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## Wish You a Happy New Year!

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## **Omani EFL Students' Preference of Grammar Teaching Method**

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### **Abstract**

The purpose of this qualitative study is to explore Omani EFL students' preference of grammar teaching method and their reasons for their preference. The two popular grammar teaching methods that are prevalent in EFL Oman are deductive grammar teaching and inductive grammar teaching. In the deductive approach grammar rules are explicitly given at the beginning of the learning process while in inductive approach examples containing grammar items are given to the learners and asked them to discover rules (Thornbury, 1999). Sixty-five fifth and sixth semester English language and literature graduate students from the Department of English, Al Buraimi University College, Oman participated in the study. The data was collected through an open ended questionnaire. The findings show that most students prefer deductive grammar teaching because it is an easy method for learning complex grammar and effective method for learning new grammar items; furthermore, deductive grammar teaching gives the students' confidence and better practice, saves their time and enables them to remember grammar rules and apply them in new learning situations. The students who preferred inductive method attributed critical thinking skill, independent learning, long term memory and active learning to it.

**Key words:** Omani EFL students, grammar, teaching, deductive, inductive, learners' preference

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## **1. Introduction**

Grammar plays a key role in most English as a Second Language (ESL)/ English as a Foreign Language (EFL) learning contexts although communicative approach is accepted widely. The teachers use either deductive grammar teaching method or inductive grammar teaching method in their classrooms. Although, there are a number of studies conducted to find out students' preference of grammar teaching approaches (DeKeyser, 1995; Male, 2011; A. V. Brown, 2009; Landolsi, 2011), a few studies have been conducted in EFL Omani context and they are done either in schools (Al-Kalbani, 2004) or with pre-service teacher trainees (Nagaratnam & Al-Mekhlafi, 2012). There has been no study that addressed Omani graduate students' preference of grammar teaching to the researcher's knowledge. This study tries to fill this gap.

## **2. Grammar and Grammar Teaching**

Grammar is an important component of English language learning. According to H. D. Brown (2007) language is chaotic and unintelligible without grammar. Similarly, Nunan (1991) argues that learners cannot communicate well if they do not know the basic grammar. Hinkel and Fotos (2002) observed that even though there is no unanimous view on grammar teaching, it is one of the pillars of English language teaching. Grammar teaching has been recognized as an essential and unavoidable aspect in language learning (Doughty & Williams 1998). Although Communicative Language Teaching has reduced the amount of grammar taught in ESL/EFL classrooms, it is still believed that English language teaching is centered on grammar (Nassaji and Fotos, 2004). Recent research has demonstrated that grammar teaching is both necessary and essential because grammar knowledge influences learners' skill in using target language to communicate effectively (Carroll & Swain, 1993; Ellis 2002). In other words, grammar has always occupied a central position in English language teaching; furthermore, the two prominent grammar teaching approaches are inductive and deductive grammar teaching.

### **2.1. Deductive Teaching Method**

Deductive method is based on deductive logic. Therefore, it begins by studying grammar rules directly and moves to the specific examples that illustrate those rules. According to Decoo

(1996) deductive learning is the process of going “from the general to the specific, from consciously formulated rules to the application in language use” (p. 96). Deductive grammar teaching is a rule based explicit grammar teaching where learners receive the rules directly from the teacher before they know the functions (Cowan, 2008). Krashen (2002) has pointed out that deductive method is related to conscious learning because it teaches rules explicitly and stresses error correction. Widodo (2006) relates deductive approach to Krashen’s (1987, 2002) learning and acquisition hypothesis and concludes that it is an explicit formal teaching. Gollin (1998) associates deductive method with Grammar-Translation Approach.

Deductive approach is a direct, easy and fast method of teaching grammar rules. Van Patten and Borst (2012) argue that explicit prior knowledge of rules help learners to process the input accurately and much faster. It is suitable for adult learners as H. D. Brown (2001) points out that most adults “need to have the language system laid out explicitly with rules from which they can work deductively” (p. 147). Sallas, Matthews, Lane and Sun (2007) observe that the learners “whose underlying structure is relatively explicit and salient are typically learned better with guided instruction than relatively unguided discovery learning” (p. 2132). Deductive approach may be more appropriate to the learners whose time and knowledge are limited (Szkolne, 2005). According to Fortune (1992) deductive method is still used in language teaching classroom around the world and dominates in many course books and grammar books. Nevertheless, deductive approach is not appropriate to all types of learners. For example, it may not be suitable for young learners since grammar explanation contains indigestible technical jargons. According to Hedge (2000) in deductive teaching the teacher is the authority and the source of information meanwhile students are “passive recipients” (p. 82) of the given information. There is no learner involvement since it is a teacher fronted teaching style of grammar teaching (Widodo, 2006; Chalipa, 2013). Furthermore, deductive approach neglects meaning for the sake of forms and promotes passive learning (Shaffer, 1989).

## **2.2. Inductive Teaching Method**

Inductive learning starts with analyzing specific grammar examples to identify the general grammar rules. Carr (2009) claims that induction is “a form of reasoning in which one arrives at general principles or laws by generalizing over specific cases” (p. 47). According to

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Krashen (2002) inductive learning is related to subconscious learning. Ellis (2010) points out that “Inductive explicit instruction provides learners with the data and guidance that they need to derive their own understanding of the grammatical feature” (p. 4). Longman Dictionary of Language Teaching and Applied Linguistics (1993) defined inductive approach as an approach which doesn’t involve any direct rules teaching, but require learners to discover rules from their experience of using language. Nunan (2003) states that in inductive method the learners discover rules from given examples through guided discovery. Similarly Prince and Felder (2006) observe that the learners find out rules from the given data with teachers’ guidance and help. Rivers and Temperley (1978) point out that the teachers’ main responsibility is to provide meaningful learning contexts in which rules are exemplified and the learners infer rules from the given examples. According to Krashen (1982) inductive teaching is an explicit grammar teaching since it raises the learner’s consciousness on language forms whereas Schmidt (1990) observes that learners learn implicitly and unintentionally without any awareness of what is being learned. In fact, inductive teaching can be done either explicitly or implicitly as Dekeyser (2003) claims that “When students are encouraged to find rules for themselves by studying examples in a text, learning is inductive and explicit. When children acquire linguistic competence of their native language without thinking about its structure, their learning is inductive and implicit” (p. 315).

Inductive method promotes learner autonomy since it allows the learners to “perceive and formulate the underlying governing patterns presented in meaningful context” (Shaffer, 1989, p. 395). It makes the learner active as Herron and Tomasello (1992) concluded after a study that inductive method was better than the deductive because students got engaged in hypothesis testing actively and immediate feedback on their learning. Inductive approach is useful for teaching complex structures that are “difficult to articulate and internalize” (Larsen-Freeman, 2009, p. 528). Inductive method replicates L1 acquisition. To demonstrate, H. D. Brown (2001) claims that inductive learning is similar to subconscious L1 acquisition which motivates and engages the learners to discover rules and helps them to “get a communicative ‘feel’ for some aspects of language”(p. 365). In spite of these, inductive teaching may lead learners to wrong conclusion (Szkolne, 2005). It wastes time in the process of rule discovery since it takes a lot of unnecessary effort to discover rules though it brings about greater learning (Brendse, 2012).

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Furthermore, inductive grammar teaching is frustrating to some learners because it may be against the learners who have different past learning experience (Widodo, 2006; Chalipa, 2013).

### **3. Previous Studies**

There have been a number of studies that investigated both the teachers and students' attitudes towards grammar and grammar teaching and their preference of grammar teaching methods. DeKeyser (1995) conducted a study and reported that meaning based teaching that provided explicit grammar explanation was preferred. Male (2011) carried out a mixed study to investigate students' attitude towards grammar and grammar teaching and found that the students believed grammar was important in learning English and they preferred explicit grammar teaching. Scarcella (1996) stressed form-focused instruction and corrective feedback. Ebsworth and Schweers (1997) conducted a study and showed us that the teachers believed that grammar teaching helped the learners whose aim was to develop good academic and business English and achieve high accurate English. Schulz's (2001) comparative study between US and Columbia demonstrate that 80% of the US students believed that grammar learning was important for mastering English whereas 64% of the teachers believed so. While 76% of the Colombian students preferred grammar, only 30% of the teachers felt so. Moreover, the Colombian students preferred explicit grammar teaching more than the US students did. Wang (1999) carried out a study to find out students and teachers' attitudes towards grammar instruction in Taiwan and found that the students and the most of the teachers preferred the explicit grammar teaching method. A. V. Brown (2009) surveyed both teachers and students' perception of effective teacher practices and reported that students preferred a grammar based teaching while the teachers favoured communicative language teaching.

Ismail (2010) studied forty female ESP students from UAE University to investigate their perception on grammar learning using a questionnaire, classroom observation notes and semi-structured interviews. The results demonstrated that students believed that explicit grammar teaching was useful for learning grammar. Landolsi (2011) investigated students and teachers' perception on grammar teaching in UAE universities using questionnaire and interviews and discovered that the teachers believed that grammar was important for learners to learn English and the students viewed grammar teaching as essential in learning English. Al-Kalbani (2004)

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surveyed the perceptions of EFL school teachers and students from three different geographical regions in Oman and discovered that the students preferred explicit instruction whereas teachers preferred implicit instruction. Nagaratnam and Al-Mekhlafi (2012) examined pre-service teacher trainees' attitudes towards the grammar teaching method and found that they had positive attitude towards grammar teaching and preferred implicit grammar teaching. The available literature reveals that there is no study that has investigated the undergraduate learners' preference of grammar teaching method in EFL Oman context. Therefore, this study focuses on this missing gap in the literature.

The purpose of this qualitative study is to explore Omani EFL undergraduate students' preference of grammar teaching method and their reasons for their choice. This study will contribute to the literature related to English language teaching in general and grammar teaching in particular. The findings of this study will demonstrate that it is important to understand the learners' preference of grammar teaching so that the teachers will be able to choose the method that is appropriate to their learners.

#### **4. Methods**

This is a qualitative study because "the researcher collects open ended, emerging data with the primary intent of developing themes from the data" (Creswell, 2003, p.18) and "Qualitative research is empirical research where the data are not in the form of numbers" (Punch, 2009, p. 3). Qualitative research is naturalistic studying people, things and events in natural contexts.

##### **4.1. Context and Participants**

This study was done in Al Buraimi University College Oman, a private college, affiliated to California State University, Northridge-USA, and under the direct supervision of ministry of higher education Oman. The participants were 65 fifth and sixth semester English language major students from the Department of English. They were studying Communicative Grammar and also studied different grammar courses like Basic Grammar and Introduction to Modern Grammar.

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An open ended questionnaire was used to collect the data for this study since open-ended questions are asked to collect information “to be analyzed for its content” (J. D. Brown, 2009, p. 202) and people are asked to give their opinion, feeling and evaluation (Wellington, 2000).

The open ended questionnaire was analyzed thematically. Since the data was primarily “textual data”, it employed “interpretative analysis” (Croker, 2009, p. 5). Different levels of analysis were done by “moving deeper and deeper into understanding the, data and making an interpretation of the larger meaning of the data” (Creswell, 2003, p. 190). This study uses qualitative data analysis frame work given by Miles and Huberman (1994); therefore, the data went through these four stages: data reduction, data display, data conclusion and data verification.

## **5. Results and Discussion**

The open ended questionnaire was analyzed thematically to explore the students’ preference for grammar teaching method and the reasons for their preference. According to the survey analysis 48 students (72.85%) out of 65 preferred deductive grammar teaching method whereas 17 students (26.15%) were infavour of inductive method.

### **5.1. Reasons for Deductive Teaching**

The students preferred deductive grammar teaching method because it is easy for them to learn complex grammar and gives them confidence while practicing grammar. Since deductive method teaches grammar directly, it saves their time, helps the students to remember grammar rules and enable them to apply the learned rules in new situations. Furthermore, deductive method can be an effective method for learning new grammar items.

#### **5.1.1. Simplifies Complex Grammar**

According to the questionnaire since teachers teach grammar rules directly with appropriate examples illustrating difficult grammar and give the students give the students carefully and specifically designed practice for using the rules, deductive method simplifies

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complex and difficult grammar and removes the confusion associated with it. Since the students don't understand grammar from the examples, they need explicit teaching. The students who participated in the study mentioned:

“Method 1 is useful as well where there are a lot of difficult grammar that will get confused with it.”

“When the teacher demonstrates the rules of difficult grammar to their students and then gives activity... they will understand the rules very well.”

“Some of students can't understand difficult rules by the examples only.”

### **5.1.2. Easy to Comprehend**

The students who preferred deductive method believe that the teachers' direct explanation and their examples illustrating the rules make grammar easy for them to understand clearly. Furthermore, since the rules are given directly, the students don't have to struggle to find them out from the examples. In the open-ended questionnaire the students wrote:

“It will be more easy for students to understand grammar rules rather than method 2. It is more clear.”

“The first method because this method can make me understanding the rules in correct way so the rules will be very clear in my mind and very easy when I want to study for the exam.”

“Also each rule which holding by examples or supporting sentences they become very clear.”

### **5.1.3. Effective Method in Teaching New Grammar Items**

Deductive method is very effective and successful for learning new grammar rules because teachers teach them systematically by providing complete background of the rules. Moreover, the prior knowledge of grammar rules will make learning new grammar items easier

as the students can follow the rules systematically and the teachers can clear the students' doubts while practice using new grammar items. The participants commented:

“This method is so effective especially when we learn new grammar rules.”

“Also the better teach grammar rules for students because he gives background about new rules.”

“Method 1 is the best because student would be able to ask if they have any doubt in understanding... it's easy to have a rule and follow it in learning something new.”

#### **5.1.4. Minimise Mistakes and Confusion**

The students believe that direct grammar teaching reduces the students' mistakes and removes their confusion because the students know what is correct and what is not correct. The students can identify their own mistakes and the teachers can correct the students' errors whenever they make. On the contrary, the students may go wrong while discovering rules from the given examples; furthermore, the wrong rules will remain with them for ever. The students viewed:

“There will be a rule to follow and discover the mistakes.”

“This method helps students from making errors or to avoid errors.”

“First he will give us a correct way to know the rules of grammar and then we try to do practice...the teacher try to explain what wrong with them if we do it in wrong way.”

“When I start with example may be I make mistake to figure out the rule, so the first understanding will stay in my mind all the time even if the teacher explain it later. That is mean I will keep the wrong understanding in my mind.”

“I like the direct one because I think if the teacher gives examples first then discover the rules that make the students confused.”

#### **5.1.5. Gives Confidence and Motivates Students**

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The participants think that deductive grammar teaching method makes them confident since they know the rules and what they are supposed to do during practice. Prior grammar knowledge enhances the students' motivation as they can try applying the learned items. In the questionnaire the participants expressed:

"I prefer method 1 because first we need to know everything about the rules in order to be confident."

"When I understand rules first I have confidence."

"We feel motivation to study a lot of rules and give a lot of examples."

#### **5.1.6. Typical Method in Grammar Teaching**

The students consider deductive method as the typical grammar teaching method because it follows the natural order of learning i.e. knowledge before practice. Rules first will enhance the students' understanding the examples well and will give them better practice.

"Because we should to understand the rule in the first, after that we learn the examples."

"In my opinion, practicing after full understanding is good way to make sure that your students understand the rule."

#### **5.1.7. Saves Time**

Deductive teaching saves both the teachers and the students' time as it doesn't require much time for teacher preparation and the students don't have to trouble discovering rules from the given examples. One of the students wrote "In this way we can understand the rules in a few time." Another student wrote "I like method 1 because when the teacher explains grammar rules first, it makes the students understand early and he or she saves time."

#### **5.1.8. Easy to Remember**

The students can easily remember and recollect directly taught grammar rules and even the examples illustrating those rules. The students viewed:

“Method 1 because that is easy to me to remember the rule and apply them to new example.”

“I prefer the first method. This method makes me memorize the rule clearly and understand it well.”

“Also the rule will help us to give any example about the rule and to keep that example in our mind.”

#### **5.1.9. Provides Better Practice**

Understanding grammar rules and the examples illustrating those rules before practicing grammar makes the practice easier and useful as they know what to do and it removes the students’ confusion during the practice. The students who participated in the survey wrote:

“If we understand the rule we can deal with the example without any confuse.”

“Because I understand the rules, I can solve the practice.”

“Then, after getting the lesson I know what I am supposed to do with examples.”

“Since I know what I have to do, it helps me to understand the practice well.”

“I like to understand first then I test my understanding by doing practice.”

#### **5.1.10. Applicable in New Context**

They prefer deductive grammar teaching method because it helps them to apply the learned grammar rules in new and real life communicative contexts. They can use the learned rules to construct their own sentences. Furthermore, the deductive grammar teaching method can improve their receptive and productive language skills as well. To demonstrate this, some of the students mentioned:

“I understand the practice and have the ability to give examples.”

“After understand the rules, I can give examples myself.”

“Method 1 the student will memorize it and will apply it in his life.”

“I can apply in my life through the communication.”

“Having the examples after understanding the rule is better in remember it later and use it our lives.”

“And that helps the student when they speaking.”

“In addition, the comprehension skills will be good.”

#### **5.1.11. Reasons for Inductive Teaching**

According to the questionnaire, 17 students preferred inductive teaching method because it helps them to understand grammar well, promotes critical thinking skill and independent learning, develop long term memory and encourages active learning

#### **5.1.12. Provides Better Understanding**

The students who preferred inductive grammar teaching method believe that they understand and learn grammar better by discovering rules. Inductive grammar teaching improves students' grammar knowledge considerably since it is the result of the students' own personal effort. The students stated:

“I like the second method, because for me it's more clear and help me to understand the rule... Starting with examples is more better than starting with given rule first.”

“Method 2 because when we discover something that will be more useful which mean we can understand it easily than give us the lesson directly.”

#### **5.1.13. Promotes Critical Thinking Skill and Independent Learning**

According to the students, inductive grammar teaching forces them to think and discover rules from the given examples. As a result, it promotes critical thinking and independent learning. Furthermore, the learners can identify their mistakes when the teacher explains later

and even they can evaluate their own skill in using grammar. For example, the students explained:

“Method 2 is more effective which make students think and discover.”

“I prefer the second method because students will use their mind to draw and know true rule of grammar.”

“Useful for their mind. Make them think.”

“Also it gives the chance for the students to evaluate his/ her ability in grammar rules.”

“The students depend on themselves. They can know their mistakes after the teacher explains the rules for them at the end.”

#### **5.1.14. Develops Active Learning**

The students believe that inductive teaching involves and engages them in the process of learning grammar. In other words, inductive teaching encourages active learning since it ensures students' active participation in the process of grammar learning. For instance, one of the students wrote “Method 2 because this method is good... to them do practice also participation.”

#### **5.1.15. Enhances Students' Concentration**

The students believe that inductive method enhances students' concentration as it forces them to focus on examples to infer rules. According to one student, “Also, students will be able to focus on understanding the examples and this will help them in constructing the rules.” Another student wrote “Make students focus on the material.”

#### **5.1.16. Better Memory Retention**

The students believe that inductive method helps them to retain the learned grammar longer. Since they discover rules, they will not forget them easily. Some of the participants wrote:

“Because it helps students to remember the rules and after they figure it out through studying the examples, they will not forget easily.”

“It helps to stick the rule in my mind.”

“For me I like to teach me by using method to remember the lesson always.”

“Because when I work out to find the rule, I will never forget the structure of the rules. Moreover, I work hard to find out these rules, so it will stick in my mind forever.”

This study demonstrates that most of the students preferred deductive grammar teaching method. The findings of this study go with the findings of some previous studies and confirm the views of some scholars. First of all it goes with Van Patten and Borst (2012) who argue that explicit prior knowledge of rules help learners to process the input accurately and much faster than if the learners are not given explicit knowledge of grammar. Secondly it matches with H. D. Brown (2001) who claims that learners need rules to start with. Thirdly it confirms that deductive approach may be more appropriate with the learners who have limited time and knowledge (Szkolne (2005). Fourth, this study is parallel to Krashen’s (2002) claim that deductive method stresses error corrections and presenting rules explicitly. Fifth, the study agrees that inductive method develops critical thinking and promotes independent learning as it gets the learners to discover rules (Shaffer1989). Sixth, the study confirms Herron and Tomasello’s (1992) conclusion that inductive method makes learners active. Seventh, this study agrees with Brendse (2012) who view that inductive method leads to achieve greater learning outcome and wastes students’ time. Lastly, it confirms Szkolne’s (2005) view that learners may arrive at wrong conclusion through self-discovery.

## **6. Conclusion**

According to deductive approach learners should learn grammar rules prior to examples and practice the rules whereas inductive method asks the learners to study specific examples to identify general rules form them. The teachers use either deductive or inductive grammar teaching method to teach grammar. This qualitative study attempted to investigate Omani EFL undergraduate students’ preference of grammar teaching method. The open ended survey

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questionnaire result indicates that the majority of the students prefer deductive approach because it is useful to teach them complex grammar, effective grammar teaching method for teaching new grammar rules, gives confidence to students and motivates them. The students can learn grammar easily; they can memorize the rules easily and apply the learned rules and structures in new situations. Furthermore; deductive method gives the students better practice and saves their time. Those who preferred inductive method believe that inductive teaching promotes independent learning, develop learners' critical thinking, helps the students to remember grammar for long time and makes them active learner.

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## Appendix

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## **Survey Questionnaire**

## Instruction

**Read the two extracts about two different grammar teaching method and then choose the method that you like by giving your reason for your choice.**

## Method1

First the teacher explains grammar rules to you, and then he gives practice. After understanding the rules, you apply them in the new examples.

## Method2

First the teacher gives examples that contain grammar rules. Then you study these examples and discover the rules from them.

Which grammar teaching method do you prefer? Why?

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## **81 Cents for a Dollar**

### **Anna Bunce**

#### **Women in the Workforce**

Although women do the same jobs as men, women are not treated the same as men in the workforce because of unequal pay, lack of leadership positions and family responsibilities; therefore, women need to be paid more in the workforce. It appears that many more women in the United States of America graduate from college than men. Women take time off to take care of their families. Some companies use this against them. Women make 81 cents to the dollar. It is better than it was 20 years ago but more work needs to be done.

#### **Gender Equality**

Today, more American women than men graduate from college, yet current statistics show that the gender pay gap is greatest at the top income levels (Lee and Wagner 2). Gender equality is generally the promotion of rights and equal consideration for all genders (Rich and Walker 1). Most of the time it is to encourage women's rights in male-dominated cultures. Writers say that many of the religions believe women are less than men (Rich and Walker 2).

In the USA, only white men could vote for many years. New Jersey was the first state to give voting rights to women (Rich and Walker 3). Twenty-one women serve in the United States Senate ("Women in the U.S. Senate 2017" 1). The country of Saudi Arabia was one of the last to give women the right to vote. King Abdullah announced in 2011 that women would be able to vote in 2015. It is interesting that women are not allowed to vote in the Vatican City (Rich and Walker 4). This doesn't make sense as Vatican City is in Europe but maybe different because of religion. Women will have less wealth, fewer resources for retirement and women are likely to take time out of the workforce to do caregiving because they earn less than males (Vasel 1). A lot of women work in the USA now but only some women in a male-dominated field. Sixty-five million women in the labor force and 53% of women were concentrated in education,

trade and government ("Gender Inequality and Women in the US the Labor Force" 1). Although women do the same jobs as men, women are not treated the same as men in the workforce because of unequal pay, lack of leadership positions and family responsibilities; therefore, women need to be paid more in the workforce.

### **Not Gender Discrimination That Women Earn Less Than Men**

It is not gender discrimination that women earn less than men (Finley and Jacobs 1). Finley and Jacobs think that women are not committed to companies. They take breaks from work. Women earn less than men but women can do the same things men can do and should be paid equally. There is evidence to suggest the gender-wage gap is closing. Women receive 77.8 percent of what men receive in median annual earnings (Finley and Jacobs 3). Women whose skills and experience are closely matched to those of their male counterparts see a wage disparity of less than 10 percent (Finley and Jacobs 1). There is no reason for less pay by almost 10 percent. This means that women save less for the future.

### **Pay Gap Is Growing Faster**

Statics show that the gender "pay gap" is actually growing fastest among the better-educated workers. An example is women with college educations (Finley and Jacobs 2). This is not great as men and women pay the same amount to go to college and then they make less when they start working. Companies value the willingness of an employee to set aside his or her personal life in order to work long hours. Given the value of experience, for example, it is in a company's interest to cultivate workers who are able and willing to put the company's interests ahead of their personal interests (Finley and Jacobs 2).

### **Company's Approach**

So, a single woman who never takes time off for family reasons make more money. Women are more likely to work part-time and almost 85 percent of women who did so in 2000 cited non-economic reasons. Among part-time workers who never married, women actually earn slightly more than men (Finley and Jacobs 3). Companies use these types of values against

women. Taking time off for family means less money for women. Most women still earn only a portion of what men are paid for the same jobs (Lee and Wagner 1).

### **Department of Labor Statistics**

According to statistics from the US Department of labor, women are getting paid about 81 cents for every \$1 earned by men. Admittedly, this is an improvement over 65 percent ration prevalent in 1975, but a gap that steadily narrowed during the period 1975-1990 appears to have become stuck and by measures, has actually started increasing in the decade between the mid-1990s and today (Lee and Wagner 2). That is not great that the US has been walking on this since 1975 and it hasn't caught up completely. It is not right to think women make 19 cents per dollar in the 2000's.

A recent study found that the US ranks 27th among the world's developed countries in terms of women's economic achievement. The study found that while the US is number one in education of women, with more females receiving college degrees than other nations, women still lag far behind when it comes to jobs, particularly jobs in government (Lee and Wagner 2). Are American women not interested in working in government jobs or are they not getting government jobs? This needs to be looked at in the future.

### **Median Monthly Salary**

Women working full time earn a median monthly salary of \$2,665 compared to the \$3,289 earned by men. That's a difference of \$624 a month or \$7,488 a year (Lee and Wagner 2). This amount of money adds up to over 20 years. This is a lot of difference in money. Women make up a smaller percentage of corporate America at every single level than men (Scotti 1). Women are just as likely to request a raise as their male colleagues and that they do so more often than men at the senior level. But women are still 18% less likely to get a promotion. They're less likely to get advice from their managers and are less likely to interact with them, too (Scotti 3). These facts do not sound like much has changed for women in America. Why don't these women get promoted? Women lose around \$10,470 a year and that means she has to stay ten years longer than a man who makes the same (Vasel 2). A single mom's family will have less

money than a single dad's family. This affects the future of the children and the children will be able to go to college and make more money.

### **Not Many Female Company CEOs**

The US has never had a female vice president or president. The US has a few supreme court justices and some cabinet ministers. Women make up only 20% of C-suite executive positions (jobs that have "chief" in the title), 29% are vice presidents, just 37% of women are managers and less than half make up entry-level positions with 47% (Scotti 1). The numbers of women at each tier of corporate America are nearly unchanged from 2016 and have only inched up slightly from 2015 when women accounted for 17% of C-suite jobs (Scotti 2). It isn't because there aren't talented women. Women may not be given promotions in some companies. There may be a bias against women in powerful positions. The percentage of women running companies in the Fortune 500 is still solidly in the single digits. Fortune Magazine released its 2017 Fortune 500 list, which ranks major U.S companies by their fiscal 2016 revenues and 32 of the companies or 6.4 percent, were run by female CEOs (McGregor 1).The median female CEO made \$13.1 million in 2016 compared with \$11.4 million for the median male CEO (McGregor 2). These numbers are interesting. In 1972, the first-ever female CEO in a Fortune 500 company was Katharine Graham. Graham frequently found herself to be the only women in a male-dominated room. In 1999, first woman CEO to lead a company in the Dow Jones industrial average was Carly Fiorina. She was a former Republican presidential candidate and Ted Cruz's former running mate (Carpenter 3).In 2009, the first-ever woman to woman CEO succession was Anne Mulcahey. Anne left her position as Xerox CEO and Ursula Burns another woman stepped into the C-suite (Carpenter 4). In 2009, the First-ever African-American CEO was Ursula Burns. She was a one-time Xerox intern who rose to the highest position in the company (Carpenter 5).In 2014, first female CEO at a big automaker was Mary Barra. She became CEO of general motors and became the first-ever women to lead an automaker. This is a huge milestone in the history of the male-dominated industry (Carpenter 6).

It is good to have examples of women CEO's but it is still interesting that there are only a few. The Women who was interviewed by this writer was Sue Bentley. Ms. Bentley is the

Director of Human Resources. Ms. Bentley is coordinating all employment at North Central University. She does the onboarding and offboarding and employee well-being of the employees. Ms. Bentley has been in the business world for 20 years and has two children. Bentley said “I have never taken time off for my children. My parents live at home and they raised my children for me.” Ms. Bentley is a 1 1/2 generation refugee and was born in Cambodia. Bentley said “there are about 70% female and 30% male in my field. I don’t see that there is inequality between men and women in my job” (Sue Bentley 1 November 2017). Ms. Bentley maybe has benefitted because she was seen as committed to her work. Maybe just focusing on work helped her pay. In addition, Asian family system and customs have helped her a lot, in her career.

## **Women and Family**

Many women are raised to think of their family first. Women tend to sacrifice for their family and children. Women may be less inclined to put their jobs ahead of their family. Men are more inclined to make sacrifices in order to assure job security and to earn more money (Finley and Jacobs 2). There are some men who stay at home to take care of children. Majority of women tend to fill the caregiver role. Research has documented that working mothers are nearly twice as likely to take time off to care for children as are working fathers in dual-earner families. Women with college degrees are more likely to give up their job in order to raise a family in the first decade of the 21st century than were women in the 1990s (Finley and Jacobs 2). Many women work part-time and give up promotions. The US Labor Department has collected figures showing that the number of women who stay home with young children has begun rising and that this trend is greatest among educated mothers who might otherwise be expected to be earning the highest salaries. Women elected to work part-time and in many cases, chose to do so because they wanted to spend more time with family (Finley and Jacobs 2). Maybe some of this is because they want to focus on family for a few years and can make that choice.

## **Individual Lifestyle**

The differences between male and female workers comes down to individual lifestyle preferences when women put children before their careers (Lee and Wagner 3). The companies want committed workers and don’t reward women for focusing on families. Companies say it’s

the women who decides to take a break and lose money and promotions. America has the highest number of women going to college. Some gender pay gap differences have improved. The gender pay gap is much larger among Africans and Hispanic women (Vasel 1). Statistics showing that women earn less than men in the “same” jobs are commonly used to suggest gender discrimination (Finley and Jacobs 1). Women of color pay for double discrimination, overall, “are stalling because we have age-old stereotypes about women and men” (Scotti 2). Women of color will struggle to go to college and also struggle after college to make enough money. There have been cases where people sued the company because they got promotions without a pay increase. It is hard to get higher up people in companies to tell the truth about pay differences. The recent Supreme Court ruling Ledbetter v. Goodyear makes it virtually impossible for employees who face discrimination based on sex, race, ethnicity, religion, disability and age to take action against their employers of the claims are based on decisions made by the employer 180 days ago or more (Lee and Wagner 2). Employers can now discriminate and not be afraid of being sued. This may not be good for women as they work on improving the gender pay gap. Some people may say that 81 cents for one dollar is good enough but women should not be punished for taking time off to raise children. If women are doing good work, they should be paid the same as men.

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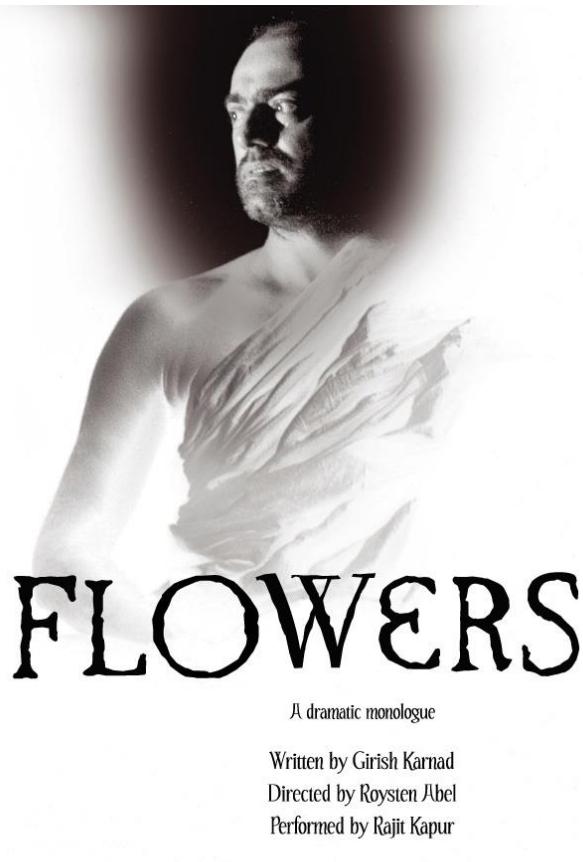
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## **Karnad's Two Monologues: An Analysis of *Flowers* and *Broken Images***

**Dr. Mohammad Yusuf Ansari, M.A. English, Ph.D.**

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Courtesy: <http://www.ragetheatre.co.in/production/flowers/>

### **Karnad Explores the Genre of Monologue**

After presenting an array of characters on stage and dealing with a variety of themes, Karnad explores the genre of monologue which is more challenging as, when staged, only a single character has to hold the attention of the audience for a defined period of time. Given that

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just one actor participates in the narrative, monologues can be placed in the category of a ‘monodrama’. In both the monologues, *Flowers* and *Broken Images* (2004) the character lays bare his or her soul through a series of events coupled with flowing speech.

### ***Flowers***

In *Flowers*, Karnad deals with the philosophy of religion and tries to answer questions pertaining to God, justice and mercy. The old questions are cast in contemporary modes as the protagonist discovers flaws in ancient wisdom and raises new debates regarding faith. He also explores the conflicts of love and lust, idealization and profanity, power and morality. Issues like women’s position in society, gender roles, social and family structures, religious and princely hierarchies are also discussed.

The plot revolves around a married priest who dutifully worships the *linga*, but stumbles when he falls madly in love with a courtesan. The monologue is based on a folktale from the Chitradurga region in Karnataka, which was used by the Kannada writer T.R. Subbanna in his 1952 novel *Hamasageethe* (*Swan Song*). Subbanna’s protagonist is a temple priest who falls in love with a courtesan. Unable to control his desire, he visits her every evening with the prayer offerings. This continues till the village chieftain discovers a strand of hair in the *prasada*.

The priest, Veeranna, lies that the hair belongs to the god and accepts the chieftain’s challenge to prove his claim. After a day’s meditation, Veeranna is surprised to find the *shivalinga* with long hair. The *linga* starts bleeding when he breaks a strand to check whether the hair is real. Filled with guilt, Veeranna beheads himself as an act of retribution. Like Veeranna, the priest in the play finds himself in a dilemma when the god forgives his immoral act. After the whole village witnesses “waves and waves of jet black hair” (258) sprouting out of the *linga*, he is made the state saint, “to be prized, protected and shown off to visiting envoys” (259). Unable to understand the way his god governs right and wrong, he commits suicide.

The monologue is meditative as well as expansive. Unable to come terms with his new-found sainthood, the priest wants to die. Well-versed in astrology, he predicts his own impending death:

In a few moments from now, Scorpio will start creeping into the water from the south-eastern corner of the temple tank. There is a hollow there in the third step under the water, large enough to hold an unhusked coconut. And I know that on this day of the year at this precise moment – and I can tell the precise moment because Scorpio is stretched out in the eastern sky in all his magnificent glory with the lowest point of his curving tail just about to take off from the horizon – at this precise moment his reflection will enter the water at the exact point under which the hollow lies. (243)

### **Look Beyond His Own Life, Into Infinity**

So immense is his knowledge that he can look beyond his own life, into infinity: “And looking up at the constellation from this top step of the tank, even with my back to the temple, I could tell you what star is perched on the brass tip of its pinnacle. For I know every nook and cranny in these grounds. I know where every star will be as the skies revolve through the year” (243). The action of the play takes place in his mind and descends before the audience through memories, predictions, associative thinking, dilemmas, anxieties, regrets and fear psychosis. His recapitulation embodies the universal experience of sin and retribution. Whereas an ordinary man would have reveled in the sainthood, the priest thinks of it as a burden. The values of loyalty, commitment and morality do not lose their validity even though he searches all realms of knowledge and he prepares for the final penance:

Scorpio has crawled out of the recess in the third step under water. His reflection is floating towards me. The hollow is empty. As a boy I used to shove my head into the hollow to test how long I could hold my breath. I shall do so again now, but not to test my lungs. I shall seek in the narrow confines of that hollow the answers that God has denied me. (260)

In Hinduism, the *linga* is a symbol of Lord Shiva and is believed to represent the male generative power. There have been debates on the origin of the *linga*. According to one of the myths, when Shiva tore off his *linga* it “extended deeper into the cosmic waters than Vishnu could dive and higher into the cosmos than Brahma could soar” (Williams 200). In *Flowers* the priest treats the *linga* as an independent living entity, “talking to it, singing to it, even discussing recent political developments, and most of all decorating it with flowers” (243-44). The chieftain admires the priest’s skill of inventing new ways of adorning the *linga* every day, and he is well-known in the village for his devotion to the job. He explains the rituals that are performed on a daily basis:

I have a dip in the tank and, and in the wet *dhoti*, sit down in the sanctum surrounded by baskets of flowers. Everything else then recedes into hazy, scarcely-felt distance and for an hour there is only the *linga* and me. And the conversation conducted through flowers – *malligai*, *sevanti*, *chenduhoovu*, *sampigai* and *kanakambara*. (244)

### **Significance of Flowers**

Flowers form an important part of Hindu worship. Daily, fresh and specific flowers are offered to a Hindu deity as it is seen as an act to acquire the deity’s blessings and to ward off negative energies. For the priest this is more than a job. The experience is euphoric and rather surreal. The giant lingam, the heavy fragrance of the flowers and the incense conjure a picture of romance that is completed with the entry of the courtesan, Ranganayaki. Courtesans have a long history in Indian culture. They were independent women who entertained kings and aristocrats and in return they enjoyed royal patronage. Though educated and skilled in various arts, such as singing and dancing, courtesans were looked down upon and were considered outcasts. Lata Singh writes that “a courtesan has accumulated over time moralistic, value loaded connotations; in the popular mindset it was equated to a whore, forcing these women performers into silence” (1677).

After falling in love with Ranganayaki at first sight, the priest on her request decides to show his skills on her bare body which becomes a daily practice just like the *pooja* rituals. For the priest it was an all-new experience as he found her body offering “a whole new world of patterns” (250), something which the *linga* lacked. He says:

I pitied it, felt exasperated at its unimaginative contours. Why did its shape have to be so bland and unindented that one had to balance garlands precariously on it and improvise superfluous knots to hide some ungainly strings? Why didn’t the Lord offer a form which inflamed invention like Ranga did? (250)

Through this statement Karnad compares the male and female forms. The deity represents the male form which the priest found “bland” as compared to Ranga’s well-kept body with which he plays lustfully.

Adorning the naked body with garlands becomes akin to lovemaking as both take pleasure in the act. Through Ranganayki the priest satisfies his sexual needs, something he is not able to do when at home with his wife: “On the days I wanted her, I would give her a look she had come to recognize and late at night when everyone was fast asleep, she would crawl up to my room for a furtive scuffle in bed which demanded minimum of uncovering” (248). The priest’s wife is aware of the affair, but she does not complain even once and quietly continues to serve him:

She never ate before me. As soon as she heard me splashing in the tank, she would start heating up the food. While I ate, she stood rigid by the door, lanky and impassive, concerned but still. She never once asked me about Ranganayaki. . . But I was distressed at the pain I was causing my wife. I loved her. I knew I had made her a target of vicious gossip. . . . Communication in the house was reduced to fragments and we stopped even looking at each other. But there was nothing I could do. (251)

## **Portraits of Stereotypes**

By portraying stereotypes, Karnad once again comments on the position of women in the Indian society. On the one hand is the priest's wife who endures everything silently, and on the other is Ranganayaki who is merely an object of pleasure for men. Unlike the queen in *Bali* (1980) or Padmini in *Hayavadana* (1971), his wife suppresses her desires and performs the duties that are expected of her. Through the love triangle of the priest, his wife and the courtesan, Karnad comments on the patriarchal perspectives on marriage and love liaisons. The priest's wife is voiceless, constant and supportive. That she can leave her husband does not occur to her, as according to Hindu custom a wife leaves her husband's house only when he dies. Marriage is an eternal commitment. The courtesan, however, is not under any such bondage. Her presence, unlike the wife's, is not valued. She is allowed, by the dramatist, to disappear. The only moment of intimacy between the priest and his wife is seen when they wait for the chieftain in the temple. After a long wait he performs the *pooja* and gives a flower to his wife:

The formality was over. I put a flower in my wife's outstretched hand. As she straightened to tuck it in the knot of her hair, she looked directly into my eyes. And held the look. My wife and I were there, just the two of us, alone, as we could never be at home. At a time and in a place where nobody could possibly surprise us. And for once, her infinite self-control had slipped and she was baring her desire as brazenly as though she had let her *pallu* drop from her bosom to expose her blouse and let it hang unretrieved. . . . I could feel my insides reaching out to her and was taken aback that I had forgotten that I could want her. The *linga* sat there looking at us and I snarled silently at it, 'Isn't it funny? I am going to defile your sanctum and it has to be with my lawful wife, for Ranganayaki would never be allowed to step in here. (253-54)

## **Marginalisation**

Karnad comments on the marginalisation of courtesans. Considered to be morally degraded, they are not even allowed to enter a religious shrine. The priest makes it clear that had he the authority he would have made love to Ranganayaki inside the temple. He prefers to be in

her company and like the everyday *pooja* he performs, he sees his visits as a ritual. Ranganayki offers a sharp contrast to the priest's wife whose body has been damaged by child bearing and domestic labour. This is the reason he chooses to be with Ranga instead. His relationship with Ranganayaki comes to an end when the chieftain discovers her hair in a flower. Life comes full circle when he returns with the same flowers to its rightful place, the *linga*. Here he flouts the rule of offering fresh flowers to the deity and ends up using "the leavings, polluted discards" (256). Asked to prove that "God had long hair" (256) the priest goes into isolation for twelve days and prays as an act of penance. The priest's twelve-day penance reaps rewards in the form of a *linga* with long hair. Hair is a central metaphor in the play. Ranga's hair defiles the *prasada*, the priest offers his wife a flower for her hair when they sit together in the inner sanctum and the *linga* sprouts rich, lustrous hair that bleeds when plucked. The same hair earns rewards and distinctions for the priest. However, he is unable to understand why god was so benign especially when he had committed a sin. He sees god's mercy as a burden, a miracle which was beyond his understanding:

. . . I am guilty of gross dereliction, of sacrilege. . . Why then should God cast His vote on my behalf? . . . Has God the right to mock justice in favour of love for Him? Or does he have a different logic? . . . Such Grace is condescension even it comes from God. Why am I worthy of this burden He has placed on my shoulders? I refuse to bear it. God must understand I simply cannot live on His terms. (260)

### **Distancing from Beliefs**

With the above ironic statement the priest distances himself from his religious beliefs and practices and condemns the rule of rising over bodily desires. Like other men who came in Ranganayaki's life, the priest too leaves her and fails to give her an identity and place in society. She is remembered merely as a courtesan when she leaves the village. Her final image is reflective of her helpless state:

The tranquility of the night was shattered by the canon. . . . Frantic, I started pulling out the flowers from her hair and piling them on my shoulder cloth. She sat up, groggy and dazed, yelping in pain as I snatched at the flowers. . . . As I turned back to push the main door shut, I saw Ranganayaki, naked and on all fours, staring out stupefied, shivering. (255-56)

Karnad uses the disappearance of Ranga to restore normalcy. With her powers she metamorphoses into the *linga* and saves the priest from disgrace. His promotion is a tongue-in-cheek comment on how saints are made. He, however, is overwhelmed by her intelligence and his wife's power of love and commits suicide. The suicide is unexpected and rattles the reader. He sees the title of sainthood as a punishment rather than an honour, for it would keep reminding him of his transgression. He is aware that it would be impossible for him to take the same path as he did before meeting Ranganayaki. Ranganayaki's entry severs the priest's ties with his god and his free will comes into play. Divine intervention only makes matters worse for him. Unable to bear the burden of his dwindling faith and the betrayal of his wife's trust, he chooses to end his life in the very hollow in which he played as a child.

### **Portrayed from Male Perspective**

Women in the monologue are portrayed from a male perspective. The two women are radically different from each other. The priest's wife is a submissive, nameless woman who performs the roles designated to her. She is engaged in housework all the time. She even seems to treat conjugal relations with her husband as a chore. The priest observes: "I had never seen a woman completely naked. At home, we all bathed in the open, in the corner formed by the neem and the banyan trees in our backyard, so my wife covered herself with a sari even when she bathed" (248). He even goes further to say: "The problem, however is more basic. My wife would have died of shame than be seen naked, even by herself" (249). Ranganayaki, on the other hand, is comfortable with nudity. In her company he sheds all inhibitions and worships her like a goddess. In spite of his close association, the priest refused to eat in Ranganayaki's house. He was a Brahmin and would consume only the food cooked and served by his wife. Karnad

highlights the hypocritical attitude: “I would return home quite late, ravenous. Ranganayaki had given up teasing me about consuming her body but not the food in her house” (251)

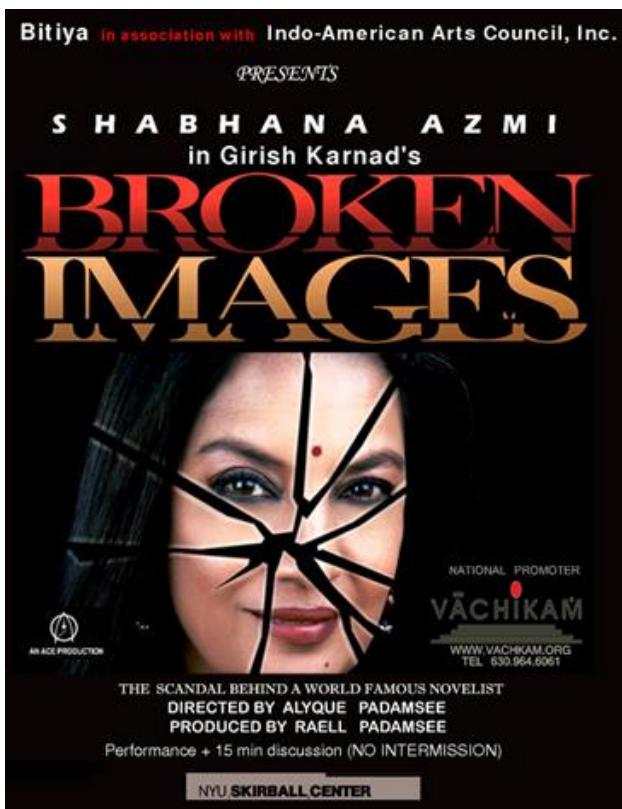
A certain evolution takes place in the personality of the wife in the course of the play. She not only takes the initiative in love-making when she is alone with her husband in the inner sanctum, but she also exercises her rights. When the priest is mobbed by believers after the miracle takes place, she rescues him: “No one, not even the Chieftain, questioned her authority. I fell into deep sleep and woke up refreshed. It was almost midnight, my usual hour for the evening meal. She served me food and supervised the proceedings, as usual, leaning on the door” (259). In two simple sentences, she declares her victory: “She is gone. She and her woman left town the very next day” (259),

### **Ironic Variation of Whore-Madonna Syndrome**

Aparna Bhargava Dharwadkar opines that the play offers an “ironic variation” of the ‘whore-madonna syndrome’ for “the priest’s voice has an endearing innocence and honesty rather than an alienating arrogance” (xxxiii). According to the whore-madonna complex a man would refrain from having sexual relations with his wife for he sees her as a caring and saintly figure. To fulfill his sexual needs he would turn to a woman who has fallen in the eyes of society; an impure, tainted woman. According to Sigmund Freud, a man who has a cold, dysfunctional relationship with his mother develops this condition. The priest sees his wife as a mother-figure and would consider the act of lovemaking incestuous. Indeed the priest reveals the existential angst that he goes through after his illicit affair. He not only loves the *linga* which he had known and worshipped since childhood, but also his wife and the courtesan.

Girish Karnad uses myth to deconstruct manmade institutions like priesthood and kinship as power centres. Once again the hollowness is exposed like in *Naga Mandala* (1988), *The Fire and the Rain* (1994) and *Talé-Danya* (1990). Through *Flowers* he shows that sin and retribution are defined by priests to their own advantage. The monologue also shows how man’s sudden awareness of his own vulnerability brings despair.

## *Broken Images*



*Broken Images*, which Karnad also directed, deals with the dominance of the English language in the field of Indian writing. It provides a caustic comment on the response a writer gets from the media for using the coloniser's language. It was Shashi Deshpande's comments that inspired Karnad to write the play. She pointed out that "Indian writers in English who are published in India get a step-motherly treatment compared to those published on foreign shores" (John). Works of great worth published in Indian languages languished until translated into English. The deliberate marginalisation of vernacular literature during the colonial period impacted Indian literary heritage. Thus the monologue explores the ethics of originality which has been a major debate in the literary world since the Romantic period. The protagonist's novel, *The River Has No Memories*, is looked upon as a betrayal in certain quarters:

Actually let me confess. If I had foreseen how many people I would upset by writing in English – I really would not have committed that folly. Intellectuals

whom I respected, writers who were gurus to me, friends who I thought would pat me on my back and share my delight – they are all suddenly breathing fire. How dare I write in English and betray Kannada! (263)

### **Technology and Language Debate**

With just a single character Karnad juxtaposes twenty first century technology with the language debate that has been raging for years. Karnad makes Manjula Nayak his mouthpiece and defends Indo-Anglian Literature for using English to reach out to a wider audience. Her debut novel in English has taken the literary world by storm. She has been invited by a broadcasting studio to share her success story. She walks onto the stage wearing a lapel mike, surrounded by television sets:

Ah! I see. New Technology. Isn't it scary? The rate of obsolescence? (*Listens.*) Of course I have. In London. And in Toronto. But when you think of Indian television studios, you always imagine them cluttered. Lots of men and women scurrying about, shouting orders. Elephantine lights. Headphones. Cameras. You know what I mean. But here . . . I mean, it's all so spartan. . . . All right. . . . No camera. I just look ahead and speak to an invisible audience in front of me . . . Direct. Fine... (261-62).

### **New Panopticon**

The very setting is reminiscent of Michael Foucault's interpretation of a 'Panopticon'; a building where each and every movement of an individual is watched. Similarly, the media has become the new Panopticon; the 'all seeing' eye to which Manjula falls prey. She reveals her repressed desires and fears to her own image on the giant screen. What was supposed to be just an interview turns out to be a dissection of a character who steals her physically challenged sister's novel and identity and presents it to the world as her own. She weaves a brilliant story, full of lies and deceit, about how she was affected by her sister's failing health:

Truly the book is about her. I have dedicated it to her memory. She died last year just a few months before the book came out. I have tried to relive what I learnt about her emotional life as I nursed her – tended to her – watched helplessly as she floated into death. I miss her. I miss my beautiful, gentle sister. (265-66)

Manjula is not the real author, but she tackles questions with ease. Being a Kannada writer she hits back at the people who criticized her for writing in English: “My British publishers said to me: ‘We like your book because it’s so Indian. We receive any number of manuscripts from India but they were all written with the western reader in view. Your novel has the genuine Indian feel!’” (264). She further explains that there is nothing wrong in writing in English for making money and considers it a “good enough reason” (264). At the same time she points out that writing in Kannada is not so profitable. This way Karnad defends those writers who write in English including himself. Though he has written most of his plays in Kannada, as a writer he is aware of the fact that he scaled greater heights through his translations. He translated most of his plays into English and at the same time preserved the Indian flavor. Raja Rao, one of the founding fathers of the Indian novel, also defends writing in English as long as it suits the Indian conditions:

English is not really an alien language to us. It is the language of our intellectual make-up – like Sanskrit or Persian was before – but not of our emotional make-up. We are all instinctively bilingual, many of us in our own language and in English. We cannot write like the English. We should not. We can only write as Indians. . . . Our method of expression. . . will someday prove to be as distinctive and colourful as the Irish or the American. Time alone will justify it. (*Kanthapura* 5)

Today, English has come a long way from being just a weapon used by the white man to subjugate the colonised. The presence of English on the cultural stage has been beneficial as in a way it has helped to preserve the linguistic diversity of the national fabric. Ramanujam Meghanathan observes: “English knowingly or unknowingly has played an instrumental role in

maintaining the diversity of India's language scene because the existence of English has meant that it is not necessary to select any one Indian language as a national language" (83). However, African writer Ngugi wa Thiong'o, condemns the use of English and sees it as committing "Languicide". In *Decolonising the Mind* he bid farewell to English and started writing in his native Gikuyu language, thus "resurrecting the African soul from centuries of slavery and colonialism that left it spiritually empty, economically disenfranchised and politically marginalised" (Warah). Like Ngugi, many writers see English as a danger to their native tongue and believe in holding on to their roots through their mode of expression.

### **Complex Relations between Sisters**

Malini's novel, which "burst out in English" (264), received worldwide attention after her death. Compared to the lukewarm response to her elder sister's Kannada writings, her novel met with instant success. Manjula's vendetta presents a microcosmic view of the tension and the rivalry that existed between the two sisters. It exposes a complex relationship ruled by jealousy and bitterness. Manjula's repressions are rooted in her low self-esteem. Her envy of her sister goes back to their childhood. It was compounded in adult life when Malini came to live with her and monopolised her husband's attention all day.

While Manjula wishes to "live in the heart of Kannada culture" (270), her younger sister "breathed, laughed, dreamt in English" (271). Malini is portrayed as the younger, attractive woman who suffers from *meningomyelocele*. Her ailment confines her to a wheelchair, but even then she "radiated life" (269). The attention she received from her parents makes Manjula feel inferior. She says, "I have often wondered whether I would have been as bright if I'd received all that love and attention" (269). What disturbs Manjula even more is the closeness between her husband, Pramod, and Malini. Pramod, who is "caring, but useless" (282), is a software developer and spent most of his time at home. Though physical intimacy was out of the question, Manjula was curious to know what the two did all day and would often return from work at unexpected timings only to find them engaged in some animated discussions "like a married couple" (280). At times she felt like "someone external to the soul of this house – along with the cook, the maid and the nurse" (281). Pramod saw the nurse as the only person close to Malini

after him. He would ask Manjula if they could bring back the nurse and would also go out with her close friend, Lucy, to expensive restaurants. Rather than his wife, he considered the nurse and Lucy suitable companions to ventilate his pain and anger. Manjula reveals that their relationship fell apart after he found out that she was publishing the novel and claiming its authorship.

The true reason for plagiarizing the novel was more than just winning recognition that she could not get as a Kannada writer. She wanted to hide from the world the fact that she loathed Malini and wanted her to die:

It was venomous. I was camouflaged as the first cousin, and not sister. But it was me all right and the portrayal was rancorous. I was a shallow woman, a pretentious mediocrity, a gushy conniving and devious relative who had taken her in for inheritance. But there were no adjectives. Just facts. The events were from life. They were accurately described. The conversations were recorded verbatim. I couldn't deny them. (284-85)

Instead of becoming a “laughing stock” (285), and being remembered merely “as a footnote in the life of a brilliant author” (285), she decides to turn things in her favour. It is her way of taking revenge and filling a void which was created because of the extra attention and love her sister received. She hopes to wipe away all the bitter memories and bask in the glory of her new identity as a bestselling author. Her image however reminds her of the bitter truth:

IMAGE. Wait a bit. Perhaps... she did win in the end?

MANJULA. How do you mean?

IMAGE. If she meant to prove *to you* that you were a fraud, she certainly succeeded.

MANJULA. You – you – I’ll show you.

*(She rushes to the screen and looks for the cable connecting it.)* (286)

### **Unmasking Manjula**

The image unmasks Manjula and presents her true self. The act of trying to disconnect the cable is symbolic of hiding her guilt, of silencing the truth. Rather than following each and every gesture and movement of Manjula, it acquires its own identity and confronts her. It finally succeeds in the end:

IMAGE. I am Malini Nayak, the English novelist. Manjula Nayak, the Kannada short-story writer, was decimated the moment she read my novel. She thus obliterated all differences of ink and blood and language between us and at one full stroke morphed into me . . .

Of course, I shall continue with the name of Manjula Nayak. As Manjula Nayak, I have been invited as Visiting Professor to seven prestigious American Universities. I use that nomenclature for my passport, my bank accounts, property and financial investments. However I am in truth Malini, my genius of a sister who loved my husband and knew Kannada and wrote in English.

*(Suddenly all the screens start speaking loudly, some in Kannada, the others in English. The cacophony is deafening. The revolving stage moves Manjula out into the dark. Then one by one, the sets switch off, leaving the studio, dark and empty.)*

(287)

### **Sibling Rivalries**

Sibling rivalries have been discussed in detail in literature. According to Eva Rueschmann:

The pattern of antagonism and competition between sisters abounds in classical literature and myth . . . some of the more famous examples of sisters in literary and dramatic history include . . . Antigone and Ismene in Sophocles' play; Cordelia and her sisters Goneril and Regan in Shakespeare's *King Lear*; Clarissa and Arabella in Richardson's *Clarissa*, Dorothea and Celia Brooks in Eliot's

*Middlemarch*; Elinor and Marianne Dashwood in Austen's *Sense and Sensibility*; and in modern literature Olga, Masha, and Irina in Chekhov's play *Three Sisters*; Ursula and Gudrun Brangwen in D.H. Lawrence's *Women in Love*; Helen and Margaret Schlegel in E.M. Forster's *Howard's End*; and the five sisters in Federico Garcia Lorca's play *The House of Bernarda Alba*. (Rueschmann)

The theory of sibling rivalry has also been explored by psychologists such as Sigmund Freud and Alfred Adler. Adler talks about the importance of equal treatment of siblings in the family. He believes rivalry between siblings is grounded in each child's need to overcome potential feelings of inferiority. Freud too talks about rivalry between siblings in terms of hatred and jealousy: "The elder child ill-treats the younger, maligns him and robs him of his toys; while the younger is consumed with impotent rage against the elder, envies and fears him . . ." (Sherwin-White 7). While it is clear that Manjula felt inferior to her younger sister, nowhere does Karnad give details of how Malini was treated. The rivalry between the two is merely confined to Manjula's shocking revelations.

### Bilingual Writing

According to Karnad, the play's relevance "is self-evident to anyone who knows what is happening in India's literary landscape where vernacular writers feel they do not get the attention that writers in English get, that there is a definite 'class system' operating here" (John). Though Manjula cannot be forgiven for the crime she committed, the reader cannot help but sympathize with her. She represents those writers who believe in using the vernacular language, but fail to make a mark in the literary world. One solution a situation like this offers is to write in the native tongue and then translate the work so that it caters to readers both at home and abroad. This would not only give the work a wide readership, but also the recognition the writer deserves.

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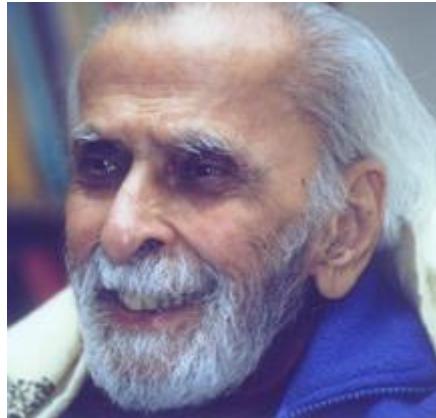
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## Raja Rao's Social Concerns in His Early Stories

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**Raja Rao (1908-2006)**

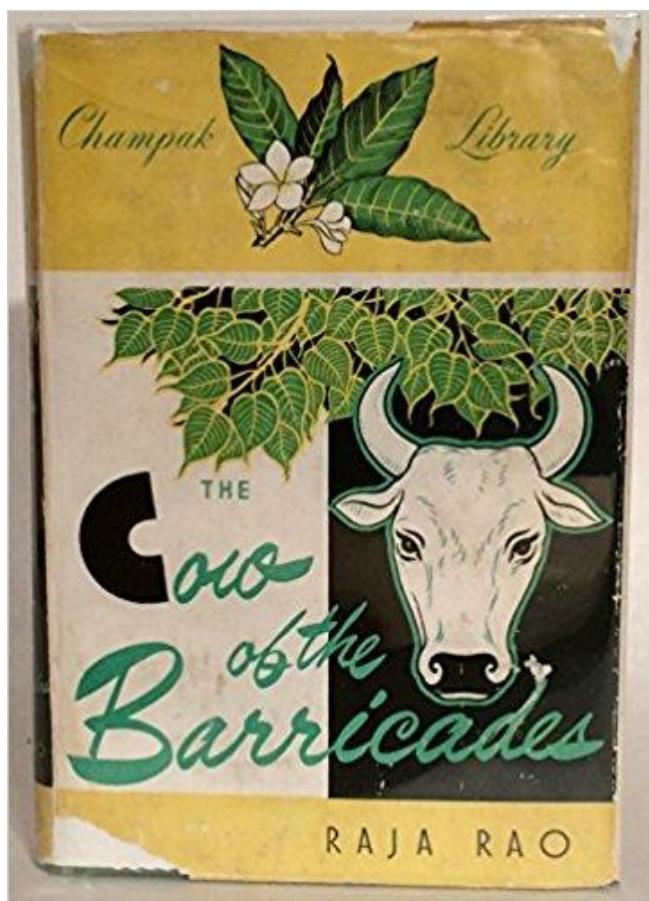
Courtesy: <http://www.therajaraeoendowment.org/>

### Abstract

This paper presents before the literary world a review kind of investigation in the stories of Raja Rao. There has always been lack of literary pursuits to explore the different layers of Rao's stories. To awaken from the slumbering negligence towards the stories of Raja Rao, and to reexamine his stories as the aid to understand his literary world better, is the edifice of the arguments of this paper. His stories are few in number and narrow in range but in impact and depth. The methodology used is analytical and comparative to shed light on the main arguments of the paper. Social and moral issues in his stories are pertinent, relevant and valuable in understanding the human conditions particularly in the middle of the last century. The study gets its thrust from the awareness that there is need to realize the significance of the intellectual encounter which takes place in early English writing.

## Social Relationship

Social concerns in Raja Rao's creative works are an important part of Raja Rao's literary achievements. One of the most significant aspects of Raja Rao, as a master of Indian English fiction, is his keen perception of the social principles operating in the Indian social psyche of the pre- and post- independence period. The social relationship has had been a dominating shaping force of the hereditary mental disposition in India. This relationship is a part of the rhythm of Indian life and thought. Social ties are pervasive influences in the collective unconscious of a tradition-bound society like the Indian Society. Social values are recurrent in the Indian epics also. The epics have helped society transmit traditional wisdom to posterity. Epics serve as a symbol in the form of patterns or themes evoking the values of the Indian cultural tradition. And this image of social impact remains a source of inspiration and a pervasive influence in Raja Rao's stories in general and in his novel *Kanthapura* in particular.



## Focus on Two Short Story Collections

Here the focus is on the first two short story collections of Raja Rao, namely, *The Cow of the Barricades* and *The Policeman and the Rose*. There are only twelve stories, and yet, as C.D.

Narasimhaiah remarks, “ [These stories] Have yet to receive critical attention” chiefly because they are “ the products of an inevitable stage in the growth of a mind, in the evolution of a major novelist who was cultivating his craft with the utmost care....”<sup>1</sup>

### **Portrayal of Village Life, Beliefs and Practices**

Raja Rao’s stories are integral part of his total vision of life. His stories are both thematically and technically connected with his novels. Quite like his novels, the stories are as much representative of Indian life and attitudes, at the social and metaphysical plains. Besides, they help Indian narrative in English evolve as he intended to. Some of the short stories of Raja Rao offer a contemporary social and political relevance, and these are quite representative of Indian life at the material plane. They unfold a metaphysical truth or embody a symbolic reality. They also contribute to the image of India at the metaphysical and spiritual planes and evoke India’s cultural past with its continuing impact on the present custom, conventions and attitudes. No doubt, the mythological framework in some and the folklore technique in others also contribute to the obvious Indianness of his stories. He has identified the villagers’ sacrosanct belief in rigid caste system, in legends and superstitions, and in the theory of karma and transmigration of soul. He has also depicted the sway of religion and god over their minds and above all their ignorance, simplicity and credulity. He has painted the village life in such a realistic and forceful manner that one cannot but marvel at his intimate knowledge of Indian life as well as his power of recreating that life within the limited compass of a short story and through the medium of foreign language.

### **Easy and Eloquent Presentation in a Foreign Language**

It’s easy to present the Indian life in anyone of the Indian languages because language and culture are the twin products of the growing and living soul of the nation. But it is difficult to recreate the Indian life and sensibility in a language of remote origin and development. Yet, as stated by the publishers of *The Cow and the Barricades*, Raja Rao “seeks to communicate Indian modes of feeling and expressions”<sup>2</sup> through the medium of the English language. Raja Rao adopted English as his medium because in French he could not do this for “its delicacy needed an excellence of instinct and knowledge that seemed well-nigh terrifying”<sup>3</sup> and the English remained, as he puts it, “the one language with its great tradition and its unexplored riches capable of catalyzing my impulses, and giving them a native sound and structure.”<sup>4</sup>

Raja Rao has tried to recapture the very spirit of Indian life in his stories which as he says are the “fruits of such an experiment” 5 both in terms of language and structure. He invents a popular form of narration, essentially Indian in tempo, tone and texture. He creates new similes and native terms of expression in order to add an Indian color to his techniques. Besides he creates new myths out of the old ones and lends a legendary structure to his themes for the same purpose.

### Never Didactic

Seldom or never didactic, Raja Rao’s intention is always to reveal the woes and sufferings of the village-folks. He tries and exposes in his stories the social evils and idiosyncrasies, oddities and weakness of human character. The power of his stories lies in the things which is born of one or the other kind of suffering having particular relevance to Indian things and yet remaining universal in significance. He has written fewer stories than his contemporaries but a significant variety of themes and techniques can still be discovered in his stories. Although the fewer number of stories narrows his range, yet, as Mr Venugopal observes “what he loses in range, he achieves in depth”. 6

### Early Stories – *A Client*

Among his early stories, both “A Client” and “Javni” are specimens of his early style of story writing. These rely on a simple and straightforward pattern of narrative and dialogue. It largely lacks the touches of his familiar style of the later stories and novels. Both the stories are the testimony to the writer’s objective, social concern which is free from any radicalism or ideological commitment. The thematic development of “A Client” centers in Hosakere Nanjundia’s persuasive efforts to win the consent of Ramu - a plain-hearted school boy for marriage. The blow of realism hits at the institution of marriage. It exposes simultaneously the evils of child marriage and unmatched marriage settlements. The success of the tale lies in the suspense which is consistently maintained till the end when the embarrassed adolescent is taken, much against his wishes, to Vishwesherwya’s house and is dramatically apprised of his benefactor’s intentions.

There had been changes in the patterns of marriage-settlement in the last few decades of the previous century, but the settlement of a daughter’s marriage among the “high-caste” Hindus has always been a great social problem. It’s a prolonged battle between the unwilling simple youth and the crooked marriage-broker. It symbolizes the problem of our society in a certain historical context. In this story this has been presented quite like the clever moves and counter-moves in a game of chess. It is like a patient hunter luring his prey into his trap. Nanjundia wins over the simple mind of

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the boy, Ramu, who begins to think at last: "After all, perhaps the old man is right. Old men are always so full of ripe wisdom... Why not marry? Sofas... Hot coffee... Electric light."<sup>7</sup> The clever marriage-agent wins and Ramu finally falls into his trap.

### ***Javni***

"Javni" presents the pathetic tale of a "low caste" widow who, neglected and ill treated by her own brother, works in a middle class Brahmin family more for the affection she gets than for the bread she earns. Javni and her mistress are bound by such a bond of love which admits no caste and creed barrier for its reciprocal give and take. "Good like a cow" as she is reported to be, she presents the image of an illiterate simple and credulous woman of an Indian village in the pre-independence days. Her faith too has both aspects of the superstition and a true belief in a benign deity. Believing in the existence of Evil spirits in the village which is according to her, a haunted place, she is also of firm faith in the grace of goddess Talakamma who "moved on reigned" above all and that is why she is thankful to the goddess for all that she gets.

Like the mind of Javni, everything in the story is simple - the narrative, the dialogue, the characterization and the moral. The simplicity of the story too has a power of its own which makes it so moving with enduring significance. The social realism of the story centres on a world in which human relations were still unaffected by the individualistic trends of the materialistic civilization. But the social realism soon develops into the emotional realism of the bond of love between one man or woman and the other. And the portrayal of Javni becomes the central point of a touching story, thus more than the tale of a widow or a woman from the so-called low caste. Javni becomes an unforgettable sketch of a woman of simple living and total emotional dedication who can love her mistress as much as the son of her selfish and cruel brother as also the lamb she has. The story of Javni presents the possibility of mutual love and regard among the people of various castes of Hindus. Javni herself grows bigger than a mere victim of caste-ridden social structure. She becomes an embodiment of devoted service and unconditional love.

### ***Akkayya***

Raja Rao employs a powerful narrating technique in "Akkayya" that evokes a child's reaction and responses to an old lady's love and affection. It also unfolds the psychology of neglected old widow. By the force of its pathos and realism it reminds us of Munshi Premchand's "**Boorhi Kaki**". Akkayya, quite like Javni, represents a class of widows or uncared women living with some of their

close relatives. She has a singularity of her own and her character is portrayed more as an individual than as a type. Yet, as Venugopal points, "...Akkayya, though loving, is only tolerated, whereas Javni is loving and is loved".<sup>8</sup> But even the sympathetic tolerance she receives is rare and can be taken for an idealistic portrayal of a humanitarian attitude so much desirable in human relationship. It also becomes the sentimental core of the realistic presentation which is the basis of characterization in this story. The story successfully depicts the life of the traditional joint Hindu families in the villages in the early 20<sup>th</sup> century in India. However, its main emphasis is on the realism of an unforgettable character.

### ***Kanakpal***

"The true story of Kanakpal, protector of gold" is a realistic story of a serpent when it is a friend. This story was narrated to the author by old Venkamma. She is Plantation Subbayya's sick mother. Employing folklore style, it begins with such touches which reinforce folklore trait of narrative: "May those who read this, be beloved of naga King of serpents, destroyer of ills"<sup>9</sup> Based on the myth of the snakes, it is a true story as the title emphasizes. This story judges both human elevation and degradation. It tells how money may be saved for a pious use by a man like visionary Rangappa and how it can be criminally grabbed by the evil ones like his own descendants. Kanakpal - the snake protector of gold becomes a veritable embodiment of gold itself both as a sacred family-treasure and an object of greed and a source of evil. It is in this respect that the serpent is both a friend and an enemy.

Quite in the style of Puranic tales and folklore, Raja Rao weaves a forceful description of a flow of time through all sorts of changes, births and deaths, elopements and marriages, epidemics and floods, during a whole century or so. The folktale style adds life to the narrative even as the whole account illuminates the life in the Indian villages of more than half a century ago.

### ***NIMKA***

A story of realism and pathos, "NIMKA" is another instance of a domestic tragedy which shows how Raja Rao's emotional cosmopolitanism is shaped into art. NIMKA - A beautiful Caucasian girl "with green mongoloid eyes and a soft lolling tongue that contains rounded sweetness"<sup>10</sup> and also a warm heart, looked like a young princess. "Nimotchka was good, very good, and of a simple true beauty, as though you cannot efface it even were you to cut her face with many crosses. Her beauty has certainty; it had a rare equilibrium and a naughtiness that was feminine

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and very innocent.”<sup>11</sup> Raja Rao implies in this story a unique poetic style which relishes a happy blend of emerging sentiments of the moment and the dazzling ideas; for instance: “it was beauty - it always will be, and you can’t take it, and as such you can’t soil yourself. How could you, for when you contemplate beauty, you end in contemplation...”<sup>12</sup> The story grows quite like the carving of an image or a little statue out of a piece of pure-white marble. Each stroke of the chisel reveals a reality hidden in the apparent blackness of the soft and smooth stone or exposing some hidden nerve of the beauty. It reveals some concealed muscle of goodness. Taken as whole the story foreshadows the typical narrative style of *The Serpent and the Rope*; and developing sometimes into a riddling one it reminds us also of the style of *The Cat and Shakespeare*. The failure of the narrator, a typical Indian, in winning the love of NIMKA is narrated very suggestively in a riddling style:

The Indian is too simple in his depth-if there is no concierge  
and the cat, there is no goodness. Success is sin. Gandhi  
is poverty. The maharaja is proof of truth. Truth is unnaked.  
Love is unsaid. So Nimotchkha fell in love with Michel.<sup>13</sup>

The story presents the tragedy of Nimka's life and love; she was successful neither in life nor in love. Her remarkable goodness of soul and matchless physical beauty did not get her success in life. Having gone bankrupt, her husband left her and ran to Monte Carlo to make money, leaving their little son Boris to her care for ever. It was for her son's sake that she had to be a mannequin during the war but even he, when he grew older, left for Russia leaving her helpless all alone. The account of Mahatma Gandhi's murder is joined with her own woeful tale simply in order to lend an added pathos to the story as also to suggest the tragedy of a life of righteousness. The cardinal message of the story being the truth that "the good is what had distinction, and the bad what is successful".<sup>14</sup> The end succeeds in producing a cathartic effect as we are told that "Nimka was not sad. Her heart contained an intimacy of sorrow that was almost kin of joy... Nimka asked nothing of life. She asked nothing of me... She knew the life that has ended is eternal"<sup>15</sup>

### Social and Mythical Force of India

India is a social and mythical force for Raja Rao. It provides nurture to the social explorations of his characters either living in any pedestal of social strata. He has great concerns about the social hemisphere of India, its ideas, myths and traditions. He has provided a true picture of Indian social life in his fictional world which determines the form and content of his text. Last but not the least,

perhaps more critical attention is needed for an in-depth analysis of these archetypal situations and patterns as expressions of social consciousness.

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# **RECOLOGY AN ECO-WISE –A START UP PROJECT**

*Project submitted to the Bharathidasan University, Tiruchirappalli in partial fulfilment  
of the requirements for the award of the degree  
of  
MASTER OF BUSINESS ADMINISTRATION*

**By**

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**OVEMBER 2017**



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**CERTIFICATE**

This is to certify that the project entitled, "**Recology an Eco-wise – A Start-up Project**" is a record of research work done by **Mr. ARAVINDH.A.S (16PBA256)**, during 2016-2018 at St. Joseph's Institute of Management, (School of Business Management), St. Joseph's College (Autonomous), Tiruchirappalli District - 620 002, Tamil Nadu, India, and that this project has not been previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title to anyone and that the project represent entirely an independent work on the part of the candidate.

**Place:** Tiruchirappalli-2

**Date:**

**Rev.Dr. C. Joe Arun S.J.**  
DIRECTOR

**(Dr.G.Amudha)**  
Research Advisor

Date of VIVA-VOCE:

Internal Examiner

External Examiner

## **DECLARATION**

I, Aravindh.A.S, hereby declare that the project entitled "**Recology an Eco-wise – A Start-up Project**" is a bonafide record of research work done by me under the supervision of **Dr.G.Amudha**, St. Joseph's College (Autonomous), Tiruchirappalli District-620 002, Tamil Nadu, India, for the PG programme at St. Joseph's Institute of Management, (School of Business Management), St. Joseph's College (Autonomous), Tiruchirappalli. I further declare that this work has not been previously published or formed the basis for an award of any degree, diploma, associateship or other similar title.

**Place:** Tiruchirappalli-2

**Date:** (Aravindh.A.S)

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## **Abstract**

The Start-up on Waste management is to collect the waste from household and industries on daily basis. Waste collected from the suppliers are made use and converted it into a useful output as Manure, Bio gas and pray products from which the revenue is generated. Initially the waste collected is segregated according to its category, bio degradable and non-bio degradable, mixed waste. The process initiates from households and industries, from the segregated waste the vegetable and food waste is taken and given as the input to old cows which are not in productive process of milking giving. The cow dung is then collected and put in the bio gas plant and allowed to process for a certain period of time. The full efficient from the cow dung is extracted in the form of bio gas and stored. Then the dry cow dung is collected and mixed with the soil, this set up is put under earthworm processing. The earth worm with in the mixture ensure us producing the quality output, the Natural Manure – Organic Fertilizers. This complete setup of producing the Organic Fertilizer is known as Vermicomposting and the process is Vermiculture. The preparation of Bio gas involves anaerobic process the bacteria formation, it mainly consist of methane, the. This start up plan is an initiative to promote the organic farming helping the rural famers to increase their productivity without affecting the natural phenomena. This project is completely involves in the complete setting up the plants for biogas and vermicomposting with their requirements and dealing with the output and revenue that could be beneficially made out of the system.

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# **Chapter 1 – INTRODUCTION**

A business plan is a concept that gives financial gain that is usually centered on a product or service that can be offered for money. An idea is the base of the pyramid when it comes to the business as a whole. Any business idea has to solve a problem that has a significant impact in the lives of the people. This description is about the ideas and the problem that need to be solved. The chapter also includes the scope of the solution of the problem and how the idea can be used in generating the revenue.

## **1.1 Description of the Start –up Idea**

The semi urban areas are not developed with proper installation of waste management system. Most of the domestic wastes are used less for recycling process. This project makes the domestic wastes to be converted into useful organic manure and electrical energy. The wastes are separated into biodegradable wastes where they are given to cows which in turn give the organic manure extracted from the cow dung. Through cow dung, the extraction of bio gas takes place and the remaining cow dung is used in the production of organic manure. Waste management is collection of domestic wastes which is bio degradable in households and industries. After collecting the wastes, there will be segregation process of biodegradable wastes and non-biodegradable wastes. The bio degradable wastes are given to the aged cows and from which gases are extracted from the cow dung. After taking the biogas out of the dung, it is then converted into manure which can be sold to farmers where they can use it as organic fertilizers. The conversion process is stimulated by the cultivation of earthworms, especially in order to use them to convert into organic manure. Biogas is a biofuel produced from the anaerobic fermentation of carbohydrates in plant material or waste (eg: food peelings or manure) by bacteria. It is mainly composed of methane, with some carbon dioxide and other trace gases. Theoretically, biogas can be converted directly into electricity by using a fuel cell. However, this process requires very clean gas and expensive fuel cells. In most cases, biogas is used as fuel for combustion engines, which convert it to mechanical energy, powering an electric generator to produce electricity. The project is mainly concentrated on two cities and towns where there are both domestic wastes and possibility of farming at a higher level.

The project is done by taking the kitchen wastes and food wastes which can be given to aged cows. In return we can obtain biogas from cow dung which can be used as organic manure. The business has competitions from chemical fertilizers which can be preferred by the farmers for higher return. The progress will be less productive in the initial stage approximately two years but the cultivation will be a healthier one and the cultivated products can be taken as organic foods. There is also a challenge of processing cost of extracting biogas from the cow dung and also conversion of manure into fertilizer which involves the process of vermiculture. The uniqueness of the project is the integration of waste management with energy production and production of fertilizers. The unfair advantage is that none of the company has come up with any of the integration of waste management, energy production and organic fertilizer production. The interdependency may cause the time lag in production and also the output will be of less income in the initial stages. The domestic wastes and institutional wastes can also be collected and if people were given awareness just regarding the segregation of the biodegradable and non-biodegradable wastes, the input process becomes very much easier. The process deals with only domestic food wastes and hence the process should be of day to day bases. The organic fertilizers marketing strategies should be formed and the farmers should be negotiated and the miniature biogas plant will also require eligible candidates to process the biogas into electricity. The electricity can be fed to the nearby areas and that can also be a source of income apart from fertilizers selling. The project involves setting up of plants and a farm for old cows and approachable farmers who are looking for natural farming techniques. In a common man's eye anything that is unwanted or not useful is said to be garbage or waste. However scientifically speaking there is no waste as such in the world. Almost all the components of solid waste have some potential if it is converted or treated in a scientific manner.

There is a chance of making the organic cultivation popular and beneficial in any developing country, if the wastes of the country are taken into consideration. The outcomes might take time but the products can be categorised at premium costs which generates high revenue along with the energy applied. This project has its social benefits and a long term run in the market because of the diversity in the process and various ways in revenue generation. Generation of waste is inevitable in every habitation howsoever big or small. Since the dawn of civilization humanity has gradually deviated from nature & today there has been a drastic change in the lifestyle of human society. Direct reflection of this change is found in the nature & quantity of garbage that a community generates. We can dispose the waste or reuse

the waste and can earn money through proper management. Indian cities which are fast competing with global economies in their drive for fast economic development have so far failed to effectively manage the huge quantity of waste generated.

### **Existing waste management situations in India:**

Major environmental challenges are being associated with waste generation and inadequate waste collection, transport, treatment and disposal. Disposal of residual landfill sites or investment in waste-to-energy facilities depends upon the individual. Current systems in India cannot cope with the volumes of waste generated by an increasing urban population, and this impact on the environment and public health. A priority is to move from reliance on waste dumps that offer no environmental protection, to waste management systems that retain useful resources within the economy. The challenges and barriers are significant, but so are the opportunities. Waste segregation at source and use of specialized waste processing facilities to separate recyclable materials has a key role. The potential for energy generation from landfill via methane extraction are shortage of qualified engineers and environmental professionals with the experience to deliver improved waste management systems in India.

### **1.2 Need Analysis:**

Effective waste management is a major challenge in cities with high population density. Achieving sustainable development within a country experiencing rapid population growth and improvements in living standards is made more difficult in India because it is a diverse country with many different religious groups, cultures and traditions. Waste management is a major problem for many urban local bodies in India, where urbanization, industrialization and economic growth have resulted in increased waste generation per person.

Despite significant development in social, economic and environmental areas, waste management systems in India have remained relatively unchanged. The informal sector has a key role in extracting value from waste, with approximately 90% of residual waste currently dumped rather than properly land filled. There is an urgent need to move to more sustainable waste management facilities. Development in infrastructure are required for India to become a world leading economy. Developing high quality infrastructure that meets the needs of the people and protects the environment is fundamental to achieving effective economic growth. Waste management infrastructure has an important role in delivering sustainable development. Rapid population growth in India has led to depletion of natural resources.

Wastes are potential resources and effective waste management with resource extraction is fundamental to effective waste management. Value extraction from waste can be materials, energy or nutrients, and this can provide a livelihood for many people. The transition from wastes to resources can only be achieved through investment in waste management as this depends on a coordinated set of actions to develop markets and maximize recovery of reusable/recyclable materials. Materials, energy and nutrient recovery must be the aim of future waste management infrastructure development in India. Resources can be recovered from wastes using existing technologies and India has an extremely effective recycling tradition.

Waste picking is often the only source of income for families, providing a livelihood for significant numbers of urban poor and usable materials to other enterprises. Waste pickers in Pune collect organic waste for composting and biogas generation. Waste pickers also make a significant contribution by keeping cities clean. Waste collection, storage and transport are essential elements of any waste management system and can be major challenges in cities. Improvements to waste collection and transport infrastructure in India will create jobs, improve public health and increase tourism. Local bodies spend around Rs.500 – 1000 per tonne on waste management with 70% of this amount spent on collection and 20% spent on transport. Waste management disposal is at a critical stage of development in India. There is a need to develop facilities to treat and dispose of increasing amounts of waste management. Properly engineered waste disposal protects public health and preserves key environmental resources such as ground water, surface water, soil fertility and air quality.

Waste dumps have adverse impacts on the environment and public health. Open dumps release methane from decomposition of biodegradable waste under anaerobic conditions. Methane causes fires and explosions and is a major contributor to global warming. There are also problems associated with odour and migration of leachates to receiving waters. Odour is a serious problem, particularly during the summer when average temperatures in India can exceed 45 degree Celsius. Discarded tyres at dumps collect water, allowing mosquitoes to breed, increasing the risk of diseases such as malaria, dengue and West Nile fever. Uncontrolled burning of waste at dump sites releases fine particles which are a major cause of respiratory disease and cause smog. Open burning of waste management and tyres emits 22000 tonnes of pollutants into the atmosphere around Mumbai every year. The impacts of poor waste management on Public health are well documented, with increased incidences of nose and throat infections, breathing difficulties, inflammation, bacterial

infections, anaemia, reduced immunity, allergies, asthma and other infections. Properly managed engineered landfills should replace dumps in India. This would significantly reduce the environmental impact of waste.

The Problems associated with improper waste disposal could be significantly mitigated by requiring material recovery. Source separation of inert and high moisture content fractions would maximize the potential for thermal recovery and other treatment options in India. The waste processed in thermal recovery is residual waste that remains after all commercially viable recyclable materials have been extracted. Waste-to-energy technologies produce energy; recover materials and free land that would otherwise be used for dumping. The composition of residual waste is important for energy recovery and waste composition is changing in India, with the amount of high calorific waste generally increasing. A significant increase in the use of waste-to-energy technologies has been proposed, but this depends on location, climate, demographics and other socioeconomic factors.

Waste-to-energy development in India is based on a build, operate and transfer model. Increased waste-to-energy would reduce disposal to land and generate clean, reliable energy from a renewable fuel source, reducing dependency on fossil fuels and reducing Greenhouse gas emissions. In addition, generation of energy from waste would have significant social and economic benefits for India. However, the track record of waste-to-energy in India highlights some of the difficulties. The current status of waste management in India is poor because the best and most appropriate methods from waste collection to disposal are not being used. There is a lack of training in waste management and the availability of qualified waste management professionals is limited. There is also a lack of accountability in current waste management systems throughout India. Municipal authorities are responsible for managing waste management in India but have budgets that are insufficient to overcoming the costs associated with developing proper waste collection, storage, treatment and disposal. The lack of strategic waste management plans, waste collection/segregation and a government finance regulatory framework are major barriers to achieving effective waste management in India.

Limited environment awareness combined with low motivation has inhibited innovation and the adoption of new technologies that could transform waste management in India. Public attitudes to waste are also a major barrier to improving waste management in India. Core to the vision for waste management in India is the use of wastes as resources with

increased value extraction, recycling, recovery, and reuse. Urban local bodies need to be responsible for waste management, with the urban local body commissioner and chairman directly responsible for performance of waste management systems. Waste management needs to be regarded throughout Indian society as an essential service requiring sustainable financing. The case presented to a urban local bodies for a properly funded system must demonstrate the advantages of sound investment in waste management.

A strong and independent authority is needed to regulate waste management if waste management is to improve in India. Without clear regulation and enforcement, improvements will not happen. Strong waste regulations can drive innovation. The waste management sector needs to include attractive and profitable businesses with clear performance requirements imposed by the urban local bodies, with financial penalties applied when waste management services are not working effectively. Finance for waste management companies and funding for infrastructure must be raised from waste producers through a waste tax. An average charge of one rupee per person per day would generate close to 50000 crores annually, and this level of funding would probably be sufficient to provide effective waste management throughout India.

Information on future quantities and characterization of wastes is essential as this determines the appropriateness of different waste management and treatment options. State-level procurement of equipment and vehicles is necessary for primary and secondary collection with effective systems for monitoring collection, transport and disposal. The roles and responsibilities to deliver sustainable systems need to be defined, with monitoring and evaluation to monitor progress. Experiences should be shared between different regions of India and different social groups. There are a number of research institutes, organizations, NGOs and private sector companies working on a holistic approach to waste management and future waste management in India must involve extensive involvement of the informal sector throughout the system.

There is a need to develop training and capacity building at every level. All Indian school children should understand the importance of waste management, the effects of poor waste management on the environment and public health, and the role and responsibilities of each individual in the waste management system. This will develop responsible citizens who regard waste as a resource opportunity.

## **Reasons for choosing this start up**

Population growth and particularly the development of megacities is making waste management in India a major problem. The current situation is that India relies on inadequate waste infrastructure, the informal sector and waste dumping. There are major issues associated with public participation in waste management and there is generally a lack of responsibility towards waste in the community. There is a need to cultivate community awareness and change the attitude of people towards waste, as this is fundamental to developing proper and sustainable waste management must ensure maximum resource extraction from waste, combined with safe disposal of residual waste through the development of engineered landfill and waste-to-energy facilities. India faces challenges related to waste policy, waste technology selection and the availability of appropriately trained people in the waste management sector. Until these fundamental requirements are met, India will continue to suffer from poor waste management and the associated impacts on public health and the environment.

### **Existing players in the Market:**

There are many existing players in the market – Organised and unorganised players. Unorganised players do business in a smaller area and sustain since it is being a growing sector. There are big players do this business in large scale also, some of them are

- Greenobin
- Antony waste Handling cell Private limited
- A to Z group
- Timarpur – Okhla waste Management Private limited
- Vermigold

### **1.3 Scope and Importance of this Start-up**

We have large population in India, so obviously we will get lot of waste (that can be recycled or reduced or reused), so it is the one of the potential area where resources are available in abundance and free of cost in some cases and so many subsidy schemes are there to promote green energy and funds are available easily under START UP grants of India.

World waste production is expected to be approximately 27 billion tonnes per year by 2050, one third of which will come from Asia, with major contributions from China and India. Waste generation in urban areas of India will be 0.7 kg per person per day in 2025,

approximately four to six times higher than in 1999. The problems associated with waste become more acute as the size of communities increase and this provides opportunities for decentralized waste management by self-help groups and NGOs. Waste generation is predicted to be 161 million tonnes, a fivefold increase in four decades. Examples of such wastes can be bricks from ash, excess doors from old papers yards and cloths composting in city waste

Indian municipal solid waste (MSW) management market is expected to grow at a CAGR of 7.14% by 2025 while e-waste management market is expected to grow at a CAGR of 10.03% during the same period. India has planned to achieve a capacity of 2.9 million hospital beds by 2025 which will help bio medical waste management market to grow at a CAGR of 8.41%. Hence, Waste Management in India requires a considerable amount of investment and new ideas to make the most out of the source which are utilized at the very minimal level. If utilized to the optimum level, People can generate high amount of revenues out of these wastes.

Thus this Industry has a wide scope of a wider market for a well prospering in the place of business. The business can be scaled in numerous ways taking up the existing opportunities in the environment after successful withstand in the market as a leader.

## **Chapter 2 – REVIEW OF LITERATURE**

The whole project can be categorized under three wings such as waste management, biogas energy production and organic fertilizers in semi urban areas.

The article that I went through deals with Heating up food waste where there has been a research on the concept of converting food wastes into a high-energy and high-protein animal feed supplement. This conversion required growing and harvesting a single cell protein in the form of thermophilic bacteria. In using this process, the researchers also found that municipal wastewater sludges, manure, and pulp and paper plant sludges could be converted into a nutrient-rich organic fertilizer additive or soil conditioner. The fermentation process relies on thermophilic (heat-loving) and aerobic (oxygen-loving) microorganisms. After the fermentation stage, the end product is dried, formed into pellets and ready to market to feed companies. (**siuru, B. ( 2001, Feb 2). Heating up food waste. Waste Age, p. 16.**)

The next article deals on forecast analysis on fertilizers consumption worldwide. The study aimed to make a review and forecast on fertilizers consumption worldwide in order to provide basal data for the decision-making of fertilizers production and for the environmental impact assessment of fertilizers application. It was found that fertilizers consumption was dependent on human population and the increase of fertilizers consumption was mainly resulted from expansion of human population. General dynamics of consumption of total fertilizers, nitrogenous fertilizers, phosphate fertilizers, and potash fertilizers were similar to each other for the world and most of the regions. Since 1961, world total fertilizers consumption increased rapidly until the mid- 1980s and began to slowly increase since mid-1980s. Compared to the current level, the world's total fertilizers consumption would increase 32.1% and reach 226,150,381 Mt by 2030, an average annual growth of 1.33% by 2030. (**Zhang, W. Z. (2007). A forecast analysis on fertilizers consumption worldwide. Environ Monit Assess, 427–434.**)

This article explains the importance of IT in the waste management. IT plays an important role in the transportation of waste. Using spatial database and GIS techniques helps us in decision making and planning of routes in the collection of waste. We can optimize the routes and also forecast the number of transport vehicles needed to transport the waste. Solid waste management involves waste generation, mode of collection, transportation, segregation of wastes and disposal techniques. According to (Nikolaos V. Karadima) in the traditional

Travelling Salesman Problem (TSP), the cost of traveling (distance) between two wastes bins does not depend on the direction of travel. Hence, the cost (distance) matrix representing the parameters of the problem is symmetric. However, the problem, which this work refers to, is modelled as an Asymmetric TSP (ATSP) problem due to road network restrictions. An ATSP problem considers that the bidirectional distances between a pair of waste bins are not necessarily identical. The ATSP problem can be solved to optimality using various algorithms. Application of a Genetic Algorithm for the identification of optimal routes in the case of Municipal Solid Waste (MSW) collection. In 1998, 90% of household waste in Israel was disposed to landfills. That year, due to a serious crisis at landfill sites and a predicted shortage of land for waste burial from the year 2010 onward, recycling regulations were issued. These regulations required municipalities to recycle part of their waste. A graduated chart was introduced, whereby the minimum rate of recycling increases each year, so that by 2007, all municipalities will be obligated to recycle at least 25% of household waste. The regulations include an exemption section that enables a municipality to refrain from recycling if the municipality is able to show that recycling is not profitable in its case. In response to the publication of the regulations, most municipalities claimed that recycling was not profitable for them and therefore requested exemptions. Because the question is empirical in nature, we examine the economic feasibility of recycling by analysing data from large number of municipalities in Israel. The present study conducted between 2000 and 2004, utilizes data from 79 municipalities in Israel (30% of all municipalities) whose waste accounts for over 60% of household waste in Israel. It should be noted that although many types of waste can be recycled, the empirical data available for the purpose of this study concern only some of the recyclable waste components: plastic, paper, cardboard, and glass. These components comprise 40% of all solid waste in Israel. It should be stressed that other types of waste, such as organic waste and tree trims, are recyclable as well. If these are included in the calculation, 85% of all solid waste is recyclable. (**Lavee, D. (2007). Is Municipal Solid Waste Recycling Economically Efficient? *Environmental Management* , 926–943.**)

This article deals on an overview of Solid waste management in Kuwait. Available industry information along with the use of monitoring data from a waste management system was used to analyse the generation, type and composition of industrial waste. Industrial activities were classified as follows: crude oil and chemical products industry; food and beverage industry, textiles and leather industry, wood industry, paper and printing industry, non-metallic mineral products; metal industry and other industries. The wastes generated

were classified according to their composition. As from the industries and as a result more than 47,169 tons of industrial wastes are produced every year in Kuwait. It was observed that paper and cardboard, plastic, wood, and metals were the most common types of waste, mainly generated from packaging (45 per cent of the total volume), as well as material used in containers and for wrapping products. In the management of these industrial solid wastes, it was observed in most cases they were disposed of by dumping, and very rarely did businesses resort to reuse, recycling or valorisation. It goes to the landfill because recycling is considered impracticable for technical and economic reasons. The objective of this study was to refute the objections raised against biodegradable municipal waste recycling. Of the 600 tonnes of waste collected daily, 308 tonnes are biodegradable material originating from residences, merchants and shopping centres. To refute the economic objections, the study presents calculations based on compost prices and tipping fees that show a possible revenue of BRL 0.39 per kg of biodegradable waste collected and composted. This compares favourably with cardboard, paper, steel and plastics, which are recycled by market forces alone. The study identifies composting enterprises interested in receiving biodegradable municipal waste. To refute the technical objections, the research produced precedents of biodegradable discards recycling in apartment buildings and restaurants replicable at larger scales (**Alhumoud, J. M. (2008). Analysis and overview of industrial solid waste management in Kuwait. An International Journal, 5.**)

The article deals with the progress and prospects of rural biogas production in China. The reason for taking this article is China and India are identical developing nations which can have similar type of geographical entities. Biogas production is an important aspect of China's energy strategy. After decades of application and research, China biogas has achieved considerable accomplishments. This study presents the progress and prospect of biogas technologies and industry in China. Two biogas patterns exist in China, that is, household-scaled digester for scattered farmers and biogas plant for centralized biogas production. Household-scaled digester which is simple and practical has been widely used and fully developed. Biogas plants have been sprung up with different materials, process and biogas utilization technologies. Chinese government promulgated several laws and policies, and gave financial supports to promote the development of biogas. However, some problems such as inferior equipment technology, imperfect policy incentive hamper its wide application and promotion. With the rapid development of economy and the improvement of rural living condition, China biogas industry is expected to advance toward

orientation of socialization, industrialization and commercialization. India also has undergone certain energy reforms in implementing the biogas energy production. This article gave me insights of how things should have been done in India for the effective implementations of Biogas. (**Jian XIE, X. W. (2010). Chemical fertilizer reduction and soil fertility maintenance in. *Front. Agric. China*, 422–429**)

This article deals on the municipal solid waste in India and the reasons cited by the ULBs for the non-compliance. Management of municipal solid waste is a major problem for most of the Indian cities due to the growing urban population and per capita waste generation rate, inadequate public participation and the deplorable organizational and financial capacities of urban local bodies. This article highlights the interventions required for sustainable solid waste management in Indian cities by analysing the waste generation, collection, and disposal scenario of a metro city in India along with the regulatory and institutional frame work. It advocates a phased and integrated approach taking into account the operational hurdles and the capacity building of local bodies with the support of educational organizations. It advocates a phased and integrated approach taking into account the operational hurdles and the capacity building of local bodies with the support of educational organizations.

The reasons cited by the ULBs for the non-compliance include.

- Lack of public awareness, motivation, and education
- Resistance to change and non-cooperation from households and other waste generators
- Lack of consistent efforts to create awareness on benefits of segregation
- Non availability of primary collection vehicles and equipment for segregated collection of wastes
- Paucity of financial resources as well as lack of priority to waste management
- Non-availability of appropriate land to setup waste processing and disposal facilities
- Lack of technical knowhow and skilled manpower for treatment and disposal of waste
- Poor integration of different elements of waste management considerations in land acquisition and implementation of waste processing/disposal
- Poor recognition of waste management as a profession (**J, Mater. Cycles. (2012). Waste Management. *Integrated approach to solid waste management in Chennai*, 75-84**)

This article explains the importance of anaerobic digestion in the production of biogas. Anaerobic digestion treatments have often been used for biological stabilization of solid wastes. These treatment processes generate biogas which can be used as a renewable

energy sources. Recently, anaerobic digestion of solid wastes has attracted more interest because of current environmental problems, most especially those concerned with global warming. Thus, laboratory-scale research on this area has increased significantly. In this review paper, the summary of the most recent research activities covering production of biogas from solid wastes according to its origin via various anaerobic technologies was presented (**Production of biogas from solid organic wastes through anaerobic digestion: a review.** (2012). *Appl Microbiol Biotechnol*, 321 - 329.)

This article deals with the production of biogas from solid organic waste. Anaerobic digestions of organic solid wastes studied have shown to be a renewable energy source that can generate biogas with high methane content. Most of the studies on the anaerobic digestion of solid wastes were conducted on different types of anaerobic reactors at various ranges of operating parameters such as temperature, OLR, and HRT. The effect of these parameters on process performance is very important. From that they tried to conclude the following points

- Anaerobic digestion of municipal garbage showed a high performance in the CSTR and two-stage bioreactors than batch and ASBR with a methane yield in the range of 0.1–0.7 m<sup>3</sup> kg<sup>-1</sup> VS added and a VS destruction >80 % with HRT ranging from 7 to 25 days.
- Conventional batch, single-stage, and two-stage anaerobic digestion processes have been employed to produce biogas from different solid types of substrates such as municipal solid waste, FVW, FW, etc. The two-phase systems have shown good stability and optimum biogas production. Therefore, more attention should be directed towards the utilization of a two-phase system for optimum bioenergy recovery. However, the operation of the single-phase in the treatment of solid wastes to biogas in the rural areas is another alternative for renewable energy production, especially for developing countries as well as for the developed countries.

(Nasir, I. M. (2012). **Production of biogas from solid organic wastes.** *Appl Microbiol Biotechnol*, 321 - 329.)

This article deals with Potentials for food waste minimization and effects on potential biogas production through anaerobic digestion where the also emphasize on the waste management with biogas production. A further aim was to investigate the effect on the

national biogas production potential through anaerobic digestion of food waste, considering minimization potentials. A method for waste composition analyses of household food waste, where a differentiation between avoidable and unavoidable food waste is made, was used in a total of 24 waste composition analyses of household waste from residential areas. . (Parry, D. L. (2013, Jun 6). Analyzing food waste management methods. *BioCycle*, p. 36.)

The article deals with biogas potential in Canada which emphasize on the potential national biogas contribution -- enough to fuel electricity generators with a capacity of up to 810 megawatts or to refine into 2,420 million cubic meters of renewable natural gas, or bio methane -- would come from on-farm anaerobic digesters. The article also says that this can be implemented in areas which has high population which resembles an Indian context which geographic and density in population. (Gorrie, P. (2013;, Dec 12). Biogas potential in canada. *BioCycle*, p. 34.)

This article deals with the Non-biodegradable waste and its impacts on the environment. Waste is defined as discarded material which has no value in normal use or for ordinary use. Solid wastes are those undesirable, useless and unwanted materials and substances that come from human and animal activities. Generation of wastes is inevitable. The management of wastes assumes importance in view of the environmental hazards they pose. According to UNICEF, the solid waste can be classified into biodegradable and non-biodegradable waste. Biodegradable waste, which is completely decomposed by biological processes either in presence or in absence of air are called biodegradable. For example: Kitchen waste, animal dung, agricultural waste etc. Non- biodegradable waste, which cannot be decomposed by biological processes, is called non- biodegradable waste. These are of two types - Recyclable: waste having economic values but destined for disposal can be recovered and reused along with their energy value. e g. Plastic, paper, old cloth etc. Non-recyclable: waste which do not have economic value of recovery. Example Carbon paper, thermo coal, tetra packs etc. Disposal of non-biodegradable waste is a major concern, not just plastic, a variety of waste being accumulated. There are a few ways to help non-biodegradable waste management. In the present study we have discuss about the impact of non-biodegradable waste on the environment and also focus on its safe disposal for sustainable environment. (Alok Bharadwaj1, D. Y. (2015). Non-biodegradable waste – its impact & safe disposal. *International conference on technologies for Sustainability- Engineering, Information Technology, Management and the Environment*)

## **CHAPTER 3 – METHODOLOGY**

This study involves Library research which Involves identifying and locating sources that provide factual information or personal/expert opinion on a research question; necessary component of every other research method at some point. A standard outcome of research is a literature review.

Through literature reviews historical records were analysed mainly to back up the ideas and arguments, presented in the research. After doing the library research for the collection of secondary data, Field research was done to collect primary data. Primary data is collected through Google forms which was focused the people around Tenkasi. Primary Data was also collected through interview method, which gave a real time picture of vermicomposting.

### **3.1 Formulation of the research problem**

Semi-urban areas of India generate tonnes of municipal solid waste and waste generation increases by a considerable per cent every decade. More than 80 per cent of this waste reaches open dumpsites causing public health issues, environmental degradation, and resultant climate change. Plastic and e-waste form the major chunk of this waste, with minimal degrading substances. India needs to find solution to these problems. Waste management is a major problem for many urban local bodies in India, where urbanization, industrialization and economic growth have resulted in increased waste generation per person. Effective waste management is a major challenge in cities with high population density. Achieving sustainable development within a country experiencing rapid population growth and improvements in living standards is made more difficult in India because it is a diverse country with many different religious groups, cultures and traditions.

Though there is a significant development in social, economic and environmental areas, waste management systems in India have remained relatively unchanged. The informal sector has a key role in extracting value from waste currently dumped rather than properly land filled. There is an urgent need to move to more sustainable waste management facilities. Current waste management systems are inefficient, with waste having a negative impact on public health, the environment and the economy. The waste management and Handling rules

in India were introduced by the Ministry of Environment and Forests, although compliance is variable and limited.

The transition from wastes to resources can only be achieved through investment in waste management as this depends on a coordinated set of actions to develop markets and maximize recovery of reusable/recyclable materials. Materials, energy and nutrient recovery must be the aim of future waste management infrastructure development in India. Resources can be recovered from wastes using existing technologies and India has an extremely effective recycling tradition. The informal sector has a very important role in India and this must be integrated into formal waste management systems. The informal sector is characterized by small scale, labour intensive, largely unregulated and unregistered low technology manufacturing or provision of materials and services. Waste pickers collect household or commercial/industrial waste and many hundreds of thousands of waste pickers in India depend on waste for an income, despite the associated health and social issues. Pickers extract potential value from waste bins, trucks, streets, waterways and dumpsites. Some work in recycling plants owned by cooperatives or waste picker association. Waste picking is often the only source of income for families, providing a livelihood for significant numbers of urban poor and usable materials to other enterprises. Waste pickers in Pune collect organic waste for composting and biogas generation. Waste pickers also make a significant contribution by keeping cities clean.

Waste collection, storage and transport are essential elements of any waste management system and can be major challenges in cities. Waste collection is the responsibility of the municipal corporations in India, and bins are normally provided for biodegradable and inert waste. Mixed biodegradable and inert waste is often dumped, with open burning a common practice. Improvements to waste collection and transport infrastructure in India will create jobs, improve public health and increase tourism. Local bodies spend around Rs. 500 – 1000 per tonne on waste management with 70% of this amount spent on collection and 20% spent on transport. Waste management disposal is at a critical stage of development in India. There is a need to develop facilities to treat and dispose of increasing amounts of waste management. More than 90% of waste in India is believed to be dumped in an unsatisfactory manner.

### **3.2 Title of the study:**

The title of the study is “**RECOLOGY AN ECO-WISE –A START UP PROJECT**”

### **3.3 Conceptual framework of the Business Model**

#### **Waste management**

Waste management or waste disposal are the activities and actions required to manage waste from its inception to its final disposal. This includes amongst other things collection, transport, treatment and disposal of waste together with monitoring and regulation

#### **Biodegradable wastes**

Biodegradable waste is a type of waste, typically originating from plant or animal sources, which may be degraded by other living organisms. Biodegradable waste can be commonly found in municipal solid waste as green waste, food waste. Other biodegradable wastes include human waste, manure, sewage, slaughterhouse waste.

#### **Non-biodegradable wastes:**

An Object that cannot be decomposed into organic and environmentally safe waste Products. This is unlike biodegradable objects which can easily be decomposed by soil bacteria into organic and safe waste materials.

#### **Biogas**

Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen. Biogas can be produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is a renewable energy source.

#### **Organic fertilizers.**

Organic fertilizers are fertilizers derived from animal matter, animal excreta (manure), human excreta and vegetable matter (e.g. compost and crop residues). Naturally occurring organic fertilizers include animal wastes from meat processing, peat, manure, slurry, and guano.

## **Cultivation of earthworms**

The way to begin earthworm culture is to provide a culture medium of earthworm food in some kind of container or bed—a tin can, a small wooden box, a compost heap, or a specially designed culture bed—add a few egg-capsules or worms, and keep the culture thoroughly moist and shaded.

## **Organic manure**

Organic manure is a compound highly rich in nitrogen, which prominently consists of animal waste and rotten grass. The natural components are harmless and take long time to be decomposed. However as the time has progressed, manure is also manufactured in the plants under the enhanced effects of temperature and other required conditions for the decomposition to occur.

## **Fermentation**

Fermentation is a metabolic process that consumes sugar in the absence of oxygen. The products are organic acids, gases, or alcohol. It occurs in yeast and bacteria, and also in oxygen-starved muscle cells, as in the case of lactic acid fermentation. The science of fermentation is known as zymology.

## **Methane**

Methane is the simplest hydrocarbon—a single carbon atom surrounded by four hydrogen atoms. It usually forms when larger organic molecules are broken down, either by microbes or by heat. The microbes produce it when they eat dead plant matter in wet, oxygen-poor environments.

## **Chemical fertilizers**

A chemical fertilizer is defined as any inorganic material of wholly or partially synthetic origin that is added to the soil to sustain plant growth. Many artificial fertilizers contain acids, such as sulphuric acid and hydrochloric acid, which tend to increase the acidity of the soil, reduce the soil's beneficial organism population and interfere with plant growth.

### **Vermi-culture:**

Vermi-culture means artificial rearing or cultivation of worms (Earthworms) and the technology is the scientific process of using them for the betterment of human beings.

### **Vermi-compost**

Vermi-compost is the excreta of earthworm, which is rich in humus. Earthworms eat cow dung or farm yard manure along with other farm wastes and pass it through their body and in the process convert it into vermi-compost.

### **Institutional wastes**

Waste material that is generated at institutions such as schools, libraries, hospitals, and prisons.

### **Different stages involved in the waste management**

- Collection
- Reduction of wastes
- Recycling of wastes
- Treatment of wastes
- Production of manure from wastes

### **Landfills**

A landfill is a place where waste is kept. Waste is usually buried in landfills, but it may first be sorted to remove any recyclable materials.

### **Household waste**

Solid waste comprising of garbage and rubbish (such as bottles, cans, clothing, compost, disposables, food packaging, food scraps, newspapers and magazines, and yard trimmings) that originates from private homes or apartments.

### **Waste segregation**

Waste segregation means dividing waste into dry and wet. Dry waste includes wood and related products, metals and glass. Wet waste, typically refers to organic waste usually generated by eating establishments and are heavy in weight due to dampness.

## **Residual landfill**

Residual solid waste (RSW) landfills can accept solid wastes from seven specific industrial categories. The waste streams from these industries are typically generated in large quantities and are generally homogeneous and of low toxicity.

### **3.4 Research design – Descriptive**

There are needs which are to be addressed immediately especially in the semi urban areas. Waste management education is done only in most of the part of cosmopolitan cities. The upgrading towns can be shifted a level up only if there are proper waste management and optimum use of energy. This project is about collecting the domestic wastes which are bio degradable from households and industries. After collecting the wastes, there will be segregation of biodegradable wastes and non-biodegradable wastes. The bio degradable wastes are given to the aged cows and from which the bio gases are taken out from the cow dung. After taking the biogas out of the dung, it is then converted into manure which can be sold to farmers where they can use this as organic fertilizers. The conversion process is by the cultivation of earthworms, especially in order to use them to convert organic waste into fertilizer. The other product, which is biogas is made to convert into electricity. Biogas is a biofuel produced from the anaerobic fermentation of carbohydrates in plant material or waste (eg: food peelings or manure) by bacteria. It is mainly composed of methane, with some carbon dioxide and other trace gases. Theoretically, biogas can be converted directly into electricity by using a fuel cell. However, this process requires very clean gas and expensive fuel cells. In most cases, biogas is used as fuel for combustion engines, which convert it to mechanical energy, powering an electric generator to produce electricity. The project is mainly concentrated on tire two cities and towns where there are both domestic wastes and possibility of farming are at a higher level.

The project is only taking the kitchen wastes and food wastes which can be given to aged cows. In return we can obtain biogas from cow dung which can be used as organic manure. The business has competitions from chemical fertilizers which can be preferred by the farmers for higher return. The progress will be less in the initial stage approximately two years but the cultivation will be a healthier one and the cultivated products can be taken as organic foods. There is also a challenge of processing cost of extracting biogas from the cow dung and also conversion of manure into fertilizer from manure involves the process of

vermiculture. The uniqueness of the project is the integration of waste management with energy production and production of fertilizers. The unfair advantage is that none of the company has come up with any of the integration of waste management, energy production and organic fertilizer production. The interdependency may cause the time lag in production and also the output will be of less income in the initial stages. The domestic wastes and institutional wastes can also be collected and if people were given awareness just regarding the segregation of the biodegradable and non-biodegradable wastes, the input process becomes very much easier. The process deals with only domestic food wastes and hence the process should be of day to day bases. The organic fertilizers marketing strategies should be formed and the farmers should be negotiated and the miniature biogas plant will also require eligible candidates to process the biogas into electricity. The electricity can be fed to the nearby areas and that can also be a source of income apart from fertilizers selling. The project involves setting up of plants and a farm for old cows and approachable farmers who are looking for natural farming techniques.

The process is an integration of waste management, organic fertilizers and biogas energy production. This methodology will be effective in particularly semi urban areas where there is an equal ratio of urban population and rural areas. This project may benefit farmers in their farming where they will provide good quality of crops due to the usage of organic fertilizers.

### **3.5 Study population and Sampling procedure:**

The study sample of the project is about 155. The sampling procedure that used in the project is **Convenience Sampling technique**.

### **3.6 Sources of data collection (Primary & Secondary Sources)**

Type	Method
Primary Data	<ul style="list-style-type: none"> <li>• Personal interview</li> <li>• Questionnaire</li> <li>• Google forms.</li> </ul>
Secondary Data	<ul style="list-style-type: none"> <li>• Journals</li> <li>• Articles</li> <li>• Magazines</li> </ul>

### **3.7 Tools and process of data collection:**

Information you gather can come from a various range of sources. Likewise, there are a variety of techniques to use when gathering primary data. Listed below are some of the most common data collection techniques.

Click the following links to read more about data collection techniques:

- Interviews
- Questionnaires and Surveys
- Observations
- Focus Groups Discussions

### **3.8 Statistical Package and tools used:**

SPSS tool is used for analysing the data collected, which gives more space for comparing the data set and eliminate sorting errors. SPSS is easy since it doesn't involve any formula and its output is completely visualizations, charts and graphs which enhance the learning curve of the solution to the problem.

### **3.9 Limitations of the study:**

- The answer of the questionnaire must be influenced by the environmental factors in the city.
- The survey is taken at random. Hence, it might not reveal the overall picture of the city.
- Time limitation is expected in the project
- Limitation in Implementation of data collection method.
- May yield different results in different cities.
- Limitation in terms of reliability and validity of measuring instruments and tools.
- Prior research studies on the topic

### **3.10 Time Frame:**

The estimated time frame of the project is 4 months, involving all the setup and preplanning of the project till the project starts to be on live. Since the Project has many legal matters to should be followed it wouldn't be that easy to process, hence there can be some variation in time frame.

## **CHAPTER 4 - BUSINESS PLAN OF THE START-UP**

### **4.1 Data Presentation and Interpretation (Market Survey)**

The data collected through various methods are analysed through SPSS tool and findings were made according to our requirement. This analysis will enhance the project need that we should look for before starting into the area preferred for the start-up.

**Table No 4.1.1**

#### **Number of Persons in Family \* Garbage per week Cross tabulation:**

Number of Persons in Family	Garbage per week				
	1	2	3	4	Total
2	6	0	3	0	9
3	12	9	9	7	37
4	23	11	16	12	62
5	10	6	7	13	36
6	0	3	3	5	11
Total	51	29	38	37	155

#### **Interpretation:**

Tabulation specifies the rough amount of Garbage that can be collected in a week and this will help in assessing the moderate amount of input required for work for our business to work without interruption.

**Table No 4.1.2**

#### **Occupation \* Garbage per week tabulation:**

Occupation	Garbage per week			
	1	2	3	4
Farmer	2	1	1	1
Student	23	11	14	17
Government Servant	7	3	4	3
Business	5	6	6	4
Other	14	8	13	12
Total	51	29	38	37

#### **Interpretation:**

One bag garbage providers one third of the total, while others contribute two-third of the collected waste per week. Hence concentrating equally on all category of peoples the input requirement for the business keeps intact.

**Table No 4.1.3****Occupation \* Garden Cross tabulation:**

Occupation	Garden	
	Yes	No
Farmer	5	0
Student	36	29
Government Servant	8	9
Business	6	15
Other	19	28
Total	74	81

**Interpretation:**

The consolidated Data Shows that, Garden waste could be a wavering one since it is equally split across the population. Garden waste will be less then because the working people don't have garden in their home considerably. Thus this should be taken for consideration for our demand in input.

**Table No 4.1.4****Garbage per week \* Self Disposal Method Cross tabulation:**

Garbage per week	Self Disposal Method				
	Public bins	By the Valley/ Lake side/ River	By the road side	In an open space	Burn it
1	39	0	2	4	6
2	21	0	2	1	5
3	33	0	0	3	2
4	22	1	2	8	4
Total	115	1	6	16	17

**Interpretation:**

Irrespective of Garbage produced in the household, most of them tend to dispose it through public bins, so by having regular method of collection we shall be self sustained in our need of raw material for processing.

**Table No 4.1.5****Number of Persons in Family \* Public Bin Clearance Frequency Cross tabulation:**

Number of Persons in Family	Public Bin Clearance Frequency				
	Daily	Once in 2 days	Once in 3 days	More than 3 days	Other
2	4	4	0	1	0
3	13	9	2	10	3
4	18	14	9	18	3
5	11	10	4	8	3
6	2	6	1	1	1
Total	48	43	16	38	10

**Interpretation:**

The families with 3-5 persons gives us the sizeable amount of input for the business. Hence the CRM should be good for this larger contributing community.

**Table No 4.1.6****Garbage Recycle \* Total Waste Cross tabulation:**

Garbage Recycle	Total Waste				Total
	1	2	3	4	
Yes	85	34	4	2	125
No	22	7	0	1	30
Total	107	41	4	3	155

**Interpretation:**

From the analysed sample it is evident that the people are ready to give their garbage for recycling. It is all how we plan and execute our marketing such that we get a greater count of suppliers for the better enhancement of the business.

**Table No 4.1.7****Public Bin Availability \* Total Waste Cross tabulation:**

Public Bin Availability	Total Waste				Total
	1	2	3	4	
Yes	68	28	3	2	101
No	39	13	1	1	54
Total	107	41	4	3	155

**Interpretation:**

As discussed earlier if we spot a collaboration with government the waste from Public bins can be collected without any problem. It is how much we concentrate on people those who don't have public bins nearby and the management of the team collecting waste in a pattern the available resources are used optimally.

**Table No 4.1.8****Waste Disposal Education \* Garbage Recycle Cross tabulation:**

Waste Disposal Education	Garbage Recycle		Total
	Yes	No	
Yes	91	17	108
No	34	13	47
Total	125	30	155

**Interpretation:**

People are widely ready to support our business. Our attention should be put on the group which is not willing to give their waste and also on the people those who don't have proper knowledge on the waste disposal. By doing this the contributing strength will increase.

**Table No 4.1.9****Garden \* Total Waste Cross tabulation:**

Garden	Total Waste				Total
	1	2	3	4	
Yes	43	26	3	2	74
No	64	15	1	1	81
Total	107	41	4	3	155

**Interpretation:**

People having Garden are not only Suppliers, they are our valuable customers too. So Concentrating on the people having garden will help us to sell our products since they know the advantage of the manure since they have quite knowledge on it.

## 4.2. EXECUTIVE SUMMARY

### 4.2.1 Problem

The main environmental problem associated with fertilizer use is contamination of water with nitrates and phosphates. The nitrogen from fertilizers and manures are eventually converted by bacteria in the soil to nitrates. These nitrates can be leached into the groundwater or be washed out of the soil surface into streams and rivers. High nitrate levels in drinking water are considered to be dangerous to human health. Phosphorus cannot be readily washed out of the soil, but is bound to soil particles and moves together with them. Phosphorus can therefore be washed into surface waters together with the soil that is being eroded. The phosphorus is not considered to be dangerous, but it stimulates the growth of algae in slow moving water. These algae eventually die and decompose, removing the oxygen from the water causing fish kills. This process is called eutrophication. It is important to remember that there are a number of sources of these pollutants including industrial waste, sewerage disposal, detergents and manures. The problem of high nitrate levels in groundwater was recorded as early as 1860, long before fertilizer use became commonplace. Recent research shows that the main sources of nitrates in groundwater are crop residues and organic matter that decompose and produce nitrates at time when crops cannot make use of them

Modern fertilizer consists of varying amounts of nitrogen (N), phosphorus (P) and potassium (K). These three are believed to be essential for plants to grow, (below, I'll discuss why NPK may not be as necessary as we think.), and are extracted from the soil with each harvest. This is why farmers spread fertilizer on their fields, to replace the nutrients lost. It's certainly not the ideal and sustainable way to farm, but it's thought to be the most efficient for large-scale farms. Strategies like crop rotation and allowing large fields to rest would cut too deep into profits that are based on quantity, opposed to quality.

#### **4.2.2 Solution**

Soil, on farms as well as the wild, has nutrients in it. However, the proportion of minerals is different in different places. Within a field, the nutrient content is similarly not uniform. In the wild, plants that are most suitable to the soil and other conditions grow and you don't have any control over their growth. However, since you want to grow only your favoured variety of plants in your garden or farm, you need to add nutrients according to the needs of that variety and availability in your soil. Moreover, in a partially covered piece of land, such as a farm, the soil nutrients are taken up by the plants, but are not replenished when the plants or their leaves die, because you remove them as food, herbs, etc. Hence you require fertilizers to enrich the nutrient-deficient soil and create artificial conditions for higher productivity of the plants. What are these nutrients required by plants? The most commonly required plant nutrients are nitrogen (N), phosphorus (P) and potassium (K). Almost all fertilizers are categorized according to their Nitrogen-Phosphorus-Potassium or N-P-K value. Nitrogen is required for the growth of vegetative parts such as the stems and the leaves, while your plants will have healthy roots if they get a sufficient amount of phosphorus. Phosphorus is also required for good flowers and fruits. Potassium makes the plant healthy by facilitating the circulation of nutrients within the plant. In addition to N-P-K, plants also require other nutrients, such as calcium and magnesium. Since these are required in small quantities, you need not add them separately unless in exceptional cases, if your soil is totally devoid of these minerals or the crop you wish to grow requires them in large quantities.

#### **4.2.3 Market**

Organic fertilizer market in Tamil Nadu is a huge market as a result of the expansion of irrigated crops, as all crops use different amounts of organic fertilizers due to their different

characteristics that distinguish them from chemical fertilizers. Organic fertilization is the cornerstone that should be developed to raise the productive value of agricultural land and reduce the environmental pollution resulting from the use of mineral-chemical fertilizers and therefore recycling organic waste is one of the important factors that lead to the provision of quantities of organic fertilizers that meet the needs of agricultural land. Organic food is still a niche concept in India. Current domestic organic food sales are estimated at around Rs.200 million annually and growing at a compounded rate of 30 percent to 40 per cent each year. Demand is growing as incidences of food adulteration are repeatedly reported on in global media and consumer consciousness of natural, healthy and safe foods rises. New food safety legislation is also working towards improving the safety standards of food and, at the same time, consumers are increasingly willing to pay for organic foods as their disposable incomes rise. Key factor behind the recent pickup in growth is e-commerce which provides organic companies with an appealing route to market. There are more than 25 e-commerce platforms selling organic foods online in India now, plus generalist grocery sites like big basket and Pepper tap are selling organic categories. In addition, there are specialized organic retailers like ISayOrganic, JoyBy Nature, ekgaon, and Organic Shop. It takes about three years to convert a field from conventional to organic. An organic food company, which obtains the organic certification, usually works with a group of farmers known as its Internal Control System (ICS). The company provides those farmers with support in terms of inputs and education in organic growing practices. It also assures the buyback of the crop throughout the conversion process. Companies also incentivize farmers by engaging them in growing more crops that can be sold as organic, instead of having single crop operations. A very important aspect of supply chain management is certification. Different importing countries have different sets of approved certifications so food companies need to set a standard of organic farming and choose an appropriate agency for certification. These agencies include the USDA, EU, Control Union and OU Kosher. To help increase parity between India and its export markets, the Government has implemented the National Programme for Organic Production (NPOP). It has also launched PGS-India (Participatory Guarantee System of India) which is a quality assurance initiative that is locally relevant, emphasizes the participation of stakeholders — including producers and consumers — and operates outside the frame of third-party organic certification.

The typical size of the deal has been Rs.3 million to Rs.10 million and typical turnover of the companies at the time of investment has been in the range of Rs.5 million to Rs.10 million.

We are also witnessing venture funding in start-ups and early stage organic companies increase. Why are these investors bullish on investing in Indian organic food? First and foremost, if we look at the entire food basket and plot each food category on a graph with the scale of opportunity and margin opportunity on two axes, organic foods is one of the few categories that will fall into the high scale, high margin opportunity bracket. The high scale is driven by the fact that organic food consumption is not even 0.1 per cent of India's Rs.300 billion annual food consumption. Likewise, India's share in the Rs.100 billion global organic food market is less than 0.2 per cent. The scale of the opportunity is also driven by the increasing variety of organic foods hitting the market and the emergence of e-commerce as a channel in which to sell the product. The high margin opportunity is driven by two things: typically there is a 15 per cent to 50 per cent premium on organic products, which in a stable organic business can translate to 10-25 per cent EBITDA margins. Margins are also driven by the immense branding opportunities in organic products. Indian commodities like pulses, staples, and vegetables are long overdue a re-brand so are an example of food products which could benefit from organic branding. Another reason for investor interest is that the typical organic supply chain is more efficient compared to conventional agribusiness as there are fewer intermediaries and there is better control on quality, cost and traceability of the product. A unique opportunity to investors to invest and earn top-quartile internal rates of return over the next five to 10 years. It is an exciting time for the organic foods industry and I believe all stakeholders including consumers, retailers, companies, farmers, investors, certification agencies, importers and the government will benefit with the evolution of the industry.

The organic food market in India is growing at 25-30 per cent, but the awareness about organic farming is still low in India despite huge spending, the government. India is capable of growing all kinds of organic foods. Farmers should be educated to boost organic cultivation. Organic farming not only protects land and water resources, but also improves farm income, he added. According to the study, India's organic food market has potential to grow more than 25 per cent annually with more awareness about these products and the government incentivizes region-specific organic farming to ensure consistent growth in future.

The current growth in the organic food market is driven by rising health consciousness, changing lifestyles, mounting disposable spending and growing availability of organic food products in shopping malls and retail outlets. More growth is expected in future as the

government is increasingly supporting organic farming in the form of subsidies and is also planning to roll out a comprehensive policy in this regard. As per the government data, organic farming is practiced in 12 states in about 4.72 million hectares. In 2013-14, organic food production was 1.24 million tons.

#### **4.2.4 Competition**

Organic farming produces the same yields of corn and soybeans as does conventional farming, but uses 30 per cent less energy, less water and no pesticides, a review of a 22-year farming trial study concludes." Of course, the people who make fortunes selling fertilizer, herbicides, pesticides, GMO crops, etc., don't want people to know that. We must keep believing that the kind of agriculture we're seeing since the "Green Revolution" is the only viable way to do things and that organic methods are a throwback to less efficient times and more expensive. In fact, as far as we know organic farming would be cheaper than non-organic if it was as heavily subsidized. Organic farming approaches for these crops not only use an average of 30 per cent less fossil energy but also conserve more water in the soil, induce less erosion, maintain soil quality and conserve more biological resources than conventional farming does.

The study compared a conventional farm that used recommended fertilizer and pesticide applications with an organic animal-based farm (where manure was applied) and an organic legume-based farm (that used a three-year rotation of hairy vetch/corn and rye/soybeans and wheat). The two organic systems received no chemical fertilizers or pesticides.

The research compared soil fungi activity, crop yields, energy efficiency, costs, and organic matter changes over time, nitrogen accumulation and nitrate leaching across organic and conventional agricultural systems. The reason was that wind and water erosion degraded the soil on the conventional farm while the soil on the organic farms steadily improved in organic matter, moisture, microbial activity and other soil quality indicators. The fact that organic agriculture systems also absorb and retain significant amounts of carbon in the soil has implications for global warming, pointing out that soil carbon in the organic systems increased by 15 to 28 per cent, the equivalent of taking about 3,500 pounds of carbon dioxide per hectare out of the air. This is helpful, but a footnote compared to the importance of stopping soil erosion. The "Green Revolution" way of doing things has been destroying most of our most fertile land for decades now.

### **4.3 Vision**

Our vision is to be an industry leader in creating sustainable and secure system that improve and transform the polluted environment into healthy environment

### **4.4 Mission**

Our mission is to conduct and bring together credible, evidence-based science on the environmental and health effects of organic farming and communicate the findings to the people.

- Our mission is to provide quality Healthy Environment and maximize return with diligence and integrity.
- Advance understanding about the health and environmental benefits of organic farming through scientific research.
- Improve the efficacy and sustainability of organic farming methods through scientific research.

### **4.5 Objectives**

- To engage and develop partnerships with institutions, agencies, organic farmers, and food systems that are working to improve and transform Green environment.
- To empower consumers to make choices that will improve their health, the health of the environment and the health of their communities through education and outreach.
- To strengthen and expand organic practices and commodities which reduce the use of toxic, synthetic chemicals and have clear benefits to human health and the environment.

## **4.6. PRODUCTS AND SERVICES**

### **4.6.1 Problem worth Solving**

Waste management in India is an area which has not been taken seriously. India is considered to be a country which doesn't give its importance to recycling of wastes. India is coming up with plans to make the country clean but doesn't give its equal importance to the area of usage of wastes. Cleaning of wastes is just the starting point. The real progress of the country will be determined by the effective management of wastes. India now features itself in the top ten countries that produce solid wastes due to the increasing standard of

urbanisation. India is generating such waste at 621,000 tonnes a day (approximately). There are only four developing nations among the list of top 10 waste-generating countries - Brazil, China, India and Mexico. This is primarily because of the large size of their urban populations and because their city-dwellers are adopting high-consumption lifestyles. The progress in waste management especially in semi urban areas have to be increased in order to make the most for both the rural and urban can be utilized. The semi urban areas can be made as a hub in order to take the increasing urban wastes and provide organic manure to the farmers in the rural and semi urban areas. These problems have to be solved in order to make the most out of the waste.

This problem has to be solved now because of the many progress taken by the government of India in cleaning the cities. The wastes can be collected to make the best output possible out of the collected. If the wastes are not collected, there could be a chance that India is dumped with wastes that could never be recycled. Many industries have now realised the importance of the waste management and are coming up with process of generating electricity but these recycled energy are not given to the people. People should be benefited for the contribution that they give. Domestic wastes are not utilised probably in the process of recycling. There is a lot of awareness which has to be given for people for the effective usage of domestic wastes. There are various process associated in the conversion of solid wastes. And also people were aware of the possible usage of solid wastes. The domestic wastes are often rotten and degraded by nature which can be used in the most effective ways possible to earn the highest optimum output. The domestic usage is high in urban areas and high quantity of wastes can be collected in the process and it is a problem which has to be solved in the near future. The extraction of the methane gas in various parts of Tamil Nadu has led to confusions among the people of the state. This process demands remedial measures which will bring a sign of relief to people who are concerned about the methane extraction. There are also quality concerns over the extraction of methane in various other ways. All those things should be addressed by justifiable methods and outcomes.

#### **4.6.2 Our Solution**

The possible solution for this problem is the by production of electricity and organic manure out of the domestic wastes collected. Electricity is something which can be obtained only from the solid wastes. In this case we feed the biodegradable wastes to the cows which are very old. The old cows after the consumption of the input, gives us the dung through

which effective methane gas can be obtained. The rest of the dung along with the other biodegradable wastes can be utilized in order to make the organic manures. The organic manures can then be utilized in making the culture of organic farming again into the rural areas of India. The country can bring back its own high quality vegetables in the farming.

Organic farming can bring outputs which has high demands in the foreign and also in the domestic market. This is due to the increase of awareness about natural product in the mind-set of people. There is also a possibility of selling the extracted bio gas itself into the market. The bio gas extraction from the cow dung can be used as a replacement for the gas used in cooking. The energy conservative society was in a situation to take whatever replacement options available in the country to change. This could be a possible solution for the people who don't get enough facilities for cooking in the rural areas. In the process of making this world a better eco-friendly energy conservative, these kind of steps should be taken in order to maintain the energy which can be conservative. The solutions could be either biogas or electricity and organic manure production. This ensures that the product is getting much more diversified output and doesn't depend on one part of market. The process is made in such a way that it can be aligned in any ways depending upon the circumstances. The organic manure has a very good market in abroad and hence it can be used to make the higher revenue margin. Also the methane gas extraction from the wastes and cow dung may reduce the extraction of methane gas from the ground on fertile land.

#### **4.6.3 Validation of Problem and Solution**

The problem of managing the waste needs a solution which has to be addressed. There were also many ways in converting the solid wastes but there are no awareness on the biodegradable waste management. The solution could be of any means for this problem but the solution given in this project makes it to be flexible in its own ways. There were many options available as remedial measures. All these measures were incorporated into a single context for the flexibility. The solution could be altered in many ways depending upon the spectrum of demand. This ensures that this could be the best solution possible out of all the solution available.

Bio gas which was extracted from the cow dung can either be directly sold to the rural market or they can be converted into electricity in the form of fuel cells which can be used for various possible purposes. The cow dung which is remaining after the extraction of the

methane gas can be used as the substitute for the extraction of methane directly from the ground.

#### **4.6.4 Roadmap/Future Plans:**

Implementation process in sub urban areas first because of the accessibility to both the rural areas and urban areas is the first stage of future plan. Later the process could be implemented in various possible locations nearby. The revenue stream could be increased by making the organic manures to be sold in abroad. The demand for organic manure is high and that could be explored in getting higher revenue stream. The project could be taken to the next stage by forming communities in collecting the domestic biodegradable wastes and also in possession of old cows and cultivating fields. The natural organic farming could be made in the land and the products can be sold at a higher price. The process has a very good scope of scalability if it is approached in the right method possible. The optimum utilization of the resources could take the company to the next level. The method can be utilized in various parts of the country depending upon the geographical conditions available. The process could take various dimensions in its shape when the right approach is taken at the right geographical areas. The scalability would bring higher margin of revenues when all the diverse options available with the management of wastes can be utilized in the optimal way. Available market in Abroad should be kept in watch for future expansion.

### **4.7 Market Analysis Summary**

#### **4.7.1 Market Segmentation**

There are customers at both ends of our supply chain that will benefit from our services and products. Municipalities will benefit from our service by having an alternative means of waste disposal. Other potential customers who will benefit from our compost product include turf farms, fertilizer manufacturers, nurseries, landscapers, golf courses, homeowners, and even the federal government for use in highway construction reseeding. Therefore, we have two basic market segments; those waste treatment facilities which will benefit from our services and consumers who will benefit from our product.

There is a report stating that landfills are overflowing and the costs of disposing of sewage and garbage is rising. City leaders can relieve over extended municipal budgets, prevent the

contamination of drinking water, and help farmers build healthier soils by recycling garbage and human waste back to farms. At least 13 U.S. states have 6 years or less before all of their landfills are completely full. We offer a service by which municipalities can dispose of their waste without it having to be land filled anywhere. This is of great value to this customer.

At the other end of our process are the users of our compost. According to Cornell University composting is experiencing a resurgence of activity which is driven by increased understanding of the agronomic benefits of compost utilization, and rising disposal costs for municipal wastes. Also, according to Purdue University consumption of compost in the commercial market is growing due to people looking for a more organic or natural substitute for traditional chemical fertilizers. Recycling is at the forefront of responding to this growth trend in the Mid-Atlantic USA. We will initially focus on selling compost to fertilizer manufacturers, nurseries, and landscapers. We already have commitments from a fertilizer manufacturer and a landscaper to purchase 600 tons per year or more of our compost material.

Five major market segments for compost have been identified:

- Agriculture (for food and non-food crops and sod farms).
- Landscapers (for industrial and commercial properties; golf courses, cemeteries, and athletic fields; landfill covers; and damaged soils).
- Nurseries (for plant and forest seedling crops and reforestation projects).
- Public agencies (for highway median strips, parks, recreational areas, and other public property).
- Residents (for home landscaping and gardening).

#### **4.7.2 Target Market Segment Strategy**

To target our customers, we examined the market trends. This market has grown significantly in recent years and we expect to capture a quarter of this multibillion-dollar market. This market growth is fuelled by a more health conscious consumer. People are better informed about the potential side effects associated with chemical fertilizer products both to their health and to the environment. Sales of organic foods have risen sharply. Organic food sales at the retail level totalled \$10.4 billion, according to Katherine DiMatteo, executive

director of the Organic Trade Association. This year, retail sales of organic foods are expected to exceed \$15 billion with more than \$32 billion projected by 2009 (CNBC, Dec. 3, 2004).

#### **4.7.2.1 Market Needs**

Several companies compete in the fertilizer market. Their major selling points are performance and price. However, health conscious consumers have created growing competition between chemical and organic products. Competition can be divided into two forms: direct and indirect.

Our direct competitors would include other compost producers capable of producing sufficient product to supply the growing compost demand.

Our indirect competitors are fertilizer manufacturers who also are a part of our target market. As noted elsewhere in this business plan, the trend is away from chemical fertilizers, toward natural organic soil enhancers. Thus the market for chemical fertilizer is decreasing while our market is increasing.

#### **4.7.2.2 Market Trends**

Current trends in the market greatly favour the start-up of our recycling business.

Laws have been passed in India placing greater restrictions of the types of landfills which can receive waste sludge. These laws take effect in 2008. Municipalities are already seeking alternative means of disposal as disposal prices are expected to skyrocket as landfill space decreases dramatically. Our recycling service solves this problem for municipalities.

The organic industry now boasts sales in excess of \$9 billion at retail, with growth forecast to continue at 25% per year, the demand for compost to use in organic farming and other applications is growing rapidly.

#### **4.7.2.3 Market Growth**

The possibility of growth in this market is realistically huge. Consider the following simple facts:

- i. Municipalities must have an alternative means for disposing of waste; we offer a great alternative to meet that need.
- ii. Market trends are skewing more and more toward organic soil enhancements and away from chemical fertilizers; we meet this need as well.
- iii. We have no huge direct competition in our target area and very little in the similar region.

All of this means that waste management is poised to see tremendous growth.

#### **4.7.3 Key Customers**

- Farmers
- Terrace Farming
- Grocery shops owners
- Nursery Shops
- Recycling Industries

#### **4.7.4 Future Markets**

The Future Target market of the business will be expanding to other regions (i.e) expanding the Target Market. The next will be taking the work of Government Municipalities collection of waste management may be as lease or making the waste management industry as Private

and tries to take over the clean and Green project of our Government and using India as pollution free, clean and Organic.

#### **4.7.5 Competition**

##### **4.7.5.1 Competitors and Alternatives**

When we look into our Target market, the main competitors are Government that is Urban local body Municipalities, Chemical fertilizer Manufacturers and other organic fertilizer manufacturers especially who are selling through online. When we look into the chemical fertilizers the products are more costly and do not address the market trend toward organic, natural soil enhancers.

Municipalities have composting operations in an attempt to deal with waste disposal issues. They typically use a method in which sludge is placed on the ground in windrows which are turned periodically for aeration. This is an inefficient method of composting primarily because it is slow, taking 90 or more days, which means that availability is uncertain for consumers. Also, in this composting method high enough temperatures are not achieved to kill harmful bacteria and seeds that may sprout into weeds. Additionally, municipalities are not businesses, which mean their marketing capabilities are limited. Their market primarily consists of local homeowners and businesses, which ignores the greater market. Also, this composting method requires a lot of ground space which restricts the operation. Finally, odour can be a problem for municipalities due to nearness of local residents or businesses. For these reasons, municipality composting efforts are not considered a competitive threat.

##### **4.7.5.2 Our Advantages**

The competitive advantages we have are summarized as follows.

1. Discounted Pricing
2. Free Shipping
3. Accessibility
4. Convenience – Easy to use

5. Eco – Friendly
6. Cost: The price of our compost product is much less than chemical fertilizers.
7. Organic product: We offer an organic product which is responsive to current market trends. This includes the entire advantages organics offer over chemicals.
8. Elimination of disposal issues: Municipalities now have a waste that takes up landfill space. Our service recycles the waste which saves valuable landfill space.
9. More effective between application times: Normal times between applications can range from two to four weeks. Our product lasts for many months, thereby saving the customer time and money (no additional expenditure for more products).

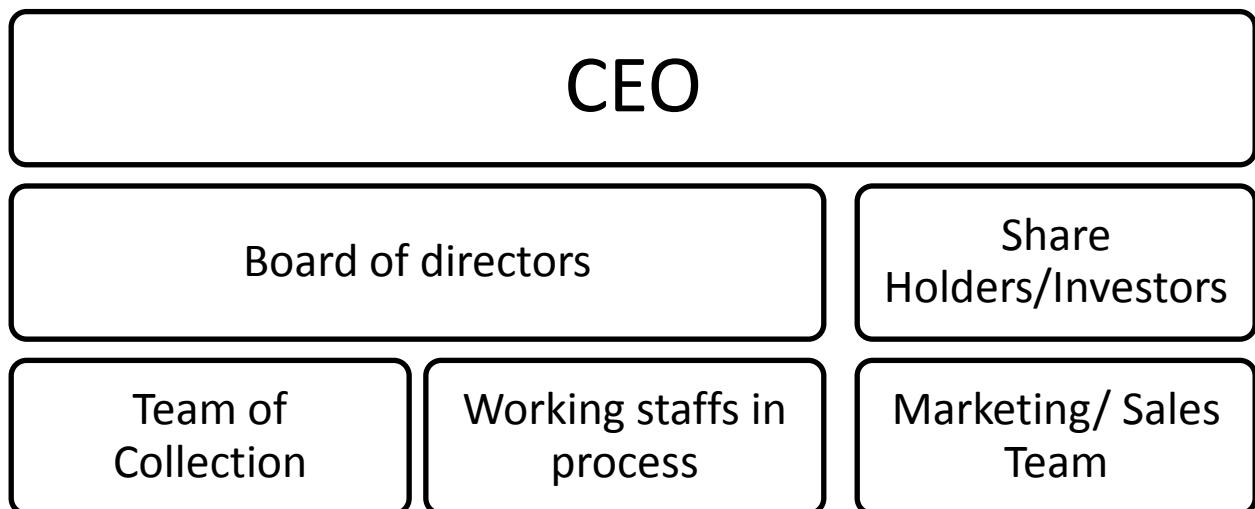
Value proposition for end users of compost material: Compost is a valuable soil amendment that improves many soil properties, such as porosity, structural & thermal stability, water retention, resistance to wind and water erosion, and tillage. Compost also decreases soil crusting, regulates storage and release of nutrients, enhances the development of beneficial microorganisms, builds up plant resistance to parasites and disease, and promotes faster root development. Plants and crops treated properly with compost may produce higher yields and have less weed growth. Chemical fertilizers do not offer this value.

#### **4.8 Legal Compliance**

A Company involving waste management and organic manure should have proper clearance from various departments for a proper setup of the business. That includes the following departments namely, Agmark , Ecomark, Indian Organic Certification, ISI-BIS , ISO-65, USDA. These accreditation will give worth to the product in Local as well as Abroad even when the product is exported in future as a part of scalability.

## **4.9 COMPANY AND MANAGEMENT SUMMARY**

### **4.9.1 Organizational Structure**



### **4.9.2 Management Team**

The management teams could be distinguished into three sections based on the works that they do. The whole process is of three categories and the teams are divided based on the task that they have to be done. The first team is the collection team who collects all the biodegradable wastes from the domestic areas. The wastes deposited in the factories are first separated by the staffs who work on operations. They fall under the second category who works in factory where they feed these into cows and also collect the cow dung. They also involve in the extraction of methane from the dung. There is a separate in house team which converts the bio gas into electricity in form of fuel cells or they fill they biogas in containers which will make them ready to be taken to the market. The third process done by this team is making the organic manure from the cow dung. The manure is packaged and given to the marketing team. This team forms the third section who sells all the three products in the nearby market.

### **4.9.3 Management Team Gaps**

All the teams are given a set of target which has to be attained in the given period of time. The management teams should acquire the gaps with performance that they have done with the respect to their target. The gaps should be minimal because they have to achieve the gaps which they made in the next recovery period.

#### **4.9.4 Personnel Plan**

The plan is to provide the customer and the employee with utmost satisfaction. The employee should get their welfare and benefits according to their services to the company. The incentives could be based on the performance that the employee puts in. The shift is based on the willingness of the employee to work and the incentives are made according to the shift allowance. Employee engagement should be at the highest level and they are given equal importance.

### **4.10 Marketing Strategies**

#### **Product Strategy:**

The following is the clear explanation of the method what type of the waste should be used to produce the manure and biogas. The idea is to first produce a first quality manure which is of the mixture in the ratio of 1:1(dunk and soil), then second quality is in the mixture in the ratio of 1:2 (dunk and soil). Mostly Indian cultivators use the chemical fertiliser to produce the food product. Now as per the demand they were made to concentrate on the health. This helps the natural manure in producing the food at the house hold also. The variation in the quality helps them to be cultivated and produced in abroad and in domestic market. The Product differentiation could help the products to stand against the competitor's products.

#### **Pricing Strategy:**

Price penetration strategy and odd even price strategy can be used in the fixation of prices. The products are to be sold in three different types of products. Biogas price is fixed based on marker rate of biogas only. The biogas can be sold to the retailer or to the customer. The two type of manures are fixed the two different price, here use the Price penetration strategy, odd even price strategy. The price for the first quality is Rs. 99 and second quality is Rs. 77.

#### **Promotion Strategy**

Our promotional strategy will be two-fold: first phase promotion will focus on before, during, and six months following our opening; the second phase of promotion will deal with the long term. The purpose of the first phase is to assist with rapid market entry to ensure

early and sustained profitability. The second phase is to ensure long-term growth which helps us to propel toward achieving our goal of expanding state wide and across the country.

### **First Phase Promotions**

- **Publicity:** We will send news releases to all of the major newspapers in Tamil Nadu. Publication of news articles about Tamil Nadu Recycling will lend great credibility and be an excellent way to let all target markets know about this new, innovative business and the solutions it provides for municipalities and users of compost or fertilizers. We will similarly seek publicity in the form of news stories from local radio and television stations.
- **Advertising:** We will utilize direct mail and face-to-face promotional strategies to raise awareness about our products and services in the target markets. Newspaper advertising may also be used. Radio and television ads are not certain; we will evaluate their effectiveness before further implementation.
- **Internet:** We will have a content heavy website geared toward educating potential customers about the benefits of our products and services. All literature, business cards, etc. will include our website and e-mail address information.
- **Alliances:** We intend to form alliances with fertilizer manufacturers to use our product in their fertilizer and/or distribute our product for us.

### **Second Phase Promotions**

- **Publicity:** As the business grows and expands we will continue to seek publicity through news media to tout our successes.
- **Advertising:** We will continue to make face-to-face contact with customers and potential customers. Mail-outs will be done again within a few months of start-up. The second round of mail outs will be updated to reflect the benefits provided to customers thus far. Such mail-outs will be sent periodically.
- **Internet:** We will continue to have a comprehensive website. The website will be updated to provide responses to frequently asked questions. After the first six months, and certainly after the first year, we will evaluate the viability of having target clients

advertise on our site, and conversely, we will evaluate viability of advertising on our target client's websites (if applicable).

- **Alliances:** We will continue to seek mutually beneficial and complementary alliances with manufacturers where applicable.

## **Positioning Statement**

For municipalities seeking an answer to their waste disposal problems, Tamil Nadu Recycling is the service of choice and trusted strategic ally who gives them a cost effective solution. For users of fertilizer and soil amendment products, Tamil Nadu Recycling is a dependable provider of low cost and consistent high quality compost products.

### **Place Strategy:**

The manure buyers are those who have space to cultivate the vegetables in their land or garden. They can improvise by our product to cultivate the vegetables which turn out to be organic in nature. Mostly people who stay in apartment and in rental houses have no able land to cultivate so it is definitely in need for space in the housing premises. There is always requirement for the provision of sunlight. So we are concentrating only tier two cities and town people where they will be having enough spacing for in-house gardening. By selling the manure for every household, the improvement in the market size can be attained. It makes it easy for customers to utilize this service. Concentrating on semi urban areas will improve the sales.

### **Timing strategy:**

The collection of biodegradable wastes has to be done within a day so that it can be in a state which can be consumed by the cows. The distribution of biogas and other products has to also be delivered in time. Effective logistics can be used to deliver the products on time to the customers. The logistics can be categorized as Inbound and outbound logistics where the collection of source and delivery of products comes into consideration.

### **Selling strategy:**

Discounted Pricing: who are all buying more than 20kg for manure we are giving the each kg 5rupee discount. Free shipping Accessibility: customer buying excess of 25kgs of manure are given free shipping cost.

## 4.11 FINANCIAL PLAN

### Sales project for First Year

SALES			
Particular	Quantity	Amount per unit	Total
BIO GAS	26,568.00	70.00	1,859,760.00
FIRST QUALITY MANURE	53,136.00	130.00	6,907,680.00
SECOND QUALITY MANURE	79,704.00	100.00	7,970,400.00
		SALES REVENUE	<b>16,737,840.00</b>

### Sales project for Second Year

SALES			
Particular	Quantity	Amount per unit	Total
BIO GAS	66,420.00	70.00	4,649,400.00
FIRST QUALITY MANURE	66,420.00	130.00	8,634,600.00
SECOND QUALITY MANURE	99,630.00	100.00	9,963,000.00
		SALES REVENUE	<b>23,247,000.00</b>

### Sales project for Third year

SALES			
Particular	Quantity	Amount per unit	Total
BIO GAS	106,272.00	70.00	7,439,040.00
FIRST QUALITY MANURE	132,840.00	130.00	17,269,200.00
SECOND QUALITY MANURE	199,260.00	100.00	19,926,000.00
		SALES REVENUE	<b>44,634,240.00</b>

### Sales project for Fourth Year

SALES			
Particular	Quantity	Amount per unit	Total
BIO GAS	159,408.00	70.00	11,158,560.00
FIRST QUALITY MANURE	212,544.00	130.00	27,630,720.00
SECOND QUALITY MANURE	318,816.00	100.00	31,881,600.00
		SALES REVENUE	<b>70,670,880.00</b>

### Sales project for Fifth Year

<b>SALES</b>			
<b>Particular</b>	<b>Quantity</b>	<b>Amount per unit</b>	<b>Total</b>
BIO GAS	318,816.00	70.00	22,317,120.00
FIRST QUALITY MANURE	318,816.00	130.00	41,446,080.00
SECOND QUALITY MANURE	478,224.00	100.00	47,822,400.00
		SALES REVENUE	<b>111,585,600.00</b>

### Expenses:

#### First year expenses statement:

<b>VARIABLE COST</b>			
<b>Particular</b>	<b>Quantity</b>	<b>Unit per Cost</b>	<b>Total</b>
By Direct Raw Material	265,680.00	1.00	265,680.00
By Direct Raw Material (Black Soil)	180.00	1,200.00	216,000.00
By Direct Material Cost	2,400.00	30.00	72,000.00
By Wages	720.00	7,500.00	5,400,000.00
By Travelling Expenses	32,400.00	65.00	2,106,000.00
By Electricity Bill			360,000.00
By Maintenance Cost			360,000.00
		Total	<b>8,779,680.00</b>

<b>Fixed Cost</b>			
<b>Particulars</b>	<b>Quantity</b>	<b>Fixed Price</b>	<b>Total</b>
By Salary	20.00	180,000.00	3,600,000.00
By Lease Transport	6.00	108,000.00	648,000.00
By Lease The Small Three Vehicles	20.00	1,200.00	24,000.00
By Rent			600,000.00
By Deprecation			62,500.00
By Interest On Loan			9,000.00
		Total	<b>4,943,500.00</b>

#### Second year expenses statement:

<b>Variable Cost</b>			
<b>Particular</b>	<b>Quantity</b>	<b>Unit Per Cost</b>	<b>Total</b>
By Direct Raw Material	398,520.00	1.00	398,520.00
By Direct Raw Material (Black Soil)	270.00	1,200.00	324,000.00
By Direct Material Cost	3,600.00	30.00	108,000.00
By Wages	1,020.00	7,500.00	7,650,000.00
By Travelling Expenses	41,350.00	65.00	2,687,750.00
By Electricity Bill			540,000.00
By Maintenance Cost			240,000.00
		Total	<b>11,948,270.00</b>

<b>Fixed Cost</b>			
<b>Particulars</b>	<b>Quantity</b>	<b>Fixed Price</b>	<b>Total</b>
By Salary	30.00	180,000.00	5,400,000.00
By Lease Transport	9.00	108,000.00	972,000.00
By Lease The Small Three Vehicles	30.00	1,200.00	36,000.00
By Rent			900,000.00
By Deprecation			67,500.00
By Interest On Loan			13,500.00
			Total
			7,389,000.00

### Third year Expenses projection:

<b>Variable Cost</b>			
<b>Particular</b>	<b>Quantity</b>	<b>Unit Per Cost</b>	<b>Total</b>
By Direct Raw Material	797,040.00	1.00	797,040.00
By Direct Raw Material (Black Soil)	540.00	1,200.00	648,000.00
By Direct Material Cost	7,200.00	30.00	216,000.00
By Wages	1,440.00	7,500.00	10,800,000.00
By Travelling Expenses	83,100.00	65.00	5,401,500.00
By Electricity Bill			960,000.00
By Maintenance Cost			720,000.00
			Total
			19,542,540.00

<b>Fixed Cost</b>			
<b>Particulars</b>	<b>Quantity</b>	<b>Fixed Price</b>	<b>Total</b>
By Salary	60.00	180,000.00	10,800,000.00
By Lease Transport	18.00	108,000.00	1,944,000.00
By Lease The Small Three Vehicles	60.00	1,200.00	72,000.00
By Rent			1,200,000.00
By Deprecation			172,500.00
By Interest On Loan			27,000.00
			Total
			14,215,500.00

### Fourth year Expenses projection:

<b>Variable Cost</b>			
<b>Particular</b>	<b>Quantity</b>	<b>Unit Per Cost</b>	<b>Total</b>
By Direct Raw Material	1,594,080.00	1.00	1,594,080.00
By Direct Raw Material (Black Soil)	1,080.00	1,200.00	1,296,000.00
By Direct Material Cost	10,800.00	30.00	324,000.00
By Wages	2,160.00	7,500.00	16,200,000.00
By Travelling Expenses	69,240.00	65.00	4,500,600.00
By Electricity Bill			1,620,000.00
By Maintenance Cost			840,000.00
			Total
			26,374,680.00

<b>Fixed Cost</b>			
<b>Particulars</b>	<b>Quantity</b>	<b>Fixed Price</b>	<b>Total</b>
By Salary	90.00	180,000.00	16,200,000.00
By Lease Transport	27.00	108,000.00	2,916,000.00
By Lease The Small Three Vehicles	90.00	1,200.00	108,000.00
By Rent			1,800,000.00
By Deprecation			276,000.00
By Interest On Loan			40,500.00
			Total
			21,340,500.00

### Fifth year Expenses projection:

<b>Variable Cost</b>			
<b>Particular</b>	<b>Quantity</b>	<b>Unit Per Cost</b>	<b>Total</b>
By Direct Raw Material	2,391,120.00	1.00	2,391,120.00
By Direct Raw Material (Black Soil)	2,160.00	1,200.00	2,592,000.00
By Direct Material Cost	21,600.00	30.00	648,000.00
By Wages	4,320.00	7,500.00	32,400,000.00
By Travelling Expenses	11,538.46	65.00	749,999.90
By Electricity Bill			3,240,000.00
By Maintenance Cost			2,160,000.00
			Total
			44,181,119.90

<b>Fixed Cost</b>			
<b>Particulars</b>	<b>Quantity</b>	<b>Fixed Price</b>	<b>Total</b>
By Salary	135.00	180,000.00	24,300,000.00
By Lease Transport	40.50	108,000.00	4,374,000.00
By Lease The Small Three Vehicles	135.00	1,200.00	162,000.00
By Rent			2,700,000.00
By Deprecation			450,000.00
By Interest On Loan			72,840.00
			Total
			32,058,840.00

### Marginal Costing:

Particular	First year	Second year	Third year	fourth year	fifth year
Sales	16,737,840	23,247,000.00	44,634,240.00	70,670,880.00	111,585,600
Variable cost	8,779,680.00	11,948,270.00	19,542,540.00	26,374,680.00	44,181,119.90
<b>Contribution</b>	<b>7,958,160.00</b>	<b>11,298,730.00</b>	<b>25,091,700.00</b>	<b>44,296,200.00</b>	<b>67,404,480.10</b>
Fixed cost	4,943,500.00	7,389,000.00	14,215,500.00	21,340,500.00	32,058,840.00
<b>Profit</b>	<b>3,014,660.00</b>	<b>3,909,730.00</b>	<b>10,876,200.00</b>	<b>22,955,700.00</b>	<b>35,345,640.10</b>

**TRADING ACCOUNT & PROFIT AND LOSS ACCOUNT:**

TRADING ACCOUNT & Profit and loss account					
PARTICULAR	Amount	Amount	Amount	Amount	Amount
TO PURCHASE	265,680	398,520	797,040	1,594,080	2,391,120
TO PURCHASE BLACK SOIL	216,000	324,000	648,000	1,296,000	2,592,000
TO PURCHASES OF RAW MATERIAL	72,000	108,000	216,000	324,000	648,000
To Cash purchases	353,680	330,520	1,561,040	2,864,080	5,101,120
To Credit Purchases	200,000	500,000	100,000	350,000	530,000
TO WAGES(60*7500)	5,400,000	7,650,000	10,800,000	16,200,000	32,400,000
TO ELETRICITY BILL	360,000	540,000	960,000	1,620,000	3,240,000
<b>BY GROSS PROFIT C/D</b>	<b>10,424,160</b>	<b>14,226,480</b>	<b>31,213,200</b>	<b>49,636,800</b>	<b>70,314,480</b>
	<b>16,737,840</b>	<b>23,247,000</b>	<b>44,634,240</b>	<b>70,670,880</b>	<b>111,585,600</b>
BY SALES OF BIO GAS	1,859,760	4,649,400	7,439,040	11,158,560	22,317,120
BY SALES OF FIRST QUALITY MANURE	6,907,680	8,634,600	17,269,200	27,630,720	41,446,080
BY SALES OF SECOND QUALITY MANURE	7,970,400	9,963,000	19,926,000	31,881,600	47,822,400
By Cash sales	16,682,840	23,144,000	44,569,240	70,570,795	110,435,600
BY Credit sales	55,000	103,000	65,000	100,085	1,150,000
	<b>16,737,840</b>	<b>23,247,000</b>	<b>44,634,240</b>	<b>70,670,880</b>	<b>111,585,600</b>
SELLING AND DISTRIBUTION COST					
TO SALARY	3,600,000	5,400,000	10,800,000	16,200,000	24,300,000
TO TRAVELLING EXPENSES	2,106,000	2,687,750	5,401,500	4,500,600	750,000
TO RENT	600,000	900,000	1,200,000	1,800,000	2,700,000
OFFICE AND ADMINSTATIVE EXPENSES					
TO MAINTAINANCE CHARGES	360,000	240,000	720,000	840,000	2,160,000
TO Lease rent for transport	648,000	972,000	1,944,000	2,916,000	4,374,000
TO Lease rent for three vehicles	24,000	36,000	72,000	108,000	162,000
To depreciation	62,500	67,500	172,500	276,000	450,000
TO INTEREST ON LOAN	9,000	13,500	27,000	40,500	72,840
	7,409,500	10,316,750	20,337,000	26,681,100	34,968,840
<b>BY NET LOSS/PROFIT C/D</b>	<b>3,014,660</b>	<b>3,909,730</b>	<b>10,876,200</b>	<b>22,955,700</b>	<b>35,345,640</b>
<b>BY GROSS PROFIT B/D</b>	<b>10,424,160</b>	<b>14,226,480</b>	<b>31,213,200</b>	<b>49,636,800</b>	<b>70,314,480</b>
	<b>10,424,160</b>	<b>14,226,480</b>	<b>31,213,200</b>	<b>49,636,800</b>	<b>70,314,480</b>

**Balance Sheet:**

LIABILITIES	Amount	Amount	Amount	Amount	Amount
CAPITAL	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
(+) NET PROFIT	3,014,660	3,909,730	10,876,200	22,955,700	35,345,640
BANK OVER DRAFT	127,500	62,250	97,500	816,600	450,000
SUNDY CREDITORS	200,000	500,000	100,000	350,000	530,000
SHORT TERM LOAN	225,000	337,500	675,000	1,012,500	1,821,000
BY LONG TERM LOANS	900,000	1,350,000	2,700,000	4,050,000	7,284,000
<b>TOTAL LIABLITITES</b>	<b>11,467,160</b>	<b>13,159,480</b>	<b>21,448,700</b>	<b>36,184,800</b>	<b>52,430,640</b>
ASSET	Amount	Amount	Amount	Amount	Amount
BY BORING THE GROUND	1,250,000	1,350,000	2,050,000	3,500,000	5,300,000
By Depreciation	62,500	67,500	172,500	276,000	450,000
BY CASH IN Bank	85,000	41,500	65,000	544,400	300,000
BY CASH AT hand	115,000	14,500	25,000	400,000	350,000
BY SUNDY DEBTORS	55,000	103,000	65,000	100,085	1,150,000
PLANT	400,000	550,000	620,000	1,500,000	2,300,000
LAND			1,400,000	2,020,000	3,700,000
Life storm	1,000,000	1,470,000	2,100,000	2,500,000	5,600,000
BIO CYLINDER	7,300,000	7,000,000	10,000,000	16,250,000	21,250,000
BILL RECEIVABLE	3,699,660	5,262,980	9,051,200	16,094,315	22,630,640
<b>TOTAL ASSETS</b>	<b>11,467,160</b>	<b>13,159,480</b>	<b>21,448,700</b>	<b>36,184,800</b>	<b>52,430,640</b>
Particular	First year	Second Year	Third Year	Four year	Fifth Year
Gross Profit	1	1	1	1	1
Net Profit Ratio	0	0	0	0	0
Current Ratio	1	2	2	3	3
PROFIT VALUE RATIO	0	0	0	1	1
Margin of Safety	-1,463,378	-1,387,807	4,551,756	16,621,312	27,669,720
BREAK EVEN POINT OF SALES	14,694,242	20,217,877	31,275,192	39,968,528	62,714,616

## **4.12 Operational Plan**

The operational plan involves all the process and their subsequent plans are to be described in the following

### **4.12.1 Marketing Plan**

We have clearly defined our target markets and have differentiated ourselves by offering a unique solution to our customers' needs. The primary focus of our marketing strategy must be to increase sales and profitability business quickly. This can be achieved by face-to-face contact, and an effective publicity and promotion campaign.

#### **Value Proposition.**

**Value proposition for end users of compost material:** Compost is a valuable soil amendment that improves many soil properties, such as porosity, structural and thermal stability, and water retention, resistance to wind and water erosion, and tillage. Compost also decreases soil crusting, regulates storage and release of nutrients, enhances the development of beneficial microorganisms, builds up plant resistance to parasites and disease, and promotes faster root development. Plants and crops treated properly with compost may produce higher yields and have less weed growth. Chemical fertilizers do not offer this value.

### **4.12.2 Sales Plan**

#### **Pricing Strategy**

The going rate per ton for compost is Rs.50 and up. This price is low enough to ensure rapid growth in the market yet still provide a very healthy profit, given that we have no direct competition and chemical fertilizer is much more expensive. This is possible because we are on the front end of the industry growth in this region. We may be able to analyse and register our material as a fertilizer. In that case the price per kg will be in the Rs.100 range still well below the rate of Rs.250 per kg charged for manufactured chemical fertilizers; given this scenario, the sales figures below are very conservative.

Additionally, we will be priced at market rates for the waste disposal service we offer to municipalities. Tipping fees are generally Rs.15 and up per ton. Additionally, we will charge competitive skid box rental fees and transportation costs.

## **Sales Forecast**

The forecast is based on reasonable sales projections within this very large market. An additional revenue stream will be the collection and removal of sawdust, wood chip, and bark from the wastes on a full time basis. The sawdust materials collected will be used in the composting process. The high growth is based on our plans to expand by increasing operations in towns and placing similar facilities in other areas of the Tamil Nadu. We anticipate that by 2020 we will have two such facilities and by 2022 we anticipate having four. Thus our sales forecast doubles in each of those years.

### **4.12.3 Location and Facilities**

Suburbs of cities and villages around urban centres can be ideal locations for practice of Vermicomposting. Despite the superior ability of earthworms to control odours, such operations must be sensitive to neighbouring land users. Like low-technology thermophile composting, Vermicomposting in boxes or windows tends to be very space is limited and costly. Projects in urban locations, characterized by lack of space and proximity to neighbours will usually accept small-scale waste diversion in low-technology earthworm boxes or invest in high-technology methods like the Canadian Vermitech system or continuous-flow reactor systems. However, many large-scale vermicomposting projects, processing hundreds or thousands of tons of material per year, have located on large sites of many acres in rural areas.

### **4.12.4 Technology**

Epigeic earthworms such as Eisenia, Eudrilus and Perionyx have been successfully cultured in organic wastes kept in cemented tanks under suitable temperature (26°C-30°C) and moisture (50%-60%) conditions for production of vermicomposting. Different doses (@2.5 tons/ha – 20 tons/ha) of harvested vermicomposting were applied (RBD technique) in the soils of paddy, pineapple and tea plantations in Tripura. Findings: Vermicomposting, rich in plant-available nutrients (avN, avP, avK etc.) and plant growth factors, when applied to soil: improved soil aggregation, water use efficiency, nutrient uptake etc. Dramatic yields of paddy, pineapple and tea were recorded following application of 10-20 tons of vermicomposting. A significant ( $p<0.05$ ) and gradual increase in density and biomass of earthworms were also noticed with increase in amount of vermicomposting applied. Conclusion & Significance: Crop yield was very much related to the concentration of

vermicomposting, beyond the level of which production declined. Vermicomposting and its application to soil has several advantages: i) reduce organic pollution, ii) produces organic manure for application in agro-ecosystems, iii) increases biodiversity, iv) production of high quality earthworm proteins from wastes and its utilization as feed for poultry birds and fishes

#### **4.12.5 Equipment and tools**

The materials needed to start a vermicomposting system are simple and inexpensive. The following are the requirements of Vermicomposting process:

A suitable bin can be constructed of untreated, non-aromatic wood, or plastic container to be purchased. A wooden box is better if we wish to keep the worms outdoors, because it will keep the worms cooler in the summer and warmer in the winter.

An outdoor wooden bin can even serve double-duty as a bench. If a plastic container is used, it should be thoroughly washed and rinsed before the worms and bedding are added. The bin size depends on the amount of food produced by the household.

For two people (producing approximately 31/2 pounds of food scraps per week), a box 2 feet wide, 2 feet long, and 8 inches deep should be adequate. A 2-foot-by-3- foot box is suitable for four to six people (about 6 pounds of waste per week). Red worms (the type used for vermicomposting) thrive in moist bedding in a bin with air holes on all sides. For aeration and drainage, drill nine 1/2-inch holes in the bottom of the 2-foot-by-2- foot bin or 12 holes in the 2-foot-by-3-foot bin.

Place a plastic tray under the worm bin to collect any moisture that may seep out. Drilling holes on the upper sides of your bin will also help your worms get needed oxygen and prevent odours in your worm bin. Keep a lid on the bin, as worms like to work in the dark.

Ideally Vermicomposting should consist of seven layers of:

- i) Pebbles
- ii) Coarse Sand
- iii) Processed Soil mixed with cow dung
- iv) Bagasse (Sugarcane Bagasse)

v) Processed cow dung + processed vermicastings +Earthworms

vi) Sugarcane Bagasse

vii) Vermiculture soil with many productive earthworms

These seven layers keep the earthworms cool and extremely productive.

#### **4.12.6 Milestones**

The benchmarks that are being expected during the course of Start-up are mainly focusing on the safe and clear disposal of waste that will profit the company in a larger scope. To be a well renowned organization in 2 years knowing the place well and making all possible revenue from the place. In next 2 years develop into a much big organization making the city clean with the clear cut support from the government and other functional NGO's.

#### **4.12.7 Key Metrics**

Key Metrics that have to be considered for the improvement of the company in the prevailing circumstances of the environment. Performance of the company, Workers efficiency, Conversion ratio, infrastructure, logistics are the most important indicators that literally show the growth of the company visually overcoming the obstacles in the society that is pulled to a healthier community.

## **CHAPTER 5 – SCALABILITY OF THE START-UP**

Addressing the waste management is considered to be one of the most immediate and serious environmental problem particularly in developing countries. The waste management has been adopted by industrialized nations for developing strategies largely depending on a number of factors, such as topography, population density, transportation and infrastructure, socio-economic and environmental regulations. But the importance of biodegradable wastes and their scalability in usage is still unnoticed. The following chapter describes about the scope and the scalability associated with the biodegradable waste management.

### **5.1 SCOPE OF BIODEGRADABLE WASTE MANAGEMENT:**

A systematic approach of waste management encompassing the waste of all kinds of resources at all stages should be adopted. However the material constitutes the major fraction of the total production cost, material wasted are of critical importance. Waste Management is not only a project this is one of the best plans for our nation but a profit yielding business. Waste management involves engineering principles, economic, urban and regional planning, management techniques and social sciences to minimize the overall was activity of the system under consideration. Biodegradable waste can be commonly found in municipal waste such as green waste, food waste, paper waste and biodegradable plastics which can utilized in major areas and help in production of methane gases.

The scalability can be projected in a way that the scope for further improvement is possible in both side of non-biodegradable and biodegradable waste management. House hold wastes can be used in soil that can be used to nourish house garden. There are many ways to compost; some compost mixtures allow for items like meat and dairy to be included, while others are strictly for fruit and vegetable scraps.

### **5.2 SCALABILITY OF WASTE MANAGEMANT:**

Scalability is expanding of business with increase in the production of organic manure and biogas production and exporting to foreign countries. Extending to own farming especially in organic with production and marketing in the organic food section. Modulated design can accommodate city scheduling and operational needs with geographical expansion towards other parts of the state. The scalability can be used in making the product with good

packaging sectors. Green items, which break down quickly, like raw vegetable peelings, coffee grounds, tea bags, grass cuttings, leaves are collected initially and the scalability can also be in moving to other range of sectors such as e-waste recycling. Here are two main types of waste that are to be known about so there are opportunities available for scaling up in waste management.

- Food and garden waste
- Mixed dry recycling

Food and garden waste is the waste which is described in the project. The scalability can be done by entering into the mixed dry recycling where the concentration is on recycling of the products such as Cans, Cardboards, Paper, Plastic, Glasses. Expanding the areas around Tenkasi in a steady pattern so that the business doesn't get any drawbacks

By entering into these markets there are very good chance of scaling up the business in waste management. Waste management is an area where there is a need for exploration and through which the utilization of various kinds of wastes can be converted into profitable resources.

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## **APPENDIX**

### **Questionnaire for the collection of data relating to Waste Management Business**

- 1) Name :
- 2) Number of people in each category
  - (a) 0 – 10 yrs \_\_\_\_\_
  - (b) 10-20 yrs \_\_\_\_\_
  - (c) 20-30 \_\_\_\_\_
  - (d) 30-40 \_\_\_\_\_
  - (e) Above 40 \_\_\_\_\_
- 3) Sex
  - (a) Male (b) Female (c) others
- 4) Place : \_\_\_\_\_
- 5) What is your Occupation?
  - (a) Farmer (b) Business (c) Government Servants (d) others
- 6) How many members are there in your House?
  - (a) 1 (b) 2 (c) 3 (d) 4 (e) More than 4
- 7) How many bags of garbage do you generate per week?
  - (a) 1 bag (b) 2 bags (c) 3 bags (d) none
- 8) How do you dispose Garbage?
  - (a) Corporation/Municipality (b) Private (c) Self disposal (d) others
- 9) If self-disposal, where do you usually put away the collected waste?
  - (a) Public Bins (b) By the valley/lake side/river (c) By the roadside (d) On an open space
  - (e) Others specify \_\_\_\_\_
- 10) Is there any Public Bins near your House?
  - (a) Yes (b) No
- 11) How many times once Public Bins are cleared?  
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- 12) Are you satisfied with the service provider?
  - (a) Yes (b) No

13) Reason : \_\_\_\_\_

14) Do you burn Garbage?

- (a) Yes (b) No

15) Would you like to change the current Service Provider?

- (a) Yes (b) No

16) Have you ever been educated on Proper waste disposal?

- (a) Yes (b) No

17) In what type of container do you collect waste?

- (a) Waste Basket (b) Old Basket (c) Plastic bags (d) Tin/can

18) How often is the waste container emptied in your house?

- (a) Once a day (b) Once in two days (c) Once in three days (d) Once in a week

19) Would you like to give your garbage for recycling?

- (a) Yes (b) No

20) Which Food do you prefer irrespective of price? Foods from

- (a) Organic Fertilisers (b) Chemical Fertilisers

21) Do you have garden at your house?

- (a) Yes (b) No

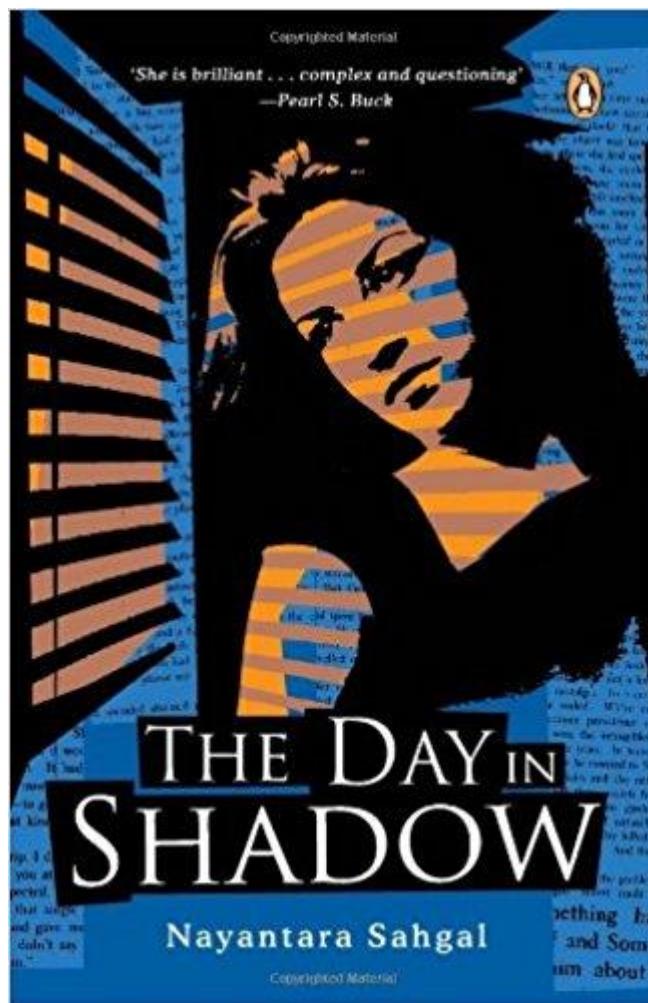
22) How much quantity do you dispose per week?

- (a) 0-5 kg (b) 5-10kg (c) 10-15kg

## **Union of Mutiny in a Marital Relationship in Nayantara Sahgal's *The Day in Shadow***

**Ashline. S., M.Phil. English**

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### **Abstract**

Nayantara Sahgal's *The Day in Shawdow* is based on the political, psychological stress, sufferings, mental torture and personal emotional shock in Simrit's life. Simrit suffers a lot in her

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personal life. She feels completely trapped, depressed, oppressed, suppressed and doomed under the care of her husband.

### **A Revolutionary Novel**

*The Day in Shadow* is a revolutionary novel, about modern educated women's living conditions in India. The novel is one type of fiction that talks about women's oppression. Nayantara Sahgal, an outstanding Indian English writer, articulates her deep concern over gender oppression in her fictional world. She is one of the female Indo-Anglian writers to receive wide recognition. Some of her non-fictional works and several articles and stories were published in leading newspapers and magazines. Sahgal has been hailed chiefly as a political novelist.

### **Indian Woman's Quest for Sexual Freedom and Self-Realization**

*The Day in Shadow* is preoccupied with the modern Indian woman's quest for sexual freedom and self-realization. This novel highlights the relationship between political and personal commotion. In her novels the political and personal lives of people are brought together by the device of juxtaposition.

*The Day in Shadow* is Nayantara Sahgal's autobiographical novel published in 1971. This novel is no doubt an epic on woman's struggle against patriarchal domination and social construction. The woman in the novel is more aware of the injustice done by man, but habit makes her a willing prisoner of exploitation and injustice.

### **Simrit, the Protagonist of the Novel**

This novel is set in post-independence Delhi. This novel opens with the party scene, which is given by the Oil Products Limited, richly festooned for the grand party expecting men of consequence, ministers and business men; the novel revolves around the center of politics and man-woman relationship. Simrit is the protagonist of the novel. She is a journalist. She lives in Delhi with her children. She writes political news in the newspapers, and magazines. Raj is an M.P, who is the friend of Simrit. Simrit, Raj and other politicians attend the party. There, she talks with Joshi. Joshi is a lawyer, who argues for her divorce with her husband, Som. After the party, Simrit and Raj leave the party hall and pick the taxi. During the travel, Simrit recalls her bitter

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experience with her husband. It is the story of Som and Simrit. Simrit ignoring the warnings of her parents, decides to marry Som on her own. Simrit's choice is a businessman husband, but her friends and Brahmin parents do not like him either. They think him a bore and unfit to be Simrit's husband.

### **Som and Simrit**

Som never discusses business in Simrit's presence. Som, the rougher element, likes to lead. Not that Simrit wants to lead, but only to be thought of as a person, that would mean a battle- and she is never prepared to fight. Ruddy Vetter is Som's friend from Germany. Vetter and Lalli are Som's business friends. Som has business dealings with them. But, Simrit does not know anything about Som's business dealings. Som explains to Vetter that she doesn't need him to spend more time with her, since she is satisfied with the children.

Vetter is a kind interested friend of Som, tries to bridge the gaping void between Simrit and Som, struggling to find what she needs? He tries to tempt her to have shopping clothes, jewels, anything; trips abroad, fantastic summer tours to Europe and children's benefits.

Som comes in and compels her with his urgency; Som was a companion of Simrit only in bed. She stays separate, excluded and rebellious. Much later she wakes unaccountable alone in the night, though Som is still asleep in the next bed, his back to her. Simrit feels she is on the verge of a fatal realization.

Once Simrit had dismissed the cook twice for drunkenness and bad behavior, though Som preferred him. She had thought at the time, it was nothing serious, nothing to quarrel about, but it was building up into a frightening situation - herself. It had become impossible to live with him. This emotional shock of a divorce plus a brutal divorce-settlement was inflicted upon her.

### **Freedom after Divorce**

Simrit enjoys real freedom and self-identity after the divorce. She works a lot and overcomes the cruel act of divorce settlement with the help of Raj. Raj supports and encourages her. She is impressed with the innocent, selfless and loving idiotic mind of Raj. He proposes to her and she agrees to marry him. At last, Raj and Simrit get married. Raj also oppresses her with

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abusive language and knowledge. Ram Krisnan is a spiritual man, he helps Simrit to understand her individuality and advises her to stand on her own legs. This novel exposes the fact that women are degraded as well as oppressed by men, thereby motivating women to rise up against the oppression. So, we see that women get their sufferings as well as the instinct to rebel from men.

### **Simrit's Suffering in Life**

*The Day in Shadow* shows the lack of understanding between Simrit and Som. Aristotle remarks two thousand years ago in his work on politics that man is a social animal. He also declares that man is a political animal but man's instincts for society are stronger than his instincts for politics and power. This novel is also based on political and personal emotional shock in Simrit's life. Simrit suffers a lot in her personal life. All human relationships, particularly marriage relationships require a great deal of maturity, because it involves human interaction of the greatest intimacy to human beings. Simrit and Som are the main characters of the novel. They get married against their parents' wishes. After the marriage, Som and Simrit lose their maturity. Som doesn't spend any time with his wife. They feel a 'lack of love', after their marriage. Som always thinks about business and friends. He does not discuss the business dealings in his wife's presence. Som does not allow her to go out. He doesn't care about her writing career and her ambition; he ties her up with his children. She is an educated woman, but she does not have enough maturity to rebel against her husband.

### **Causes for Divorce**

Simrit decides to divorce her husband. She deserts him, leaving all the wealth to Som, but takes the children with her at the time of divorce. But, Som does not let her go that easily. He transfers six lakhs rupees to her and this is inherited mainly by their son, Brij. When Brij comes of age, Som acts very cruel towards his wife. All these problems happen only because of their lack of understanding. Som and Simrit do not understand their bond in their marital relationship. Som is a well-educated man and an industrialist. He knows about the modern Indian working women's suffering and struggles. But he does not understand his wife's mind and thoughts. Their relationship shows their lack of maturity and love.

Marriage is a bond between two persons. They have to share their emotion and understand each other's feelings. Male dominated society always takes the female society under their control. Som should give enough freedom to his wife, Simrit. This novel reveals that Som is a man, who wants to always pull his wife down. Som does not encourage her to go to work and neither does he give freedom to her as a writer. His attitude towards family is like a frog without legs. He keeps and treats his wife as commodity from which he derives the maximum sexual pleasure. Because of these struggles only she decides to divorce her husband. Simrit does not rise her voice against her husband. This novel shows the lack of maturity and mutiny in the marital relationship.

### **What Lies Ahead for Women in India**

Indians are growing well in the economic and educational levels. After independence India has undergone many changes. But, the Indian male does not know how to treat a female in a family? As always from time immemorial, women suffer a lot through the patriarchy of men. In the structure of society presented in the novel which patriarchal, man is the controller of the sexual, economic, political and physical power. *The Day in Shawdow* focuses on a single powerful woman character Smirit.

Women are not allowed to think independently and are crushed down by the male – chauvinist society. Indian patriarchal society considers a woman to be an embodiment of sacrifice, silent suffering, humility, faith and knowledge. She should be virtuous, chaste, submissive, homebound, graceful and devoted to her husband and his family. Indian women have been living like this.

Simrit is a good example for modern Indian woman in society. Simrit mentally and physically struggles against her husband, Som. Simrit renders a living picture of the oppressed, depressed and suppressed life of a woman in India. Three fourth of women are living under the control of men. Nowadays women have education, money and jobs.

This novel shows the lifestyle of modern Indian women and their suffering in the husband– centred world. Women are dominated as well as motivated by men. Som dominates Simrit, and Raj motivates her. *The Day in Shadow* is an attractive novel, which highlights the tale of suffering

and oppression of women. Sahgal tries to reveal the terrible truth of the great amount of pain women suffer in the Indian society.

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## **Literature into Film: Questioning Sexual Myths in Rituparno Ghosh's Adaptation of Tagore's *Chitrangada***

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**Rituparno Ghosh (1963-2013)**  
**Courtesy: [www.Currentbooks.com](http://www.Currentbooks.com)**

### **Abstract**

Rabindranath Tagore's literary creations are always appealing to readers and thus these literary sources often provide interesting plot for filmmakers too. Rituparno Ghosh, a Bengali filmmaker from West Bengal, is often considered to be a fan of Tagore, as time and again he has chosen Tagore's literary masterpieces for his films. *Chitrangada* is his last cinematic adaptation, which is again an adaptation of Tagore's Dance drama with the same name. In the adaptation of Tagore's *Chitrangada*, he has cinematized the possibility of human desires entrapped in the confinement of body. In this adaptation, Ghosh has thoroughly dealt with the necessity of rethinking the already identified and accepted norms of the society. Through his crafted

cinematic venture in *Chitrangada*, Ghosh has questioned and explored sexual myths that are still prevailing in our society to relook into the cornered existence of those who live against heterosexuality. Homosexuality which is often considered to be a Taboo in our society is being negated by him in this film while redefining the meaning of body and then of Self. Thus “What is called into question here is the distinction between the naturally given, normative self of heterosexuality and the rejected other of homosexuality.” (Peter Barry, *Beginning Theory*, p-139).

**Key Words:** Aesthetics, Heterosexuality, Homosexuals, Taboo, Adaptation.

### **Adaptation**

Ronald Perrier writes, “The study of literature casts light on the meanings in the film, and the study of the film can illuminate the full value of the literature.” *From Fiction to Film*

Adaptation can be understood as transformation or conversion. In the process of adaptation, this transformation may occur between two ends -one which is the source and the other where the ideas from the source is transmuted. Here it should be said that literary adaptations can be traced in many other genre – from videogames to films. In this context, adaptations appear to be mainly of two types – one where simply the story line is maintained and the other where we can see the replica of the original text. In both of these cases of adaptation the question of fidelity to the original source remains. Specifically in the adaptation of literary texts into films , the film in which the literary text is adapted is often considered to be inferior compared to the literary text. In another perspective, it is argued that film itself is a separate art form where an artist, an auteur takes up his liberty to paint his own canvass with his desired colour. In doing so the auteur takes help of two separate tools one is of *mise-en Scene* – where the filmmaker will work on the development in space and the other is Montage which guarantees modification in time while putting one scene after the other.

Interestingly these specific aspects of filmmaking process and that of adaptation is handled by Rituparno Ghosh in his tribute to Tagore in a documentary called *Jiban Smriti* . Justifying his position as an auteur in the adaptation process, he opts to begin *Jiban Smriti* with =====

the following line from Tagore's autobiography “ who paints these pictures on the canvas of our memories? But whoever it is , it is pictures that he paints . He doesn't wait brush in hand to record every exact detail. He is selective , dropping some changing others, moving backward and forwards in time with ease. In fact he is an artist not a historian”. (Subtitle, Jiban Smriti-selective memories)

Through the following table adaptation can simply be explained-

ADAPTED	ADDED	EXCLUDED
Events and details from the book which are changed for the movie.	Events and details projected in the film that are not in the book	Events and details from the book which are not included in the movie.

### Rituparno Ghosh

Rituparno Ghosh is an eminent filmmaker from Bengal. His career as a filmmaker began with *Hirer Angthi*, an adaptation of Shirshendu Mukhopadhyaya's novel. His creative talent came to the forefront with the release of his most acclaimed film *Unishe April*. With this film he came up with his brilliant understanding of the facade of human relationship and women's position within a structured and accepted norm of the society. In most of his films he is seen to be propagating a feminine perspective. His understanding of the world of women and his portrayal of his female protagonists justify each other. In most of his films he has dealt with gender issues. He has handled gender issues with such ease that he got easily accepted in an industry, which had directors like Satyajit Ray and Ritwik Ghatak . The strong ground on which Rituparno Ghosh is celebrated is in his capacity to understand human feelings, suffering, and loneliness.

His ability to understand human emotion and dilemma of human identity is somehow the result of his conscious effort to understand his own self which is trapped inside his body. It is the feminine self hidden within his body which helped him to understand the world in which women in Indian society live. His inability to draw a link between his 'body' and his 'self' provided him

the opportunity to reconstruct his ideas on every layer of life". Going against the norm, the myth of heterosexuality influenced him to effeminate and to stamp himself as a Third Gender. Eve Kosofsky Sedgwick writes in her essay in *Queer Performativity: Henry James's The Art Of The Novel* "I want to say that at least for certain, ("queer") people , shame is simply the first , and remains a permanent, structuring fact of identity : one that has its own, powerfully productive and powerfully social metamorphic possibilities."

### ***Chitrangada: The Crowning Wish***



Breaking the boundary of such shame Rituparno Ghosh comes up with the most challenging project *Chitrangada: The Crowning Wish*, a semi-autobiographical film.

In the case of Rituparno Ghosh's adaptation of Tagore's *Chitrangada*, to develop his own points in the film, he has beautifully amalgamated Tagore's dance drama with that of his own visualized narrative. In this adaptation *Chitrangada: The Crowning Wish*, the auteur hankers after the possibility of acknowledging the feminine self inside the body of a man. He has problematised many issues of sex and gender placing himself in the third category - "Third Gender". Rituporno Ghosh, in this ambitious project "Chitrangada" has cinematized the dilemma of homosexuals living in a society which often cannot understand the self – body dichotomy. Through this semiautobiographical film he has envisaged the need of a transformation in our outlook to understand an individuated identity of homosexuals beyond sexual myths. Rituparno Ghosh's approach can be equated with that of Adrienne Rich who opposed "compulsory heterosexuality" while asking for a space for "lesbian existence". Like Rich many creative minds oppose the traditionally sanctioned space of heterosexuality to create a totally new space for homosexuals.



Rituporno Ghosh's film like that of Tagore's novel is a story of wish and definitely of change. Tagore in his dance drama had chosen an episode from the Hindu epic Mahabharata where Chitrangada is the wife of Arjuna . Chitrangada who is brought up like a soldier and as a

man by his father, the ruler of Manipur, a mystic kingdom, has lost her feminine self. At one point of time Chitrangada meets Arjuna in the jungle of Manipur known for its natural beauty. It is only after meeting Arjuna, Chitrangada starts searching for the lost self inside her Body. After meeting Arjuna she meets her original self and transforms her identity as a woman. shading her image of a man.in the later part of the story Chitrangada gives birth to Babrubahan, the sole heir of Manipur. Arjuna leaves both Chitrangada and Babrubahanat in Manipura accepting the norm of a matrilineal kingdom. Based on this story from Mahabharata, Tagore has elaborated the character of Chitrangada and has given it a new dimension. After him Rituporno Ghosh has dealt with the same story with a new perspective. Using film as a medium of presentation he has asked too many questions to his viewers regarding the never ending effort of those who live against the sexual myth “heterosexuality”.

### **Rudra and Chitrangada**

*Chitrangada, the crowning wish* is a film about one choreographer Rudra who is willing to stage Tagores dance drama Chitrangada. Rudra being in an intense relationship with the percussionist of his theatre group tries to shed his image of a gay for adopting a baby just like Chitrangada who also changed her manly image after meeting Arjuna. Here it is visible that both the characters of Rudra and Chitrangada are trying to go against the set pattern of nature and society but they fail in their effort. Here Arjuna is the catalytic agent for Chitrangada who forced her to rethink about her hidden desire of a woman and for Rudra it is Partho. With this parallel presentation of the character of Rudra and that of Chitrangada, Ghosh has effortlessly presented the suffering of an encaptured self within an unwanted body. Using techniques like play within a play Ghosh has elaborated the struggle of Rudra, a gay, in getting a desired identity which can relate his body with that of his self. Living in a society where people are already prejudiced with sexual myths, it is not easy for Rudra to lead a life with self dignity, despite of being a creative genius. Rudra’s aesthetic qualities are often overshadowed by his identity as a homosexual, even Rudra’s father fails to understand his son and his activities, just like the king of Manipur who failed to understand the need of his daughter Chitrangada. Here self and body comes in a warzone as self negates the body and this creates problem in the society where heterosexuality is an essential criteria of living.

## **Understanding a Gay Man's Psyche**

Rituparno through this film comes up with the understanding of a gay man's psyche which clearly portrays the dilemma of Rudra's life where he consoles himself to go under the knife of a surgeon in a critical process of sex change to adopt a baby and to reach out to the person of his love. This film also talks about the questions of a mother who is also a part of the society which teaches her about the validity of heterosexual relations. Rudra's mother's expressions negate the feminine self of Rudra within the body of a man. Affirming her authority on Rudra's body she says "I gave birth to this body, which is yours... I have a right to know, whatever goes on in this body. I have a right to know, if it is changing, transforming...". This change and transformation of Rudra's body is beyond the understanding of his mother as she can never feel the suffering of a gay who faces rejection and humiliation when he wants to be in a relation or wants to have children. As a female she is only educated about the feminine sensibilities of a female body and masculinity of a man. Rudra's dilemma asks for a new, educated and learned understanding in his mother.

## **Crushed Identity**

There is a need to understand life in terms of reality not of myth. The identity which is always crushed or invalidated in our society depending on sexual difference often leave behind them unfulfilled wish and desire. So there is a need to understand the reason behind such crushed identity, behind all those invalidated dreams and desires. Rituparno Ghosh's film *Chitrangada: The Crowning Wish* asks lot many questions on such issues revealing the truth that self and body dichotomy still prevails in our society holding the thread of the sexual myth "compulsory heterosexuality". Rituparno dreams for the transformation in our outlook which can break this myth.

For Rituparno Ghosh, "The film is about acceptance of a person's identity... It isn't just about sexuality or one's image with which he is identified.". It is for sure that Ghosh has set a benchmark for all. The parallel existence of reality and myth in our society will be better understood with concentrated look on both these terms 'reality' and that of 'myth'. All in all it

may be said that Rituparno Ghosh's adaptation of Tagore's *Chitrangada* is worth appreciating as it has enabled us to think about a different way to see life and people who are a part of it.

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