprint MRV
- Social Footprint MRV
- Life-Cycle Assessment (LCA) of products, services, and processes
- Corporate Social Responsibility (CSR) Activities and Reporting
- Green Supply Chain Management
- Green Human Resource Management
- Corporate waste management / re cycling
- Other(s), please specify
- No answer

6. Which of the following helped you contributing to the practice of green and low-carbon in your company?

(tick all that apply)

- I know how to calculate my Personal Footprint
- I know Life Cycle Assessment (LCA)
- I know Green Supply Chain Management
- I know Green Human Resource Management,
- I know Organizational Footprint MRV (Measurement, Reporting, and Verification)
- I know about Emissions targets and activities to curb them
- Other(s), please specify_____
- None of the above

Section 3: Awareness, perceptions and motivations in regards to green jobs and Footprint/LCA Competencies

7. Are you aware of what competencies and skills are required among employees to conduct Social and Environmental Accounting and/or Carbon Footprint Accounting?

- Practical application of Carbon “language” and Carbon discourses
- Saving energy at the office
- Saving energy at home, in the household
- Changing lifestyle towards low-carbon
- Reducing consumption of electricity, fuel, paper, etc.
- Training in climate change related adaptation and mitigation
- Developing corporate social responsibility ethos
- Calculating personal footprint
- Conducting Life-Cycle Assessment of products, services, and processes
- Identifying processes that increase carbon emissions
- Finding ways to change harmful and polluting behaviours at work
- Finding ways to change harmful and polluting behaviours at home, in the household
- Finding ways to change harmful and polluting behaviours in your city, district, village, community
- Using green supply chain management approaches
- Using green human resource management approaches
- MRV (Measuring, Reporting, and Verification) of organizational footprint
- Using emissions targets and reduction activities for curbing emissions
- Other
- I don’t know
- No answer

8. Would you refer to the jobs, routines, and competencies related to Social and Environmental Accounting as "green jobs and competencies"?

o Yes

o No

o I do not understand the question

9. How are the jobs and competencies designed to perform these routines, jobs, and tasks? THIS Q. Removed

 Jobs and competencies are designed by the Central HR Department

 Jobs are designed by my manager for our team/unit

 Jobs are designed in consultation with me, as I know a lot about how to get the job done

 Jobs are co-designed by me and my line manager

 Jobs are designed by me, as I know how the job can be done best

 Other

 I do not know

10. Do you have the possibility to suggest to your immediate manager what routines, jobs, and tasks can be included in your everyday routines at work?

o Yes, I can co-design my routines, jobs, and tasks with my manager and colleagues

o No, I do not have to possibility to co-design my routines, jobs, and tasks with my manager and colleagues

o I do not understand the question

o Other, please specify _____

11. In your perception, what is the desired environmental conduct promoted by your company?

 More awareness about Personal Footprint

 Regular MRV (Measuring, Reporting, and Verification) of Footprint and Emissions

 Strong LCA (Life-Cycle Assessment) practice

 More green and low-carbon innovations

 Reduced pollution from company's activities

 Reduced consumption among the members of the company

 More self-education about climate change adaptation and mitigation

 More training requests for developing green and low-carbon skills and competencies

 Less energy consumption at work

 Less fuel and gas used for transportation in the company and among emlpoyees

- Changing diets from fast-food and high-carbon towards slow food and less carbon
- Our company does not promote desired environmental conduct
- I do not know
- Other, please specify _____

12. Have your participated in training provided by your company or its partners to develop green competencies and skills?

- o If, yes, then please specify the title of the training programme_____
- o If, no, then please indicate the reason for non-participation_____
- o There was no training provided

13. If you could recommend to your department and company a list of immediate training needs to develop your green and low-carbon competencies and skills, which training would you recommend, please list by priority?

- Practical application of Understanding Carbon and Carbon discourses
- Saving energy at the office
- Saving energy at home, in the household
- Changing lifestyle towards low-carbon
- Reducing consumption of electricity, fuel, paper, etc.
- Training in climate change related adaptation and mitigation
- Developing corporate social responsibility ethos
- Calculating personal footprint
- Conducting Life-Cycle Assessment of products, services, and processes
- Identifying processes that increase carbon emissions
- Finding ways to change harmful and polluting behaviours at work
- Finding ways to change harmful and polluting behaviours at home, in the household
- Finding ways to change harmful and polluting behaviours in your city, district, village, community
- Using green supply chain management approaches
- Using green human resource management approaches
- MRV (Measuring, Reporting, and Verification) of organizational footprint

- Using emissions targets and reduction activities for curbing emissions
- Other(s), please specify_____
- No answer

14. Which competencies and skills your company helped you develop in order to improve your contribution to desired environmental conduct?

- Practical application of Understanding Carbon and Carbon discourses
- Saving energy at the office
- Saving energy at home, in the household
- Changing lifestyle towards low-carbon
- Reducing consumption of electricity, fuel, paper, etc.
- Training in climate change related adaptation and mitigation
- Developing corporate social responsibility ethos
- Calculating personal footprint
- Conducting Life-Cycle Assessment of products, services, and processes
- Identifying processes that increase carbon emissions
- Finding ways to change harmful and polluting behaviours at work
- Finding ways to change harmful and polluting behaviours at home, in the household
- Finding ways to change harmful and polluting behaviours in your city, district, village, community
- Using green supply chain management approaches
- Using green human resource management approaches
- MRV (Measuring, Reporting, and Verification) of organizational footprint
- Using emissions targets and reduction activities for curbing emissions
- Other(s), please specify_____
- No answer

15. Are you aware of which associated Key Performance Indicators (KPIs) have been developed in your company to improve your contribution to desired environmental conduct?

- KPI related to saving energy at the office

- KPI related to saving energy at home, in the household
- KPI related to changing lifestyle towards low-carbon
- KPI related to reducing consumption of fuel
- KPI related to reducing consumption of paper
- KPI related to participation in training in climate change related adaptation and mitigation
- KPI related to developing corporate social responsibility activities
- KPI related to abilities of calculating personal footprint
- KPI related to conducting Life-Cycle Assessment of products, services, and processes
- KPI related to identifying processes that increase carbon emissions
- KPI related to innovations to change harmful and polluting behaviours at work
- KPI related to innovations to change harmful and polluting behaviours at home, in the household
- KPI related to innovations to change harmful and polluting behaviours in the community
- KPI related to using green supply chain management approaches
- KPI related to using green human resource management approaches
- KPI related to MRV (Measuring, Reporting, and Verification) of organizational footprint
- KPI related to using emissions targets and reduction activities for curbing emissions
- Other(s), please specify_____
- No answer

16. What competencies and skills do you lack at the moment to contribute more towards desired environmental conduct while at work?

- Practical application of Understanding Carbon and Carbon discourses
- Saving energy at the office
- Changing lifestyle towards low-carbon
- Reducing consumption of electricity, fuel, paper, etc.
- Training in climate change related adaptation and mitigation
- Developing corporate social responsibility ethos
- Calculating personal footprint

- Conducting Life-Cycle Assessment of products, services, and processes
- Identifying processes that increase carbon emissions
- Finding ways to change harmful and polluting behaviours at work
- Using green supply chain management approaches
- Using green human resource management approaches
- MRV (Measuring, Reporting, and Verification) of organizational footprint
- Using emissions targets and reduction activities for curbing emissions
- Other(s), please specify_____
- No answer

17. What competencies and skills do you lack at the moment to contribute to an improved personal environmental conduct outside of work?

- Practical application of Understanding Carbon and Carbon discourses
- Saving energy at home, in the household
- Changing lifestyle towards low-carbon
- Reducing consumption of electricity, fuel, paper, etc.
- Climate change related adaptation and mitigation
- Calculating personal footprint
- Identifying processes that increase carbon emissions
- Finding ways to change harmful and polluting behaviours at home, in the household
- Finding ways to change harmful and polluting behaviours in your city, district, village, community
- Using emissions targets and reduction activities for curbing emissions
- Other(s), please specify_____
- No answer

Section 4: Company's Green Self-Branding and Workers' reflexivity and organizational identification: are workers loyal to their green companies (perceived organizational support (POS) and affective commitment and expectations).

18. What are the incentives and / or the directives for the green and low-carbon practices in your company?

Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale)

(Completely disagree) (Somewhat disagree) (Neither agree nor disagree) (Somewhat agree) (Completely agree)

If I practice green and low-carbon at work I get a material reward

If I practice green and low-carbon at work I get a praise and more recognition among colleagues and managers

My Key Performance indicators are linked to green and low-carbon practices

There are penalties for not being green and low-carbon in our company

My bonus is linked to the green and low-carbon practices

There are no incentives for green and low-carbon practices in our company

19. Have any of the following changed since your company started corporate greening and decarbonization?

Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale)

(Completely disagree) (Somewhat disagree) (Neither agree nor disagree) (Somewhat agree) (Completely agree)

My awareness of personal environmental conduct improved

My awareness of my company's environmental conduct improved

My awareness of my company's emissions targets and Footprint reduction activities improved

My loyalty to my company has increased

My loyalty to my colleagues has increased

My motivation to work in my company increased

My motivation to learn new competencies and skills for greening and decarbonisation increased

My motivation to improve my personal environmental conduct increased

My motivation to understand my company's environmental conduct increased

My motivation to understand my company's Social and Environmental Accounting (SEA) and Footprint MRV increased

20. With which of the following definitions of “green job” and “green competency” would you agree when it comes to your company? Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale)

(Completely disagree) (Somewhat disagree) (Neither agree nor disagree) (Somewhat agree) (Completely agree)

Green job is related to fulfilling socially responsible objectives of our company.

Green jobs and competencies are "decent jobs".

Decent jobs are the jobs with acceptable salary, short working hours, improved benefits, and higher health and safety standards at work.

Green jobs allow for more work-family balance.

Green jobs and competencies improve my professional qualifications.

Green jobs and competencies make me more useful to my company.

Green jobs and competencies are more motivating to me.

Green jobs are competencies are less dangerous, they improve health and safety at work.

Green jobs mean flexible work arrangements (i.e., I can work from home, instead of travelling to the office).

Green jobs and competencies mean that I work fewer hours and earn good salary.

Green jobs and competencies mean that workers can negotiate better work arrangements with their employer.

21. In your company are there any jobs that provide better work conditions in any of the following ways. Please indicate details in space provided:

- Flexibility work arrangement, in terms of hours worked_____
- Flexibility work arrangement, in terms of working from home or office_____
- Developmental quality of work (i.e., professional growth) _____
- Work-Family balance_____
- Intrinsically motivating_____
- Meaningful, more complexity and personal initiative_____
- Less aversive, improved health and safety at work_____
- Other, please specify_____
- No answer

22. From which sources are the employees expected to know and use the company's targets and risks, associated with emissions?

- Company Annual and Sustainability Reports
- Annual Meetings
- Company policies and codes of conduct
- Incentives schemes and structures
- Penalty structures
- Competitions and prize award rules
- Personal initiatives
- Other(s), please specify_____
- No answer

23. To what extent would you agree or disagree with any of the following statements?

Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale):

(Completely disagree) (Somewhat disagree) (Neither agree or disagree) (Somewhat agree) (Completely agree)

Our company is part of a Life-Cycle Value Chain

Our company is the largest supplier in a network of suppliers in our industry

Our company is part of a community of low-carbon and green practice

Our company must become part of a community of knowledge and practice of emissions MRV

We do not have enough expertise on Footprint Accounting in our company

Our company just started recently conducting Social and Environmental Accounting

Our company is the leader in the green and low-carbon industry in China

Our company's employees, managers, partners, suppliers are all part of a life-cycle network of organizations

Our company contributes a lot to developing a community of green practice internally (among employees, managers, shareholders)

Our company contributes a lot to developing a community of green practice externally (among suppliers, partners, community stakeholders)

Our company's employees are aware of the emissions targets and company's sustainability policies

Our company’s employees have good understanding of green and low-carbon environmental conduct

I am aware of my personal footprint

I aim to reduce my personal footprint

I am aware of my company’s emissions and footprint

My competencies help my company to measure, report and verify its footprint

I need to develop competencies to help my company to measure, report, and verify its footprint

I am an expert in Social and Environmental Accounting

I do not know enough and want to learn more about Social and Environmental Accounting, Footprint, and Emissions

The introduction of green and low-carbon practices in my company improved its environmental conduct

The introduction of green and low-carbon practices in my company helped me understand and improve my own environmental conduct

24. How much knowledge and understanding do you have about your suppliers' emissions, footprint, and environmental conduct? Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale)

(Completely disagree) (Somewhat disagree) (Neither agree nor disagree) (Somewhat agree) (Completely agree)

The environmental conduct of our company’s suppliers have an effect on our company's emissions and environmental performance

We must cooperate with our suppliers more on emissions and footprint MRV

Our suppliers are not green or low-carbon, which is not good for our company’s value.

Our suppliers do not collect any information about their emissions and footprint.

Our suppliers have information about their emissions and footprint but they do not make it available to us.

We depend on our upstream suppliers’ emissions.

We depend on our downstream suppliers’ emissions.

There is no need to cooperate on greening with our suppliers.

We do not need to cooperate on integrating our downstream suppliers in our life-cycle network’s greening.

We must cooperate more on integrating our upstream suppliers in our life-cycle network's greening.

25. Do you think there is organizational support in your company?

Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale)

(Completely disagree) (Somewhat disagree) (Neither agree or disagree) (Somewhat agree) (Completely agree)

The company values my contribution to its wellbeing.

If the company could hire someone to replace me at a lower salary it would do so.

The company fails to appreciate any extra effort from me.

The company strongly considers my goals and values.

The company would understand a long absence due to my illness.

The company would ignore any complaint from me.

The company disregards my best interests when it makes decisions that affect me.

Help is available from the company when I have a problem.

The company really cares about my wellbeing.

The company is willing to extend itself in order to help me perform my job to the best of my ability.

The company would fail to understand my absence due to a personal problem.

If the company found a more efficient way to get my job done they would replace me.

The company would forgive an honest mistake on my part.

It would take only a small decrease in my performance for the company to want to replace me.

The company feels there is little to be gained by employing me for the rest of my career.

The company provides me with little opportunity to move up the ranks.

Even if I did the best job possible, the company would fail to notice.

The company would grant a reasonable request for a change in my working conditions.

If I were laid off, the company would prefer to hire someone new rather than take me back.

The company is willing to help me when I need a special favour.

The company cares about my general satisfaction at work.

If given the opportunity, the company would take advantage of me.

The company shows very little concern for me.

If I decided to quit, the company would try to persuade me to stay.

The company cares about my opinions.

The company feels that hiring me was a definite mistake.

The company takes pride in my accomplishments at work.

The company cares more about making a profit than about me.

The company would understand if I were unable to finish a task on time.

If the company earned a greater profit, it would consider increasing my salary.

The company feels that anyone could perform my job as well as I do.

The company is unconcerned about paying me what I deserve.

The company wishes to give me the best possible job for which I am qualified.

If my job were eliminated, the company would prefer to lay me off rather than transfer me to a new job.

The company tries to make my job as interesting as possible.

My supervisors are proud that I am a part of this company.

26. How do you feel about your company?

Please indicate the extent to which you agree or disagree with the following statements (5-point Likert Scale)

(Completely disagree) (Somewhat disagree) (Neither agree nor disagree) (Somewhat agree) (Completely agree)

Working at RPQ has a lot of personal meaning to me.

I feel a strong sense of belonging to RPQ.

I am proud to tell others that I work for RPQ.

I feel emotionally attached to RPQ.

I would be happy to work at RPQ until I retire.

I enjoy discussing RPQ with people outside of it.

RPQ does not deserve my loyalty.

I really feel that any problems faced by RPQ are also my problems.

I do not feel like part of a family at RPQ.

It is more likely that I will be given a pay raise or promotion at RPQ if I finish a large amount of work.

It is more likely that I will be given a pay raise or promotion at RPQ if I do high quality work.

Getting work done quickly at RPQ increases my chances for a pay raise or promotion.

Getting work done on time is rewarded with high pay at RPQ.

Completing my work done on time gets me greater approval from my immediate supervisor at RPQ.

My immediate supervisor at RPQ gives me more recognition when I get a lot of work done.

If I get my job done on time, I have more influence with my immediate supervisor at RPQ.

My immediate supervisor at RPQ pays added attention to the opinions of the best workers.

When I finish my job on time, my job is more secure at RPQ.

27. Please provide your email address to be entered into a draw to win 1 of 3 gift certificates

_____

Last page message: “Thank you for your kind participation. The results of this survey will be available form your HR Department. With best wishes for the coming Holiday Season! Your Suvey Team :) “

Annex 2. Semi-structured interviews conducted

Details of the semi-structured interviews conducted at RPQ (PRC), HC KLSKY (Kyrgyz Republic), FOAM BKG (Kyrgyz Republic)

Requested Interview Profiles in Selected Companies and Semi-structured interviews conducted			
	Org. Area/Department/Unit	**Number of interviews**	**Key Responsibility Areas**
1	Corporate Strategy, PR, Board	3	carbon emissions and trading, organizational change, supply chain, environmental regulation compliance, corporate social responsibility
2	Sustainability monitoring and environmental performance	3	innovation in technology and tools, environmental performance, life-cycle assessment, footprints, emissions, climate change, supply chain emissions and reduction
3	Operations and facilities	5	plants and facilities, green building and office environment, energy efficiency, resource efficiency, over the life-cycle costs vs. operational costs, win-win scenarios
4	Supplier Management, Procurement teams, Sales and after-sales	5	supply chain management, training and facilitation, process and standard enforcement, implementation of green product policy
5	Human Resources and Training	3	human resource management, labour relations, green office, sustainable working space, green benefits and employees' packages in greening companies, changes in work and benefits, green jobs and competencies, sustainability experts
6	Labour Representatives, Unions, Industrial Relations	1	labour relations, unions, representations, work hours and pay, employee benefits and responsibilities, personal footprint and environmental and social responsibility, green employee initiatives
7	Supplier Representatives, involved in product, service, and process LCA, emissions measurements and reduction, improvement of environmental standards (Supply Chain connection)	1	improvement of supply chains' environmental performance, training and improvement of upstream and downstream supply chains, raising the supplier standards, emissions reduction through cooperation with suppliers
	Total Interviews:	**21**	

EndNotes

[i] **EndNote 1 – Competences as building "stones" in Practice Based Studies**

"A conversation between Marco Polo and Kublai Khan:
Marco Polo describes a bridge, stone by stone.
"But which is the stone that supports the bridge?" Kublai Khan asks

"The bridge is not supported by one stone or another," Marco answers, "but by the line of the arch that they form."

Kublai Khan remains silent, reflecting. Then he adds: "Why do you speak to me of the stones? It is the arch that matters to me."

Polo answers: "Without stones there is not arch."

Focus of Practice Based Studies is in empirical study of organizing as knowing-in-practice requires analysis of how, in working practices, resources are collectively activated and aligned with competence (the stones). This activity is not extemporaneous; on the contrary, what makes practice "plastic" – that is, relatively stable and mutable – is the activity that stabilizes the conditions for them (the bridge).

Working practices as units of analysis of work
- Partially already given and partially emergent,
- They are ways to order the work flow, to segment it into subsets of coherent and interdependent activities, and to codify it in recognizable, regognized, and socially sustained patterns.

Three salient features of work practices
- Modes of ordering, work practices create encoded situations (in situation X, do Y, Z…)
- The repetition (or recursiveness) distinctive of working practices is connected with the development of skills and with change as re-specification of refinement
- Their re-production of society

Climber as a metaphor for practicing:
The climber makes the rock as the rock makes the climber. The differences are indeed in the rock, and not in the "gaze" that is brought to it. But these are not brought to bear without the activity of the climb, which makes them present. There is co-formation. Differences emerge, multiply and are projected. The "object" is not an immobile mass against which our goals are thrown. It is in itself a deployment, a response, an infinite reservoir or differences that can be apprehended and brought into being (Hennion 2007:100-1).

The handholds for practicing:
- The body (sensible knowing, the knowledge incorporated in bodily schemes, physical abilities, and the collective development of a "professional vision" and a collective identity)

- The socio-material domain (Tools, technologies, an ecology of humans and non-humans)
- Language (technical vocabulary, classification systems, and language-in-use)
- Normative infrastructure (rules and institutions, space of ordinary prescriptions)

The bridge and the stones
Knowing-in-practice can therefore be analysed as it is manifest in the linguistic and cultural systems, and the technological and normative infrastructure, located in time and space, and as it is socially constructed and constantly developed."

Source: Professor S. Gherardi's Lecture slides at the RUCOLA Summer School 2012 for PhD students, University of Trento, Trento, Italy

[ii] **EndNote 2 - Calculative collective devices of the economic markets according to Michel Callon and Fabian Muniesa**

The Notion of Calculation Re-examined
Two risks should be avoided in the definition of market calculation. The first is the risk of reverting to an abstract and formal view of economic markets governed by impersonal laws (such as the law of demand) and consisting of disembodied economic agents reduced to their preferences and calculative competencies. The second risk, more subtle and more common in sociology, consists in simply getting rid of this cumbersome notion by dissolving the problem of calculation in the detail of ethnographic description. For many anthropologists, what was supposed to be a calculative behaviour proves to be a matter of pure judgement or conjecture or, when it can be observed,
something originating in institutions or cultural norms. Whereas economics maintains the idea of a reality of 'pure' calculation, the other social sciences try, by contrast, to show that real practices are infinitely more complex and leave little room for calculative practices per se.

Calculating does not necessarily mean performing mathematical or even numerical operations (Lave 1988). Calculation starts by establishing distinctions between things or states of the world, and by imagining and estimating courses of action associated with those things or with those states as well as their consequences. By starting with this type of definition (wide, but usual) of the notion of calculation, we try to avoid the distinction (also conventional, but too sharp) between judgement and calculation. The validity of this position, which usefully blurs the boundary between pure judgement and pure calculation, is confirmed by etymology. The emphasis on material movement — also found in the 'centre of calculation' notion developed by Bruno Latour (1987) — helps us to formulate a very general definition of calculation as a three-step process:
First, in order to be calculated, the entities taken into account have to be detached. Once they have thus been sorted out, the entities considered (taken 'into account') are associated with one another and subjected to manipulations and transformations, still in a very material sense, as in the case of a mechanical calculator. A third step is necessary to obtain an accomplished calculation: a result has to be extracted. A new entity must be produced (a sum, an ordered list, an evaluation, a binary choice, etc.) that corresponds precisely to the manipulations effected in the calculative space and, consequently, links (summa-rizes)
the entities taken into account. This resulting entity is not new, in the sense of springing from nowhere; it is prefigured by the considerations described above. But it has to be able to leave

the calculative space and circulate elsewhere in an acceptable way (without taking with it the whole calculative apparatus).

Source: Callon, M. Muniesa, F. (2005), Peripheral Vision: Economic Markets as Calculative Collective Devices, Organization Studies 2005; 26; 1229

[iii] **EndNote 3. Distributed Calculative Agencies**

The calculability of goods naturally implies the intervention of acting forces. When we talk of calculative agencies, we have in mind all the operations that make goods calculable, in the sense defined above. As we have seen, these operations involve both humans and non-humans. This leads us away from standard theories of action, which reserve agency for humans alone, towards the notion of distributed agency. Since this notion is now fairly widespread (see, for instance, Suchman 1987; Norman 1988; Hutchins 1995), we will present it very briefly, with particular emphasis on the fact that agencies' calculative capacities are linked to their equipment, which is distributed. This characterization will enable us to consider asymmetries of calculation — a key issue in the analysis of commercial struggles.

Calculative agencies are not human individuals but collective hybrids, 'centres of calculation' (Latour 1987). These agencies are equipped with instruments; calculation does not take place only in human minds, but is distributed among humans and non-humans. The notion of 'distribution' is crucial. It does not mean that flesh and blood human agents, faced with difficult calculations, use tools, without which they would never be able to accomplish their tasks. It is not double-entry bookkeeping that calculates, he says, but the human agent, in this case the entrepreneur who decides to use it. The point of view that reduces calculative tools to their instrumental dimension is common in economics, including in less orthodox approaches (institutional, evolutionary).

Source: Callon, M. Muniesa, F. (2005), Peripheral Vision: Economic Markets as Calculative Collective Devices, *Organization Studies* 2005; 26; 1229

[iv] **EndNote 4. Learning organizations**

"The metaphor of organizational learning stands as a valid alternative to the image of the rational organization, because it depicts an organization grappling not only with trial and error but also with the ambiguity of interpretative processes, of experience, of history, of conflict, and of power. Learning suggests that a sequence of experiences – and not the abstract processes of rational thought – is the basis of action, and that the organization prossesses a further resource – knowledge – which is an asset, an investment and a good that must be maintained. In this case one may say that the organization is a place of learning, it comprises processes of organizational learning. However, one can also say that the organization learns because the activity of organizing is a form of practical knowledge: a bureaucracy is an organizational model based on the separation of thought from execution; a learning organization is an organizational model based at the same time on knowledge in action, on working, learning and innovating. Organizational learning is now giving way to the learning organization, which constantly organizes itself in order to equip itself with attention rules

which govern the manner in which the actions and behaviours of individuals and communities of practie interrelate to form systems of collective cognition and action.

The learning organization is an organizational form that pays less attention to problems of efficiency, order and stability, and more attention to the reliability of its performance, to adaptive change and to flexibility.

However, there is no reason for bureaucracy to transform itself into a learning organization, even though there is a social expectation that the transformation of the public administration will move in this direction. The question – theoretical and empirical – can therefore be formulated as follows: what conditions canf favour transition to a learning bureaucracy?"

Source: Gherardi, S. (1998) 'Competence: The Symbolic Passe-partout to Change in a Learning Organization', *Scandinavian Journal of Management* 14 (4): 373-93

[v] **EndNote 5. Competences in learning organizations**

The choice of the construct "competence" enables one to enter the core of a bureaucratic culture and its change. Bureaucracy, as a Weberian ideal tye, is based on hierarchy and competence. The latter is predominantly the competence of authority, defined as the power allotted by law to each jurisdictional or administrative body. In this semantic field of having competence and therefore responsibility. But Weber's bureaucracy is also a professional bureaucracy, in the sense that competence is assigned according to professionalism, i.e., according to specialization, qualifications, and the possession of objectivity assessed capabilities. Functionaries must therefore be competent and their careers are defined in terms of their possession of a set of capacities that have been ascertained externally. They are therefore both jurisdicationally competent and professionally competent. Competence is synonymous with proficiency when it denotes the ability to perform a given activity or to accomplish a given task.

Source: Gherardi, S. (1998) 'Competence: The Symbolic Passe-partout to Change in a Learning Organization', *Scandinavian Journal of Management* 14 (4): 373-93

[vi] **EndNote 6. Practice theory, Practice**

"Practice perspectives are inscribed mainly within a sociological approach to organizational learning and knowing that consider knowledge as something that people do together.
• Knowing and doing are therefore inextricably entangled.

The 'practice turn' has enabled a shift from knowledge to knowing – and therefore from an epistemology of possession to one of practice – that is, to a conception of knowing as a practical activity.
• The 'practice turn' began within studies on organizational learning and knowledge simultaneously with rediscovery of the concept of practice by other communities of scholars

Different linguistic uses of the term:

• oppositional theory-versus-practice
• analogical: a certain phenomenon is studied 'as practice' ,
• topological. Practice is the place for knowing and learning,
• transformative, and it refers to the fact that knowledge transforms itself through its use.

Theories of practice = assume an ecological model in which agency is distributed between humans and nonhumans and in which the relationality between the social world and materiality can be subjected to inquiry."

Source: Professor S. Gherardi's Lecture slides at the RUCOLA Summer School 2012 for PhD students, University of Trento, Trento, Italy

[vii] EndNote 7. Qualculations

"Isolating objects from their context, grouping them in the same frame, establishing original relations between them, classifying them and summing them up are all costly activities that raise the question of calculative power. This definition also enables us to analyse those calculative phenomena that are not 'pure'. A flaw in a calculation may be connected to a shortcoming in one (or more) of the three steps of the calculation process (the list of entities to take into account might be too long; an accurate calculation might require unavailable resources or an extended timeframe). Depending on the concrete achievement of each calculative step, calculation can either meet the requirements of algorithmic formulation or be closer to intuition or judgement. Such a definition establishes a continuum between qualitative judgement and quantitative (or numeric) calculation. It applies, in particular, to what Franck Cochoy calls 'qualculation', i.e. intermediate situations in which the customer has to choose certain objects placed beforehand in the same spatial and temporal frame (Cochoy 2002). It also enables us to understand how situations of noncalculation can be constructed, for instance by preventing the closure of the list of entities to be taken into account, by facilitating the proliferation of relations between those entities or by paralysing any attempt at classification (Callon and Law forthcoming). With this broad definition of calculation, the most appropriate dividing line is no longer between judgement and calculation, but between arrangements that allow calculation (either quantitative or qualitative) and those that make it impossible."

Source: Callon, M. Muniesa, F. (2005), Peripheral Vision: Economic Markets as Calculative Collective Devices, *Organization Studies* 2005; 26; 1229