2011 年度
国内実地研修報告書

―愛知県田原市に学ぶ地域の特性を活かした持続可能な発展に
向けた地域開発の実践―

Domestic Fieldwork Report 2011

**Sustainable Regional Development Drawing on Local Advantages:
Lessons from Tahara City, Aichi Prefecture**

2012 年 3 月
March 2011

名古屋大学大学院国際開発研究科

**Graduate School of International Development
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はじめに

名古屋大学大学院国際開発研究科（以下、GSID）では、1995 年以来毎年、本研究科博士課程前期課程カリキュラムの一環として、愛知県もしくは近県の地方自治体ならびに関係機関のご協力を得て、国内実地研修を実施してきました。国内実地研修は、現場での実践的な教育研究活動を重視する GSID にとって、フィールド調査を通して、日本国内における諸行政課題への地方行政の取り組みや日本の開発経験を学ぶ機会を学生に提供する重要な教育活動であり、海外実地研修とともに研究科共通科目として位置づけられています。その主な目的は、１）「開発現場」を知ることの重要性を実感する、２）フィールド調査の基本的方法や姿勢、調査倫理などを習得する、３）日本の地域開発をめぐる諸問題を学ぶ、４）異なる社会経済的・文化的背景の学生によるグループ活動を通して、国際的環境における共同作業の経験を積む、の 4 点です。

2011 年度は、愛知県田原市の協力を得て、10 月 19～21 日に現地調査、11 月 22 日に結果報告会を行いました。実地研修には、博士課程前期課程 1 年生 21 名（日本人学生 2 名、留学生 19 名）が参加し、4 つのワーキンググループ（WG）に分かれて関係機関でのインタビュー調査、質問紙調査、資料収集を行いました。教員 5 名が引率にあたったほか、博士課程後期課程の学生 2 名が通訳として同行しました。また、現地調査に先立ち、事前学習の一環として、田原市役所政策推進部政策推進課長に本研究科にお越しいただき、田原市の自然、文化、歴史、産業、社会や政策課題について講義をしていただくとともに、多くの貴重な資料を頂戴しました。これらを通して得た情報を基に、学生は各 WG の調査内容を絞り込み、さらに独自に文献・資料を収集して現地調査に備えました。

田原市は、平成 15 年に田原町が赤羽根町を編入合併して誕生しました。さらに平成 17 年に渥美町の編入合併を経て、現在は、ほぼ渥美半島全域を網羅し、行政面積 180 km^2、人口 66 千人超を擁する地方都市です。田原市では、産業別就業人口の割合が、第 1 次、第 2 次、第 3 次産業のいずれもほぼ 3 分の一ずつに均衡しており、農業部門の縮小化が進む日本において、めずらしい傾向を示しています。これは、昭和 43 年の豊川用水の全面通水以来、農業が飛躍的な発展を遂げたことが大きな要因ですが、農業産出額は、全国市町村第 1 位の 724 億円に達し、特に、電照菊などの花卉、メロン・イチゴなどの果物、キャベツ・ブロッコリーなどの野菜を中心に全国一・県内一の出荷額を誇る収益性の高い、高付加価値型の農業の発展に成功しています。

工業については、三河湾臨海工業地帯田原地域に工業用地を造成し、トヨタ自動車（株）田原工場およびその関連企業を中心に自動車産業の集積が進んでおり、製造業出荷額は、全国トップである愛知県において県内 3 位です。三河港は、自動車の輸出入において全国トップの実績を有します。また、縄文時代から豊かな文化を育んだ地であり、歴史的に、渡辺崋山など著名な画家・文人を輩出していますが、田原祭りなど地元に伝わる伝統文化

の伝承や学校教育における地域文化の理解・継承の促進にも力を入れています。さらに、環境問題への取り組みにおいても先駆的であり、風が強い地理的条件を生かし風力発電を積極的に進め、現在、44 基の風力発電施設が設置されており電力会社に売電しています。エコガーデンシティ計画を推進し、太陽光発電設備を導入する世帯に補助金を提供しているほか、国内最大のメガソーラーパネルの建設を臨海地域に誘致するなど、再生可能エネルギーの導入・普及にも注力しています。以上の理由から、WG１は、工業、WG２は、農業、WG3 は、文化・教育、WG４は、環境をテーマに取り上げ、調査を行いました。

研修の企画・実施にあたっては、田原市役所および関連機関、独立行政法人水資源機構豊川用水総合事業部、衣笠小学校、三河港振興会、訪問企業や農家の皆様、そのほか公的・民間機関の職員の方々に、ご多忙の中、多大なご協力とご高配を賜りました。DFW の実施には、訪問調査先との交渉・調整、移動手段の確保など、大変煩雑な作業を伴いますが、田原市役所の多くの方々の全面的なご協力のおかげをもちまして、非常にスムーズに、また短期間ながら大変有意義で充実した研修を実施することができました。参加学生、特に留学生にとっては、日本の地方行政の抱える諸課題と具体的な対応を学び、持続可能な発展に向けた施策等について理解を深める貴重な機会となりました。また、田原市役所で開催しました結果報告会にも多数の関係者がご参加下さり、地域開発の現場において実際に政策立案・実施に携わる方々から率直なご意見と有益なご示唆を賜りました。心から感謝の意を表します。

名古屋大学大学院国際開発研究科
2011年度国内実施研修委員長
岡田亜弥

In front of Tahara City Hall

Explaination of Toyokawa Canal

Mikawa Port

Wind Power

Preliminary Seminar

WG1

WG2

WG3

WG4

Findings Presentation in Tahara City

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2011 国内実地研修の概要

１．目的

名古屋大学大学院国際開発研究科は、1995 年以降、正規のカリキュラムの一環として国内実地研修（Domestic Fieldwork、略称 DFW）を実施している。DFW は、1992 年以降本研究科で実施されている海外実地研修（Overseas Fieldwork、略称 OFW）をモデルに考案されたもので、これら二つのプログラムは本研究科が重視する実践教育の支柱となっている。

DFW の主な目的は、日本の地域開発をめぐる諸問題や町おこし・村おこしの取り組みについて現地調査を通じて学ぶことにある。本研究科の修了生の多くは国際開発・協力の実務や研究活動に携わっているが、将来、そうした職務に就く可能性の高い日本人学生や留学生にとって、日本国内での開発事例を学ぶことは発展途上国の開発問題を考える際にも非常に有益であると考えられるためである。そうした学習・調査活動を通して、参加学生が「開発現場」を知ることの重要性を実感すること、そして国際色豊かな構成員でのグループ活動を通して現地調査の基本的姿勢や方法を習得することもまた DFW の重要な目的となっている。

２．本年度を含む実施実績

これまでの実施実績は下表の通りである。16 回目となる本年度の DFW は、愛知県田原市に受け入れをしていただいた。現地調査は 2011 年 10 月 19-21 日に実施され、参加学生は 4 つのテーマ別に分かれて、それぞれの視点から田原市について多面的理解に努めた。本年度も例年同様、調査終了後に調査地を再び訪れ、結果報告をさせていただいた。それによって調査をお引き受けいただいた田原市の方々に直接、調査結果のフィード・バックを行えたこと、そして市役所の方々を中心とする関係者の方々に貴重なご意見やご指摘を賜ることができ、大変貴重な機会となった。なお本年度の参加学生は日本人学生 2 名と留学生 19 名の計 21 名で構成された。

■　DFW の実施実績

	年度	研修場所	参加学生数（内、留学生数）
1	1995 年	愛知県幡豆郡一色町	10（4）
2	1996 年	愛知県幡豆郡一色町	13（8）
3	1997 年	愛知県加茂郡足助町	19（11）
4	1998 年	愛知県加茂郡足助町	25（14）
5	1999 年	愛知県渥美郡渥美町	36（25）
6	2001 年	愛知県南設楽郡鳳来町	23（14）
7	2002 年	岐阜県郡上郡八幡町	26（18）
8	2003 年	岐阜県加茂郡東白川村	36（16）
9	2004 年	岐阜県加茂郡東白川村	32（15）
10	2005 年	長野県下伊那郡泰阜村	31（17）
11	2006 年	長野県下伊那郡泰阜村	40（19）
12	2007 年	長野県下伊那郡清内路村	25（20）
13	2008 年	長野県下伊那郡阿智村	28（17）
14	2009 年	長野県下伊那郡阿智村	20（15）
15	2010 年	静岡県浜松市	31（21）
16	2011 年	愛知県田原市	21（19）

(注)　2000 年度は研修場所の諸事情により実施されなかった。

３．プログラム内容

DFW のプログラムは、事前研修、ワーキング・グループ（Working Group、以下、WG とする）ごとの調査準備、現地調査、結果報告会の 4 つの活動から構成される。

■　事前研修

日時	講師	講義内容
6 月 3 日（水）16:30-18:00 ＜必須＞	名古屋大学 岡田亜弥　教授	「日本の地方行政、田原市の紹介」
6 月 24 日（水）16:30-18:30 ＜必須＞	田原市役所 課長　鈴木正直　様	「田原市の概要」
9 月 5 日（月）－ 9 日（金） ＜選択＞　集中講義	日本パシイワ 会長　鹿野和子　様	国内実地研修特論：「日本の地域開発経験の途上国への導入可能性」

■　ワーキング・グループごとの調査準備

本年度は、参加学生各自の興味・関心に応じて、産業、農業、教育・文化、環境の４つの WG が設けられた。使用言語は日本語及び英語の両方とし、主に参加学生同士で翻訳や通訳を行った。6 月から 10 月にかけて、各 WG は担当教員の指導の下、調査準備を重ねた。それぞれの調査課題の設定、調査時の希望訪問先の選定、詳細な質問事項の作成や調査方法の検討作業を進めた。

グループ	調査課題
WG1 産業	田原市では、三河港と田原工業団地が市の産業発展に重要な役割を果たしている。中でも、自動車産業ならびに自動車関連産業は、地方自治体の税収に大きく貢献しており、市民に雇用を創出している。本調査は、三河港地域自動車産業クラスターの形成及び発展に向けた支援における田原市の役割を主な目的とする。
WG2 農業	本調査は、田原市における農業分野の弟６次産業の現状と将来的な展望を考察する。第六次産業とは、農業、漁業などの第一次産業、加工、製造の第二次産業、そして、販売、サービスなどの第三次産業を包括して行う産業の事である。主な調査対象者は田原市の農政課、営農支援センターと農家である。
WG3 教育・文化	田原市は、日本でも有数の文化遺産を持っている。重要文化財の渡辺崋山関係の資料をはじめ、史跡や天然記念物など数多くの文化財が残されており、古墳や貝塚等の埋蔵文化財包蔵地は 500 箇所以上にのぼる。本調査は、田原市における文化教育のあり方について考察する。
WG4 環境	田原市は「たはらエコ・ガーデンシティ構想」をもとに、地域資源を活用して環境と共生する豊かで持続可能な地域づくりを目指している。本調査の目的は、その「たはらエコ・ガーデンシティ構想」の７つのプロジェクトの中で「省エネルギー推進プロジェクト」と「エコ・エネルギー導入プロジェクト」に焦点を当てて、市民の参加と受容度を明らかにすることである。

■ 現地調査

田原市にて実施された 3 日間の現地調査の詳細は以下の通りである。

	WG1	WG2	WG3	WG4
10 月 19 日（水）11:00 -17:00	・宇連ダム ・ 万場調整池 ・ 蔵王山展望台	・宇連ダム ・ 万場調整池 ・ 蔵王山展望台	・宇連ダム ・ 万場調整池 ・ 蔵王山展望台	・宇連ダム ・ 万場調整池 ・ 蔵王山展望台
10 月 20 日（木）9:00 -17:00	・田原市企業立地推進室 ・臨海企業団地 ・三河港	・ 田原市農政課 ・ 農業支援センター ・ 低炭素施設・園芸施設	・ 田原市博物館・民族資料館 ・ 衣笠小学校 ・ 図書館	・ 田原市健康課 ・ 田原市エコエネ推進課 ・ 田原市福祉課
10 月 21 日（金）9:00 -15:00	・（株）翔運輸 ・ 田原市博物館	・ 菊農家 ・ キャベツ農家 ・ (株)イシグロ農材	・ 田原市教育委員会 ・ まつり会館	・ 炭生館 ・ エコパーク ・ まつり会館

■ 結果報告会

結果報告会の詳細は以下の通りである。

項目	詳 細
日時	2011 年 11 月 22 日（火）13:00-15:30
場所	田原市役所
出席者	調査に協力してくれた市役所関係者の皆様
報告者	国内実地研修参加学生
内容	ご挨拶（横田直之様　田原市役所政策推進部長） ご挨拶（岡田亜弥教授　DFW 実施委員長） WG1 の報告（20 分間のプレゼンテーション） 質疑応答（約 10 分間） WG2 の報告（20 分間のプレゼンテーション） 質疑応答（約 10 分間） WG3 の報告（各 20 分間のプレゼンテーション） 質疑応答（約 10 分間） WG3 の報告（20 分間のプレゼンテーション） 質疑応答（約 10 分間） ご挨拶（岡田亜弥教授　DFW 実施委員長）

４．担当教員と参加学生の一覧

以下の通り、計 21 名の学生が参加した。男性 13 名、女性 8 名の内訳となっている。

グループ 担当教員	No.	氏名	専攻	性別	国籍
WG1 産業 （岡田亜弥）	1	Senh Senghor　*	DID	男	カンボジア
	2	Ear Sothy	DID	男	カンボジア
	3	Bosakaibo Bomino Georges	DICOS	男	コンゴ民主共和国
	4	Yok Samedy	DID	男	カンボジア
	5	Meng Wang	DICOS	男	中国
	6	Zhang Chen　**	DICOS	女	中国
WG2 農業 （西川由紀子）	7	Irfan Zikri *	DICOS	男	インドネシア
	8	Dian Retno Mayang Sari	DICOS	女	インドネシア
	9	Ika Permata Sari Silalahi	DICOS	女	インドネシア
	10	Fransiskus Hendi Dwi Ariyadi	DID	男	インドネシア
	11	Asuka Shirao　**	DICOS	女	日本
WG3 教育･文化 （山下淳子）	12	Miki Go　**	DICOS	男	日本
	13	Misheck Dickson Issa　*	DID	男	マラヴィ
	14	Oyunbazar Enkhtsolmon	DICOS	男	モンゴール
	15	Touch Sorana	DID	男	カンボジア
	16	Dysi Nory	DID	女	カンボジア
WG4 環境 （藤川清史）	17	Yamin Ko	DICOS	女	ミャンマー
	18	Seng Vanmaren　**	DICOS	男	カンボジア
	19	Ven Seyhah	DID	男	カンボジア
	20	Cut Rina Khairani	DID	女	インドネシア
	21	Zhang Tong Tong　*	DICOM	女	中国

（注）** グループ・リーダー　＊ グループ・サブリーダー

DID：国際開発専攻、DICOS：国際協力専攻、DICOM：国際コミュニケーション専攻

５．本書の構成

本書は、調査地である田原市役所の調査協力者をはじめ、国際開発・協力や調査研究活動に関係する約 150 もの国内の諸機関にも送付されている。日本の都市の先進的な開発事例の貴重な記録としても、本書が有効に活用されることが望まれる。

本書の構成は以下の通りとなっている。4 つのグループ別の報告書が産業、農業、教育・文化、環境の順に続く。英語報告書にはすべて和文要約が添付されている。

なお、本書に示された見解、提言、批判などは筆者である学生のものであり、本研究科または担当教員のものではない点にご留意いただきたい。

（文責　Ngov Penghuy）

田原市の概要

愛知県田原市は、愛知県東部の南端、渥美半島に位置し、北は三河湾、南は太平洋、西は伊勢湾と三方を海に囲まれ、豊かで美しい自然環境を有している。海岸線の長さは約 100ｋｍに及び、唯一東側を陸続きに豊橋市と接している。東西に約 30ｋｍ、南北に約 10.1ｋｍ広がり、行政面積は 189 ㎢、人口は 66,000 人超である。田原市は、年間を通して、比較的温暖な気候に恵まれているが、海に突き出た半島に特有の地理的特性により年中風の強い地域でもある。

田原市の歴史をたどると、古くは縄文時代にさかのぼる。平安時代末期から鎌倉時代にかけては、焼物（渥美焼）の生産が盛んとなり、中世における窯業の一大産地を形成した。同市には、現在も数多くの縄文遺跡や古窯跡が残されている。また、江戸時代には、田原藩一万二千石の拠点として、城下町文化が栄えるとともに、画家・蘭学者として有名な渡辺崋山ら文人を輩出し、豊かな文化・芸術を育んだ。今日も東三河地域の代表的な祭りとして知られる田原祭りも、江戸時代にはじまったといわれている。

行政上、1868 年（明治元年）には 59 の村が存在したが、その後、町村合併と再編を何度も繰り返したのち、戦後、1955 年に田原町と渥美町が、そして 1958 年に赤羽根町が誕生した。その後 50 年近くを経て、いわゆる「平成の大合併」により、2003 年に田原町が赤羽根町を編入合併して市制が施行され田原市が誕生した。さらに 2005 年に渥美町を編入合併したことにより、ほぼ渥美半島全域を市域とする現在の田原市になった。

田原市における産業別就業人口の割合は、第 1 次産業が 33%、第 2 次産業が 29%、第 3 次産業が 38%とバランス良く均衡している。特に第 1 次産業就業人口の割合は、全国平均の 5%を大きく上回る。これは、昭和 43 年の豊川用水の全面通水以来、農業が飛躍的な発展を遂げたことが大きな要因である。豊川用水が通水する以前の田原地域は、いもを主要作物とする農業の比較的遅れた地域であったが、豊川用水による灌漑の普及により農地は拡大し、農業生産は著しく増大した。田原市の土地利用状況をみると、農地が 33.8%（6,391ha）を占めている。また、農業世帯のうち専業農家の割合が 44.6%を占め（2010 年）、農業の衰退が著しい日本において、特異な傾向を示している。農業産出額は、全国市町村第 1 位の 724 億円（2006 年）に達し、特に、電照菊などの花卉、キャベツ・ブロッコリーなどの野菜、メロンやいちごなどの果物は全国トップ水準の出荷額を達成するなど、収益性の高い農業の発展に成功してきた。また、海に囲まれた地理的特性を活かして、漁業も盛んであり、県内第 3 位の漁獲量を誇っている。

他方、工業面では、1964 年の東三河工業整備特別地域指定を契機として、臨海部で港湾整備並びに工業用地の造成が着手され、企業誘致による工業化が本格化した。現在では約 1,100 ヘクタールの工業用地が臨海地域に整備されている。三河港臨海工業地帯田原地区等にトヨタ自動車（株）田原工場を中心に自動車部品産業など 69 社が立地しており、東三河

地域や近隣の湖西市、浜松市と併せ、一大自動車産業集積地を形成している。輸送機械関連製品を中心とする製造品出荷額は 23,053 億円に達し、都道府県第 1 位の愛知県では豊田市、名古屋市に次ぐ第 3 位（2008 年）、全国では 19 位である。また、三河港は、自動車の輸出入において全国トップの実績を有する。

さらに、豊かな自然と風光明媚な地理的特性、そして数多くの名所旧跡など歴史・文化資源を活かした観光業も盛んであり、蔵王山、伊良湖岬、大石海岸（太平洋ロングビーチ）などは、景勝地として古くから知られている。また、サーフィンなどのマリンスポーツや潮干狩り、海水浴、渡り鳥の飛来する干潟など観光資源も豊富である。近年、メロンやいちごなど農業と組み合わせた観光も盛んである。田原市では、数多くの観光施設が整備されており、年間のべ 330 万人が訪れている。

他方、田原市は、豊富な文化・歴史資源の保存、田原祭りや凧祭りなど地域に伝わる伝統文化の伝承や、小中学校の学校教育における地域文化の理解・継承の促進にも力を入れている。

さらに、環境問題への取り組みにおいても先駆的であり、風が強い地理的条件を生かし風力発電を積極的に進め、現在、44 基の風力発電施設が設置されており電力会社に売電している。一方、「エコ・ガーデンシティ構想」を推進し、「菜の花エコプロジェクト」など 7 つのプロジェクトを実施するとともに、太陽光発電設備を導入する世帯に補助金を提供しているほか、国内最大級のメガソーラーパネルの建設を臨海地域に誘致するなど、再生可能エネルギーの導入・普及にも非常に熱心である。なお、田原市は、2011 年日本経済新聞社「全国都市サスティナブル度」調査において第 1 位と評価された。

このように田原市は、地域の特性・優位性を活かした地域づくりに努力し、非常に成功している事例であるといえる。しかし、他方、さまざまな行政課題も存在する。第 1 に、日本全体に共通する課題でもある少子高齢化と人口減少の問題である。田原市においても急速に少子高齢化が進んでおり、今後 25 年間で人口は約 6000 人（約 9％）減少、高齢化率は約 20%から 31%へ上昇すると見込まれている。また、少子化も進行し、若年人口の割合も現在の 14%から 11%に減少する見込みである。就業者の減少や経済活動の縮小による税収の減少や産業への影響、そして人口の逆ピラミッド化に伴う社会保障費の増大が懸念されている。

第 2 に、福祉・医療に関する課題である。他の自治体とも共通する課題であるが、高齢化の進展により、今後、福祉・医療の一層の充実化が求められている。特に、高齢者の生きがいづくりや働く場の提供などの取り組みが必要とされている。また、医療ニーズが高まる中、医師不足により、救急医療体制や中核的医療機関における診療体制の維持・継続が困難となりつつある。さらに、人口減少をくいとめるための子育て支援施策の充実も重要である。そこで、田原市では、中学生までの子供の医療費無料化等を実施するとともに、放課後子ども教室の整備や時間外保育機会の提供など、子育て環境の充実に取り組んでいる。

第 3 の課題に、産業振興が挙げられる。田原市は、臨海地域を中心に中部地域最大規模の工業用地を有するが、世界同時不況など対外経済要因による企業業績の低迷から、未分譲用地も多く残っている。安定した税収の確保や雇用機会の増加のためにも、企業誘致による産業振興は重要であるが、円高や震災の影響などの諸要因により製造業企業の海外流出が進む中、新規の企業誘致は容易ではない。そのため、田原市では、県や近隣自治体と連携しつつ専門の部署を設けて企業誘致を進めるとともに、道路や港湾などインフラの整備や従業員向け住宅の整備など操業環境の充実化に取り組んでいる。他方、主力産業である農業においても、農業従事者の高齢化や施設園芸への転換、後継者の減少により耕作放棄地が拡大している。現在 434 ヘクタールに及ぶ遊休農地の解消や後継者の継続的育成も大きな課題である。さらに、将来的に TPP の締結などによる農業を取り巻く経済環境の変化に対応できるよう、一層の基盤整備や高付加価値化も必要である。

第 4 の課題は、地方行政を取り巻く変化への対応である。平成 12 年（2000 年）に、地方分権一括法が施行されて以来、地方分権が進展した。一層の地方分権化への社会の期待が高まる中、田原市でも、2008 年に市民参加と協働によるまちづくりの推進を理念とする「総合計画」がまちづくりの指針として策定されたが、その後の国政における政権交代による政策の変更や経済情勢の悪化に伴う財政規模の縮減により、計画が実態と乖離しつつある。したがって、一層の地方分権を進めつつ、現状を反映させるよう総合計画を見直す必要もある。さらに、豊川の治水・利水のための環境整備、救急・防災などの対応、道路・港湾などのインフラ整備、企業誘致や観光客の誘致など、田原市だけでなく、東三河全体で取り組むべき行政課題も多く、今後、東三河の地方自治体、特に、豊川流域圏の地方自治体の連携が一層のぞまれる。

以上、今年度国内実地研修でワーキンググループが取り上げた 4 つの分野（工業、農業、教育・文化、環境）を中心に、田原市の特徴と直面する主要な課題を簡単にまとめた。田原市は、日本の他の地方都市と同様に多くの構造的課題を抱えながらも、各行政分野において、地域の特性・優位性を活かして、持続可能な発展に向けたさまざまなまちづくりの取り組みを行っている。日本国内はもとより、今後の途上国の地域開発を考える上でたくさんの有益なヒントを提供していると思われる。本報告書が、日本の地域開発の経験と課題、そして今後の方向性の理解の一助となれば幸いである。

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第 1 章　Working Group 1

Roles of the Local Municipality in Supporting the Formation and Development of Mikawa's Automobile Cluster: A Case Study of Tahara City

和文要約

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三河港地域自動車産業クラスターの形成および発展支援における地方自治体の役割－田原市を事例として－

＜要約＞

田原市では、三河港と田原工業団地が市の産業発展に最も重要な役割を果たしている。中でも、自動車ならびに自動車関連産業は、地方自治体の税収に非常に大きく貢献しており、市民に雇用を創出している。また、有名大企業であるトヨタ自動車（株）が立地しており、三河港の輸出実績に非常に大きく貢献していることから、今日、自動車産業は田原市にとって一番重要な産業だといえる。トヨタ自動車（株）が田原工業団地に立地してから、三河港の自動車輸出が盛んになった。それに踏まえて田原市がさらに自動車ならびに自動車関連産業を発展させることを目的として、工業団地および三河湾を中心とした地域産業を一体化してきた。そして、三河港地域自動車産業クラスターの一部として、自動車産業の発展を推進するため、国内および海外の自動車関連企業の誘致に力を入れてきた。

田原市が今後、さらなる発展をしていくには、地方自治体の役割が欠かせないことが認識されている。そこで、私たちのグループは三河港地域自動車産業クラスターの形成および発展に向けた支援における田原市の役割をテーマとして、田原市において三日間の調査を行った。

私たちは豊川用水及び三河港を見学し、また、田原市役所、翔運輸株式会社を対象にインタビュー調査を行った。まず、田原市役所へのインタビュー調査からは、主に三つの点が明らかになった。一つ目は、田原市は工業発展と環境保護において成功している。二つ目は、田原市の努力及び市民の理解があるからこそ、今のように農業部門の成長や環境保護に配慮しながら、工業部門の成長を推進することが可能となった。三つ目は、企業誘致が成功したのは、優れた地理的条件、工業団地の造成を通じた大規模な企業用地の提供、大企業の立地、市役所が持つ情報発信機能、自動車産業における技術革新、田原市のある豊かな人的資源、田原市による環境維持・環境保護、環境づくりへの注力、地震や津波対策として防災システムの構築、などの要因による。

次に、翔運輸株式会社へのインタビュー調査から、自動車関連企業である翔運輸は近年、最大の顧客であるトヨタ自動車（株）への納品の効率化を試みた結果、田原工業団地へ移転したことが分かった。翔運輸の事例から、アンカー企業がその関連企業の工業団地への誘致にある程度影響を与えていることがうかがえる。

そして三河港での視察から、三河港は 18 年連続で自動車輸入総額が日本１位、2010 年自動車輸出総額が日本２位、2010 年輸入量 1.7 兆円、2010 年輸出量 3530 億円、という実績を有することが分かった。すなわち、三河港は田原市の産業部門の発展にとって重要な役目を果たしており、今後も、田原市および三河地域の輸出入の増大にさらなる貢献が期待できる。

最後に、我々は今回の調査からトヨタ自動車が田原市に投資を決定した三つの要因を明らかにした。一つ目は、地元自治体である田原市とその関連機関の果たした役割である。市役所の職員たちがトヨタ自動車との交渉を成功させ、良い関係を築くことができた。また、企業の従業員のために道路、排水システムなどのインフラを整備し、医療、厚生福祉を改善し、住みやすい生活環境を提供することに努力している。そして、埋め立て地の造成においては愛知県の協力が不可欠である。埋め立てを行う前、職員たちによって漁業従事者との交渉が成功したことで、埋立地を工業団地として開発し、最大規模の工場敷地を提供することを可能にした。さらに、ワンストップ・サービスを提供し、積極的に田原市の工業団地の利便性を宣伝している。二つ目の要因は、トヨタが樹脂塗装およびプラスチック・フロントバンパーの発明によって技術革新を実現したことである。三つ目は、田原市の立地の優位性であり、三河港と隣接していることにより、トヨタ自動車社は、自社の敷地に直接輸出向け車を積み出しできる埠頭を有するなど、ロジスティック面で利便性を提供している。

以上の調査結果を踏まえ、私たちのグループは今後の課題として次の二つの点を挙げた。田原市はトヨタ社を支援しながら、他の関連企業を誘致することが重要である。自動車産業だけに集中するのではなく、バイオテクノロジー産業、情報産業、環境・エネルギー産業の展開が必要であり、それに伴って人材の育成やインフラストラクチャーの整備も必要となると考えられる。

1. Introduction

1-1. Background of Tahara City

Tahara is one of the most well known cities in Aichi Prefecture. The city is located in the southeastern part of Aichi and found on Atsumi Peninsula. Historically, Tahara City was established by merging Tahara Town with Akabane Town on August 20, 2003. Two years later on October 1, 2005, Atsumi was merged to Tahara City, becoming a full peninsula city of 188.81 km^2. With the beautiful natural scenery of Mikawa Bay, Zoa and Ooyama Mountains, as well as the existing modern agriculture, livestock, fishing and favorable coastal industrial zones, Tahara City has become remarkably developed in many aspects. Looking at the share of population, among the total population of 66,390 people, primary industry (the agriculture sector) absorbs up to 33.3 percent, followed by tertiary industry (services) and secondary industry (industry) at 37.4 and 28.9 percent, respectively (National Census, 2005). As a case in Japan, it is unusual that agriculture absorbs more workers than the industrial and service sectors, reflecting the efficient operation of agriculture that focuses on the production of high-quality value-added agricultural and horticultural products.

Even though the share of the workforce in the primary sector is larger than other two sectors, manufacturing contributes the most in terms of value. According to Tahara City's statistics of 2007, manufactured goods contributed up to 2,771 billion yen while agricultural production accounted for only 72 billion yen. In addition, the wholesale and retail industries provided 110.9 billion yen, significantly lower than the manufacturing industry. The high value added by the manufacturing sector implies that this sector contributes significantly to the revenue of the local government, as well as the development of the city.

1-2. Industry of Tahara City

Since Tahara City is located in the central region of Japan, it has convenient access to various means of transportation, such as Tomei Expressway and National Route 1. Mikawa Port, together with industrial zones located in the north of Tahara, plays the most significant role in developing industries of the city. Mikawa Port, where it is linked to the Tomei Expressway and National Route 1, is known as the main port for automobile exports and imports into Tokyo, Osaka, and Nagoya. Physical infrastructure in Tahara City was rapidly developed with constructs such as roads and a public pier aimed at connecting industrial sites with the port. Therefore, it is expected to be a strategic position for commercial activities and logistics. More importantly, in order to attract more industries to the city, five main industrial zones have been established and incentive policies from the Tahara City government have been applied to each zone.

The five main industrial zones of Tahara City:

- **Tahara Urakizuka**

  It is the smallest industrial site in Tahara City and has only four companies: Toyota Boshoku Co., Okamura Unsou Co., Maruai Co. and Atsumi Kotsu Co. However, presently there are no further sales of lots in this area.

- **Tahara No. 4**

  It is known as the largest industrial site in the Chubu district, even though there are only two companies in this area: Tokyo Steel Co. and Air Liquide Japan Ltd. It is located in Shirahamachisaki of Tahara City and there is still land available in this area.

- **Tahara Pier Site**

  This district is located in the Midorigahama area of Tahara City, close to Tahara Public Wharf. There are four companies in this zone: Mikawawan Gas Terminal Co., Shinei Kinzoku Co. Ltd., Chubu Engineering Co. Ltd. and Nippon Express Co. Ltd.

- **Tahara No. 2**

  There are many major industrial companies located in this zone, such as Toyota Tsusho Co., Toyota Steel Center Co.,Ltd., Tahara Unyu Co., etc.

- **Tahara No. 1**

  This is the most important industrial zone, where many important industries are located. This area is specifically for manufacturing and automobile related industry. Japan's largest automobile firm, Toyota Motor Corporation, has its operation in this zone. Along with Toyota, there are also some related firms to provide logistic and machine maintenance support, as well as supply components to the zone.

1-3. Automobile Industry in Tahara City

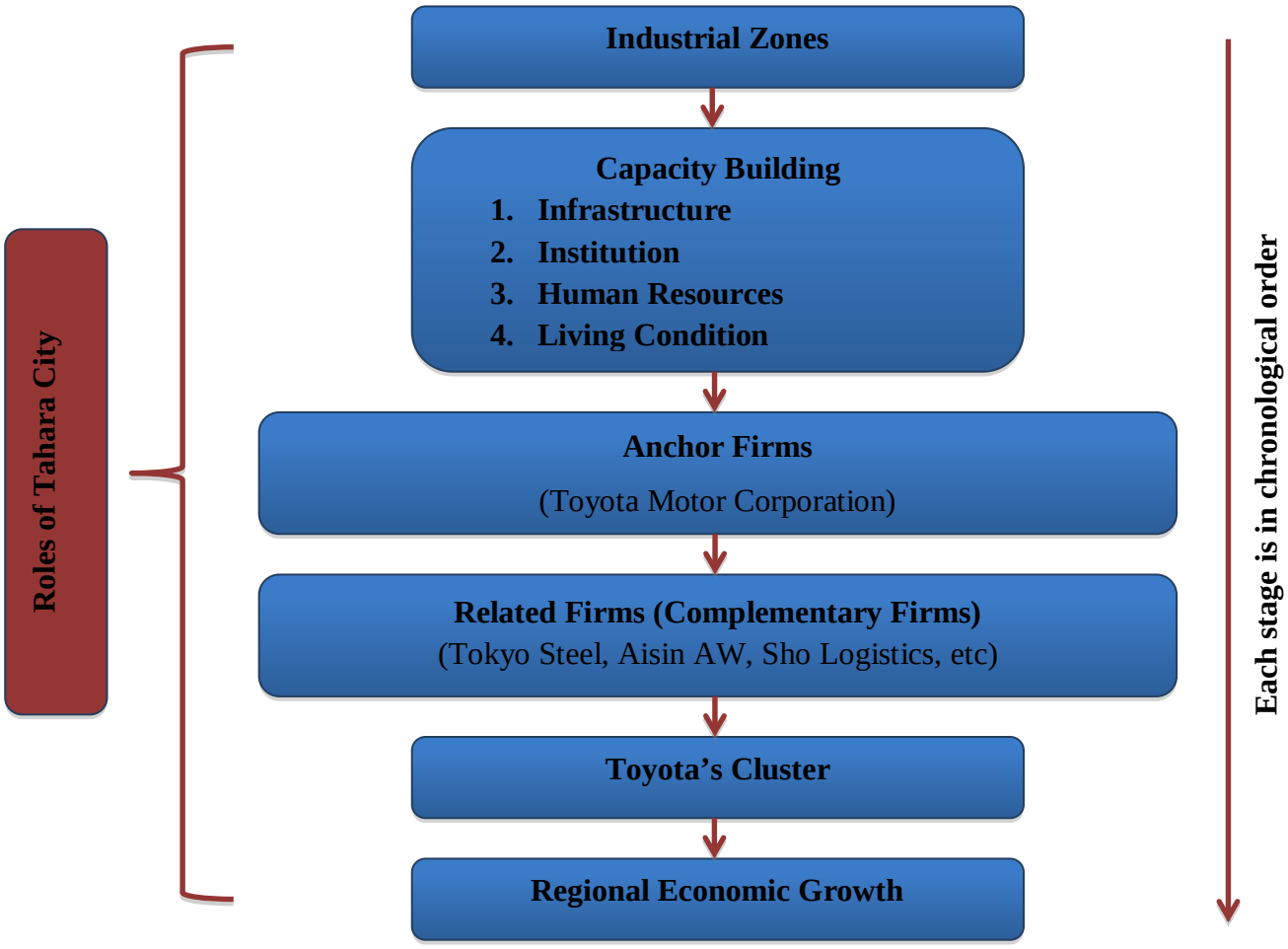
Automobiles and auto-related manufacturing are the most important industries of Tahara City in view of their high contributions to the city's tax revenues and of the many jobs created for people of the city. Compared to other industries, the automobile industry accounts for the largest share of employment, absorbing about 11, 622 employees with a total given salary around 6.93 billion yen. Currently, the primary player of this industry in Tahara City is Toyota Motor Corporation. Toyota Motor Corporation was the one of the pioneering companies to invest in Tahara City. The investment of this world leading car-producing company has accelerated investment opportunity and growth of the automobile industries in the region. Toyota plants in Tahara, along with other plants at its headquarters in Motomachi, Takaoka and Tsutsumi, are chosen as places for Toyota's automobile production in Japan.

With the geographical advantage of being bordered by Mikawa Bay, Tahara has been trying to integrate, especially industry zones, with Mikawa Port through the Tomei and Daini Tomei Expressways. The aim is to foster and facilitate the automobile industry within the city. In 2006, through Mikawa Port, Tahara was ranked number one in automobile imports and number two in exportation of automobiles, implying the significant role of Mikawa Port in the development of the automotive industry. Under Mikawa's automobile cluster, Tahara has been trying to promote the automobile industry within the city by attracting both domestic and foreign anchor firms and supporting firms to invest in the city.

1-4. Toyota's Automobile Cluster in Mikawa

An automobile cluster refers to an agglomeration of the automobile industry that induces firms to innovate and create knowledge and technology in order to be competitive with other firms. The agglomeration consists of anchor firms and related firms linking together to create a cluster for regional industrial development. In the case of automobile manufacturing, an anchor firm is a firm that assembles components and parts supplied by related firms. Before having an automobile industrial cluster, sufficient conditions must be met. Those conditions include the establishment of industrial zones as a source to invite both domestic and foreign investors. Capacity building is also needed to improve physical infrastructures, institutions, living conditions and so forth. Once all these capacity building outcomes are met, anchor firms will be ready to invest in the industrial zone. As a result, related firms will follow anchor firms to place their supply operations in areas close to or in the industrial zone. Below shows a tentative flowchart of the automobile industry cluster development process. It shows the roles of Tahara City to support efforts made by Toyota to create an automobile cluster, where Tahara City is geographically chosen as a part of Mikawa's automobile cluster.

Figure 1: Flowchart Approach to Automobile Industry Cluster



Source: Modified from Kuchiki (2007)

1-5. Significance of the Study

As shown in the flowchart above, the roles of Tahara City are indispensible to the success of Toyota's automobile industrial cluster. The city is the core of the cluster. Roles of the city can be involved in constructing industrial zones, supplying electricity, facilitating transport and forming institutions, among others. Experiences from many countries such as China, South Korea, and other ASEAN countries have all stressed the important role of local governments as a factor to contributing to the achievement of an automobile industrial cluster. Therefore, it is worth studying the case of Tahara City and about its supporting role in facilitating the process of Toyota's automobile industrial cluster development through the creation of industrial zones and the support for providing and coordinating public goods and services. This study will find out how important Tahara City is and examine what tasks have been completed, as well as what tasks are remaining to solve constraints faced by Toyota in expanding or strengthening its regional automobile cluster. Moreover, this study can find out responses from Toyota and its related firms about their decisions to invest in the industrial zones and their reactions about things the city has done, whether sufficiently or insufficiently, in its efforts to support Toyota's automobile industrial cluster. Those opinions and critiques will be useful for further improvements of industrial development of the city.

1-6. Problem Statement

There are two aspects to consider:

- **Level of Tahara City**: building and developing Toyota's automobile cluster inevitably requires the roles of the city as a partner. The success/failure of Toyota's automobile cluster in Mikawa area is somehow dependent on efforts and management made by the cities within the area (Mikawa) to foster capacity building suitable and beneficial for the investment of Toyota and its related firms. Though Tahara has already built industrial zones, there are many tasks left for the city, such as deregulation, an institutionalized tax system and marketing and information about the zones. In addition, the city needs to support the physical infrastructure including roads, schools, hospitals, electricity, water and so on.
- **Level of Toyota and Related Firms**: These firms will make their decisions to invest in zones based upon the level of capacity building done by the city in the area of infrastructure, institutions, human resources and living conditions, as depicted in the above flowchart. The number of anchor firms (currently only Toyota) and related firms in the zones and their perceptions to the current development of the city's capacity building can reflect the performance of the city to help support Mikawa's automobile cluster.

1-7. Research Objectives

The objectives of this study are:

- To find out the supporting roles of Tahara City in facilitating the automobile cluster development in the Mikawa area;
- To explore the decision criteria of anchor firms and related firms for their investments in the industrial zones;
- To examine the spillover effects of agglomeration over other industries of Tahara.

1-8. Research Questions

Hence, the study on the roles of Tahara City in supporting the development of the automobile industrial cluster gives an interesting insight motivated by the following concerns:

- How important are the roles of Tahara City in supporting the automobile cluster in Mikawa area?
- How did anchor firms and related firms make their decisions to invest in the zones?
- What are the effects of agglomeration on the automobile industry cluster?

1-9. Research Methodology

Two methods will be used to achieve the objectives of this research:

- **Theoretical research** through the review of various documents, including papers and textbooks concerning industrial clusters, the city's industrial policy documents, newspapers, journals in the field of industry development and so forth.
- **Field visit** consisting of observations and interviews. There are two categories of people that were interviewed, including Tahara City's officials in charge of industry policy and managers of Sho Unyu. Unfortunately, an interview with Toyota Motor Corporation could not be conducted and therefore, we visited the industrial zones and Mikawa Port instead. The automobile industry cluster flowchart is used as a main analytical framework for the working group to design questionnaires and to use for data analysis. Data obtained from the interviews in this study are mainly qualitative.

Table 1. Schedule for the fieldwork in Tahara City from October 19, 2011 to October 21, 2011

Date	October, 19	October, 20	October, 21
Morning	Trip to Tahara City	Interviewing Tahara City officials in charge of industry development policy	Interviewing with representatives from Sho Unyu
Lunch			
Evening	Visiting Toyokawa Canal	Visiting Industrial zone and Mikawa Port	Trip back from Tahara City

1-10. Limitation of the Study

It was found that in Tahara's industrial zones, Toyota Motor Corporation is the only automotive anchor firm that promotes the automobile cluster in the Mikawa area. Thus, the related firms are chosen based on their relations with Toyota in terms of providing component supplies, transportation services, research and technology consulting, and so on. Due to time constraints of having only three days of fieldwork in Tahara, and the fact that there are many related firms with Toyota, the working group could not be able to interview all related firms. Instead, it was decided to choose a few related firms for interviews depending upon their status as a supply partner to Toyota and their time available for interviews.

2. Successful History of Industrial Development in Tahara City

2-1. Milestone of the Success

Recently, there have been various economic issues, such as the appreciation of Japanese yen and also the declining demand for Japanese products in both local and foreign markets, which have caused some companies in the industrial zones to think about outsourcing their operations overseas. Therefore, Tahara City has the important task to take good care of those companies that might otherwise outsource their operations. The main task of the city is to attract more companies to come to invest in the industrial zones. Since the industrial zones have been developed, Mikawa Port has played a very important role for a number of companies, thereby attracting more companies to the Mikawa area. Regarding the export of automobile products, Mikawa Port is ranked number two, and number one in terms of the volume of imports into Japan in the last 18 years. This shows that the roles of Mikawa Port are quite important to support the success of industrial development in

Japan, especially in Tahara City. This being in addition to the development of industrial zones and the efforts the city has made. The success of industrial development in Tahara City is remarkable. The main reason why the city has been so successful is the presence of many automobile related companies, thanks to Toyota. Before the presence of Toyota, Tahara City was one of the poorest cities in Japan, with its main industries being agriculture and fishing. With the development of innovative technologies, Tahara City reclaimed land to attract more companies, including Toyota. However, the city faced many issues while they were developing the reclaimed land, including conflicts with local people, especially fishermen, since reclaiming land damaged their fishing industry. It also came at a time of rapid industrial growth in Japan, leading to the advent of many social issues being raised, especially in relation to environmental pollution. It resulted in difficulties for the city to negotiate with the fishermen who depended on fishing for their living. However, one of the solutions that city had to offer was to persuade all fishermen in order that the land fields could be developed.

When Tahara City was trying to reclaim the land, they didn't expect that Toyota would come to the city. At that time, building an automobile factory near the sea was not considered to be a feasible plan because of the effects of salt from the sea and its potential damage to automobile products. However, Toyota overcame this challenge by introducing technological solutions in the factory. These brought acceptable conditions for producing cars, even near the sea, and removing the bottleneck for Toyota to invest in Tahara City. One of the innovations is silicon-based paint, which prevent automobile products from getting rusty. Another is the development of the plastic bumper. These two technological innovations have made it possible for the company to build their factory near the sea. Timing was also critical as Toyota and Suzuki were trying to find large areas of land to build their factories in the east of Mikawa area. Connection was another reason why Toyota came to invest in Tahara City. As many Toyota's top managements are from the Mikawa area, who wanted to set up the factory in their hometown and also were looking for a large area of land in the area for their new factory, this has accelerated the talk which finally resulted in a agreement with Tahara City to build a Toyota's factory in land area of 300 hectares. By that time, Tahara City had already been constructing the land creating the perfect timing for Tahara City to attract Toyota. With the presence of Toyota, many related automobile companies have been attracted to Tahara City, as well as Toyohashi City.

2-2. Early Stages of Development

When the city had little expendable revenue, it was impossible to build the entire infrastructure needed, so the Aichi prefectural government, along with the national government helped Tahara City. As a matter of fact, Aichi Prefecture, not Tahara City, owned part of the industrial land. In 1964, the Japanese government appointed Tahara City as one of the main places for developing industries, and at the same time the national policy also considered Mikawa Port as one of the key ports, so they received a lot of support from the government. Hence, both the national government and Aichi Prefecture built the Mikawa Port, along with the construction of other key infrastructure components, such as roads running near to the sea. Tahara City also created residential areas

for workers of the factories. Therefore, without the support from Aichi Prefecture and the national government, it was impossible to develop industry in Tahara City.

2-3. Development of Industrial and Agricultural Sectors

The Toyota Tahara plant employs 1,500 workers and is about 30% locally employed. Among those locally employed, some crossed over from the agricultural sector. In addition, other automobile related companies employ 15,000 people. Of these 15,000 people, about 4,000 are citizens of Tahara City. In that sense, it clearly shows that people have been moving from the agricultural sector to the industrial sector. Nevertheless, the shift from the agricultural sector is not likely due to the development of the industrial sector alone, but rather because of technological advances in agriculture, that require less labor and land to produce the same amount of products. One of these technologies is the use of greenhouses, which enables them to grow more products at a higher quality on much smaller areas of land. As a result, some of agricultural lands have been converted to apartments for industrial workers.

3. Presence of an Anchor Firm – Toyota (Tahara Plant)

Mr. Shoichiro Toyoda, then vice-president of Toyota Motor Corporation, initiated talks about the company's investment in Tahara City. He later became president, as well as CEO, of Toyota Corporation. In the early 1960s, Toyota was planning to invest in Toyohashi City and was introduced to many sites where they would be able to build the factory. At that time, Toyohashi City introduced some sites near the Mikawa area but Toyota declined the offer to build the factory there due to concerns about the effects of the salt. After the oil shock in the early 1970s, new technological advances were made and Toyota was again looking for land to build their new factory. The firm was still looking for a suitable land in east Mikawa, but because they had declined the offer once, Toyota was reluctant to visit Toyohashi again. In addition, there was not enough land available in Toyohashi, as some land had already been provided to other companies in the interim. Through conversations with a colleague, who was the president of a gas company in Tahara, an executive at Toyota explained that Toyota was looking for land in the area. As a result, the president of the gas company introduced Tahara City to Toyota, as he believed that the presence of Toyota Motor Corporation in Tahara would contribute to the success of the development of the Mikawa area as a whole. More importantly, it seemed the right timing for Toyota to come to Tahara because: Tahara City had been preparing the land; there were advances in technology which made being close to the sea no longer an issue; and Tahara City had been successful in negotiating with the local people. Therefore, it can be said that through the leadership of the mayor of Tahara City, it was possible for them to invite Toyota to invest in city.

It should be noted that at the same time, Toyota was also looking to invest in Kyushu Prefecture because of the favorable conditions of the land. However, Aichi Prefecture persuaded Toyota to invest somewhere in

Aichi Prefecture. Because it was right at the moment that Tahara City was also preparing the land, the importance of timing helped Toyota to decide to locate in Tahara City.

3-1. Current Status of Tahara Plant

The production capacity of Toyota Corporation is 600,000 cars per year, yet the production in 2010 was only 400,000 cars. The products are mainly exported to the North America. Toyota's Tahara Plant produces many types of cars including Lexus LS, GS, IS, and GX, Toyota Land Cruiser, 4-RUNNER, RAV4 and WISH. Among them, the Lexus line ranks in the top class of cars and is only produced in Tahara City. Toyota Corporation considers the Tahara plant as the model factory for Toyota Corporation, even though many Toyota plants worldwide are trying to make create the model factory. Among all Toyota plants, the Tahara plant is the largest. One of the defining characteristics of the Tahara plant is that they can process through to the end production of the car. There are 8,500 employees that work day and night in two shifts. Automobiles are exported to North America from the port in Tahara. At first, there were no component supply companies for the Tahara plant but it was quite natural that the Tahara plant would eventually bring some suppliers, such as a firm that produces transmissions. Suppliers came not only to Tahara City, but also to Toyohashi, and, now many automobile related companies have come to the area after Toyota built its factory.

The investment of the corporation has made a huge economic impact on Tahara City, since many automobile related companies have also come to invest in the city. As a notable example, Tokyo Steel came to Tahara City 10 years ago, but just has had its business for the last 2 years (from 2009). Tokyo Steel is the largest company in Japan in terms of making steel from scrap. In order to manufacture automobiles, the steel has to be very thin and strong, and Tokyo Steel has the technology to produce that kind of steel from scrap. By utilizing this kind of steel, Tokyo Steel has succeeded in reducing costs by 50% and moreover, the company has also succeeded in reducing CO_2 emissions by three-fourths. Tokyo Steel decided to invest in Tahara City with the expectation that Toyota would use its steel for their products. Other reasons were that it could acquire the land as needed, it was easy for them to transport the steel to its main customer, Toyota, and it is near the sea. In the industrial zones nearby the port, there are 68 companies, of which 37 are Toyota related companies. Sixteen among the 68 companies are local firms. The total output of the industry sector of Tahara is approximately 1.5 trillion yen, generated by only 90 companies. This puts Taraha as the third largest economy in Aichi Prefecture following Nagoya City and Toyota City. Interestingly, Nagoya City and Toyota City produced this much output from more than 2,000 companies. This clearly shows that the Toyota plant in Tahara City has played a very important role in the industrial development of the area. About 60% of Tahara City's revenue comes from corporate taxes. Due to the global economic crisis of 2010, the share of the revenue from corporate taxes decreased 40% compared to the previous year. While Tahara City is known as number one in the nation in terms of agriculture production, revenue from the agricultural sector is not increasing. Suffice to say, the success of

Tahara City depends very heavily on the industrial sector. People who engage in agriculture have sufficient income because of the thriving agricultural sector, leaving an overall healthy economic condition for Tahara City.

3-2. Production Share of Tahara Plant

Toyota's Tahara Plant produces main parts such as tanks for gasoline, exhaust pipes, doors (made by steel), and also engines, which are mainly produced by using aluminum (there are some exceptions). There are factories that produce aluminum in the city. Other specialized firms in Tahara City are also making specific components. For example, Aishin AW used to produce transmissions for the Corolla because Toyota's Tahara Plant was initially producing the Corolla and small cars. Toyota then changed its strategy to produce export-oriented cars for North America. However, Aishin AW still produces transmissions for small cars. In fact, even though Aishin AW is located right next to the Toyota plant, they are not supplying their products to Toyota. Instead, they are producing transmissions that are exported to other companies such as Volkswagen in China.

Furthermore, even though Toyota has tried to minimize logistic costs, still 5,000 vehicles are coming to the Tahara Plant everyday. Toyota is well known for not keeping stock for their products to reduce the cost of their production. Yet, there are more than 20,000 components required to produce the automobiles and suppliers bring their products to Toyota. To cope with the influx of vehicles, many logistic companies have been coordinating transportation issues near Toyota's Tahara Plant. Interestingly, one particular logistic company, Sho Unyu, is organizing all the parts coming from various firms, including rearranging and sorting the components, so that they can be loaded to the assembly line right away. Sho Unyu arranges the parts according to Toyota's production lines or assembling processes (5 lines) and then they bring the products to the Toyota plant by using the Just-In-Time (JIT) approach. Therefore, Sho Unyu always receives notification on the quantity and timing of parts and components required according to the specification of cars to be produced and production schedules. Sometimes the notification comes just one hour before the scheduled production and Sho Unyu has to deliver them to Toyota Plant. This explains why Sho Unyu is located close to Toyota Plant in Tahara City.

4. Industry Promotion Schemes

Due to the success of Tahara in attracting Toyota Motor Corporation to the city, the industry sector within the city had been developed very rapidly. Many automobile related and unrelated companies have decided to invest in the Tahara industrial zones. To attract more domestic companies, as well as foreign direct investment to come to Tahara City, preferential treatment has been provided to each industrial zone. More importantly, besides the preferential treatment, the efforts of Tahara City officials are considered as the key factor for attracting investment. According to the interview, one of the main industry promotion policies of Tahara is to advertise the city (industrial zones) via any means and being a contact person for the private sector.

4-1. Preferential Treatment

There are some preferential treatments provided to each industry zone, such as the tax abatement program, found loan program, and lease system. In addition to the above treatment, the current key industrial promotion policy is to build the key infrastructural components. These include road and logistic services, gas and electricity, risk prevention from the earthquake or flooding, labor or capacity of employees and support of university research on related industries. Tahara City used to think that the subsidy to firms is important to attract them to come to invest in the city but they found that the business sector did not consider it as key determinant for them to decide to invest in the city. The main determinant that affected firms' decisions is the good communication between the private and public sectors. Thus, what the city does offer is a **"one stop service"** to respond to whatever requests come from private sector firms. Because of this many sections in city hall are designated to provide efficient, one-stop service to the private companies.

In addition, Tahara City follows up on the existing firms located in the city and takes good care of them by creating good communication channels, aimed at building a close relationship between private and public sectors.

4-2. Special Arrangements with Toyota

Though Toyota is the key anchor firm in Tahara, based on the interview, there is no special treatment for the company. However, Tahara City tries to facilitate Toyota by building infrastructure, setting up policies upon advice and requests from Toyota and creating volunteer groups to preserve the environment. Moreover, as a result of the cooperation between the city and Toyota, many of Toyota's employees bought their houses in Tahara City and Toyota has good communication with local people and those who come from other cities.

4-3. Land Fields Management

Companies that come to invest in Tahara City have to purchase the land but in sometime cases can lease. The city tries to propose incentives to attract companies. For example, the city has lowered the tax on the purchase of the land by one-half and for SMEs, to three-quarters. In addition, the city offers the return of property tax for the first three years as another creative incentive to attract businesses.

4-4. Human Resources Development

For human resources development, Tahara City supported Toyohashi University of Technology in their research related to automobile industry as well as other research related to the development of the port. The outcomes from their research are considered very important, thus the city has provided financial support and introduced the data to the industrial leaders. However, from the perspective of the government, the most important concern is how to solve the traffic issue. Related to that, the city supports a civil engineering project. Tahara City also prepares the land for building apartments so that workers and their families have improved the

living conditions. Other programs aimed at improving living conditions include services such as free medical fees for all children until they attend junior high school. Childcare programs improved the condition of kindergarten service, allowing parents to bring their children to school from 8:00am, with an afternoon nursery program allowing parents to pick up their children as late as 7:00pm.

5. A Related Automobile Industry – Sho Unyu

Sho Unyu (Sho Logistic Company), located in Iwata City, Shizuoka Prefecture, was established in May 1982, as a subsidiary of Yazaki Corporation. Sho Unyu has the international certification standards of ISO9001, ISO14000, and OHSAS. The total of sales of the company is about 16.8 billion yen per year and the firm employs 340 full-time workers, including many contract workers. As a logistics company, it operates 96 trucks, which mainly cater to the Toyota Tahara Plant. Everyday, Sho Unyu receives 500 truckloads of goods coming from other contracted companies. Even though Sho Unyu is not the most recognizable company by name, the firm has 19 other sales locations in Japan, providing the same services to a large number of customers while servicing the Toyota Tahara Plant as its main customer.

Sho Unyu has a corporate philosophy to maintain an environmentally friendly business while making sure to transport components to Toyota using the "Just in Time Approach." At times this means Sho Unyu receives a notification regarding an order with only one hour of prior notice, yet the firm can provide its efficient service. In 2005, the firm obtained the land and started the first stage of construction. Two years later, the 2nd part of the building was finished. In August 2005, there was a Green Logistics Partnership Conference held during the Kyoto Protocol, at which the international community agreed to reduce the CO_2. Both the Ministry of Trade and Industry and the Ministry of Infrastructure have been involved to achieve the targets. Sho Unyu was recognized as a "Model Company," and as one firm that takes the issue of environmentally friendly business seriously.

The Green Logistics Partnership Conference was held by the Japan Institute of Logistics Systems, the Japan Federation of Freight Industries, the Ministry of Economy, Trade and Industry (METI), the Ministry of Land, Infrastructure, Transport and Tourism and with cooperation from Nippon Keidanren, aiming to promote voluntary efforts to reduce CO_2 emissions in logistics through the joint efforts of cargo owners and logistics businesses. The goal of reducing CO_2 cannot be achieved only by the logistics firms and they needed the cooperation from suppliers of the products as well. With the guidelines of the national policy to preserve the environment, logistic firms have to make their contribution to reduce CO_2. However, as a profit-oriented company, Sho Unyu cannot allow the environmental issue to have a negative impact on their business. Therefore, Sho Unyu has made efforts to achieve the national policy while maintaining their sales.

Since Sho Unyu really cares about its own efficiency and seriously takes into account environmental issues, the firm decided to relocate and redesign its warehouse. The new location is in Tahara's industrial zone, close to Toyota so that it can reduce the time of trucks running and serving Toyota efficiently by reducing the

lead and changeover time. The structure of its warehouses is also different from some other logistic firms' warehouses. With the new location and structure, Sho Unyu has contributed a lot to reducing CO_2 emissions. Moreover, Sho Unyu is also innovatively using cooking oil to replace some of the gasoline used for the company's transportation. Noticing the efforts made by Sho Unyu, the company was awarded for its environmentally friendly business strategy by the Ministry of Trade and Industry in 2006, and by the Ministry of Environment in 2009.

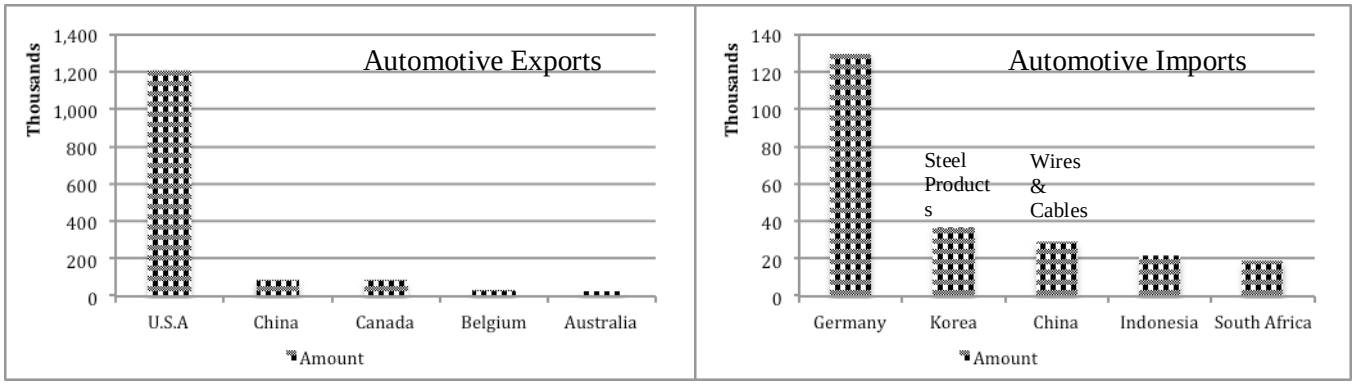
6. Key Port for Automobile Industry – Mikawa Port

From 1930 to 1958, there were various fusions of ports in the Mikawa area, resulting in the eventual creation of Mikawa Port and the status of a national port by the Home Affairs Ministry under the administrative authority of Aichi Prefecture. Later on, it became a major national port and its harbor plan was adopted in 1964. In the same year, the East Mikawa district was designated as a special industrial development zone and the Mikawa Port Promotion Association was established. The Toyohashi Port the port was opened in the 1970s and designated as a plant quarantine port, as well as a national port by the Export/Import Control Law.

In 1997, the fusion of Tahara, Toyohashi and Gamagori ports led to the emergence of Mikawa Port as a special port with the capacity for quarantine inspection. The following year, its container terminal became operational. In 2002 and 2003, various bridges and facilities for container shipping were completed then Mikawa Port was authorized as a special international automotive zone. In 2004, the regional revitalization plan entitled 'International Automotive Industry Distribution City Plan' was certified followed by the inauguration of the Japan-China Periodic Container Shipping Channel.

Figure 1 below shows trade status of the Mikawa Port as of 2010, with most of the automotive exports heading to the U.S.A, China, Canada, Belgium, Australia and others. The overall automotive exports amounted to 1,676,201 million yen, with 245,119 million yen of the share for destinations other than the U.S.A, which ranked as the number one destination for automobiles. In terms of imports, Germany is the biggest exporter of automobiles to Japan, while Korea exports steel products and China exports wires and cables to Japan (Toyohashi Tax Office, 2010).

Figure 1: Mikawa Port Trade Status (by Region) 2010 (Units: Yen,%)



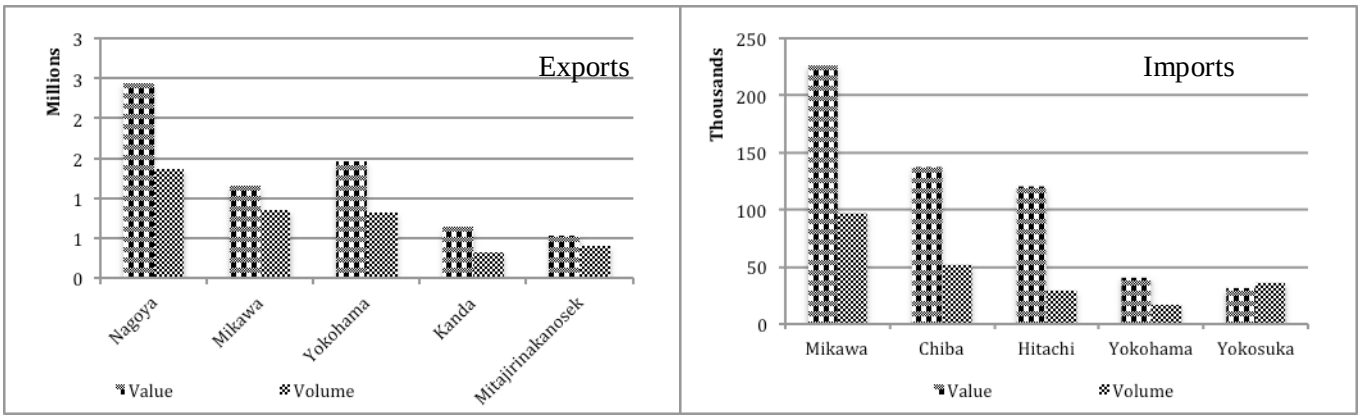
Located in the heart of Japan, Mikawa Port plays an important role for distribution activities to both Tokyo and Kinki districts. It not only supports the automobile industry, but also serves as a distribution center for goods delivered across Japan. The port is multifunctional and has a high potential for industrial development, especially automobile industry, with 80 km and 132 km2 of its surface. Over 300 companies operate near the bay in a wide range of activities. Besides production and distribution, Mikawa Port provides other services.

The Mikawa Port has been a world-class first-rate port in both exports and imports for over a decade. Taking advantage of similar, concentrated businesses in the area, the port continues to help local businesses to grow. It was designated as a " Recycling Port" and is certified to carry out the "International Automotive Industry Distribution City Project."

As far as exports and imports are concerned, the Mikawa Port has had the largest import value and volume of automobiles for 18 consecutive years and has the second largest export values and volume of automobiles in Japan. Taking into consideration the trend in ranking of Japanese ports in vehicle exports and imports (value and volume), it has a high performance and is competitive with other ports such as Nagoya and Yokohama.

As Figure 2 shows, the port's performance was very significant in terms of vehicle exports and imports in 2010. For exports, it ranked second with a value of 1,579,098 million yen and second in volume with 845,074 vehicles after Nagoya Port with 2,444,689 million yen and 1,369,034 vehicles. Moreover, Mikawa Port is ranked first in terms of imports among other ports in Japan with 226, 880 million yen and 97, 384 vehicles (Toyohashi Tax Office, 2010).

Figure 2: Trend in Ranking of Japanese Ports in Vehicle Exports and Imports (Units: Yen, Vehicles)



The surrounding areas, such as Tahara, Akemi, Funato, Jinno, Mito and Gamagori all have activities directly related to Mikawa Port. Tahara is the port's large-scale production zone with developed infrastructure such as roads, land for industrial use, a public pier and green space. The Tahara Industrial Zones 1 & 2, with 800 hectares of space is the location for various companies, including Toyota Motor Corporation's Tahara Plant and serves as a locus for vigorous production. From this area, automobiles go directly from production to exportation from the private quay built within Toyota Motor Corporation's Tahara Plant. It can be noticed that the Tahara

Public Pier handles domestic cargo and possesses six berths from 4.5 - 5.5 meters deep (one berth has earthquake-resistant construction). Tahara Zone 4 has a large-scale corporate development district with a total area of 300 hectares. This area has plots of land, both large and small, that can meet any company's needs.

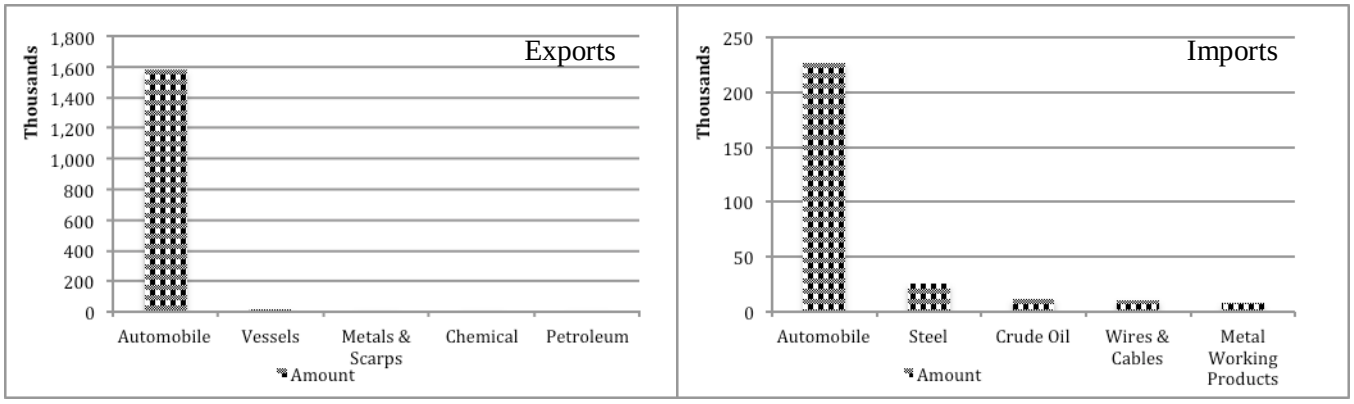
Akemi area, with an area of 659 hectares, is home for to steel-making company and a shipbuilding company. The area has the Akemi Industrial Base and private quays between 4 and 12 meters for handling raw materials and finished products. The Akemi Industrial Base was originally for wooden housing construction companies but recently serves automotive and chemical-related industries. In addition, this area has a corporate park used by companies in the field of overland logistics.

The Funato area has a public wharf built to handle domestic cargo. There are 21 berths maintained along quay walls between 4.0 and 5.5 meters in depth (those deeper than 4.5 meters are built to be earthquake-resistant). Green space along the waterfront is currently in the process of being expanded. Being in the heart of Toyohashi area of Mikawa Port, Jinno's eastern section (96 hectares) is used for shipping scrap iron and for domestic shipment of Japanese brand automobiles, while the western section (120 hectares) is used for the export of Japanese automobiles and has become a base for importing various foreign automobiles. Inaugurated in 1998, the Mikawa Port Toyohashi Container Terminal handles cargo and its volume is gradually increasing. There are four shipping routes for containers that go to China on a weekly basis. It is important to mention the connection with the entire port area has with transshipping services through Busan Port and through the domestic feeder routes to the Chukyo and Keihin areas. The land reclamation plan is continuing and will provide new access to roads and harbor facilities and provide land for corporate development.

The Mito area is in the center of Mikawa Port and has good access to the Toyokawa I.C. and the Otawa Gamagori I.C. on the Tomei Expressway. This area plays a major role as a base for industry and logistics. Current construction in Mito District 1 involves the Higashi Mikawa Coastal Road, the Route 23 Toyohashi Bypass, and the Gamagori Bypass, all with the goal of expanding port functionality to handle increasing logistical demands. Mito District 1 serves as a site for manufacturing, distribution or warehousing enterprises. Mito District 2 is a coastal industrial site with excellent transportation access to the Tomei Expressway, the Shinkansen and major ports. This large-scale complex can offer a site over 20 hectares in area with the added benefit of water supplied for industrial use.

In general, the most important exports from Mikawa Port are automobiles, vessels, metals and scraps, chemicals and petroleum. In terms of imports, there are automobile, steel, crude oil, wires, cables and metalworking. Figure 3 below shows the trade status by commodity of Mikawa Port as of 2010.

Figure 3: Mikawa Port Trade Status (by Commodity) 2010 (Units: Yen, %)



Source: Toyohashi Tax Office (2010)

Located west of Mikawa Port, the Gamagori area is a logistics hub around Hama-cho and a marine leisure zone around Takeshima Island. It is an industrial base and the core of regional development for Gamagori City. The area's primary import and export cargo are automobiles and wood. It has had a partnership with the port of Gisborne, New Zeland since 1996. The area is equipped with such facilities as earthquake-resistant quays and public sheds and specifically, the Hama-cho area has timber storage ponds and timber yards.

There is an 11-meter deep quay wall under construction that aims to further enhance port functions. In addition, the earthquake-resistant quay can tolerate earthquakes up to magnitude 8.0 and would enable the flow of emergency supplies from the sea to the hinterland in the case of a major Tokai area earthquake.

7. Toyokawa Canal and the City Development

The Toyokawa-yosui (Toyokawa Canal) started operating for agricultural water conservancy in 1949 and in1958, the Ure Dam was completed. From 1961, the Aichi Canal continued the business of the Toyokawa-yosui. Since 1999, the Toyokawa-yosui has been reconstructed. The fulfillment of Oshima Dam was completed in 2001, and after that in 2003, the Japan Water Agency started its mandate to manage the Toyokawa-yosui. The water from the canal is divided into three usages: 72% of the water is supplied as agricultural water; 22% is used as domestic water; and 6% is water for industrial use.

The Toyokawa-yosui supplies industrial water to about 80 companies, including steel companies, foodstuff companies and logistics companies around the Toyohashi Harbor in Mikawa, Aichi Prefecture and Kosai, Shizuoka Prefecture. However, Toyokawa-yosui plays its most important role in the Mikawa area for the agriculture sector, as Tahara City is famous for agriculture.

8. Problems, Challenges and Future Perspectives

8-1. Problems and Challenges

The biggest problem is the traffic congestion in the mornings and evenings. In normal traffic conditions, from Port of Mikawa to the highway, it takes only ten minutes. However, due to traffic congestion, can take up to 30 to 40 minutes. Moreover, there are also complaints from private companies about the transportation time from Toyohashi City to Nagoya City and requested that the transportation time be reduced to less than 50 minutes within the next three years. Based on an interview with a Tahara City official, there is a plan to construct a road that connects Toyohashi City and Nagoya City with a length of 80 km in length and without any traffic lights.

Also, from Tahara City to Gamagori City, it takes about 60 minutes. Companies, including Toyota, have requested that traffic conditions be improved in order to shorten the transportation time. Reducing logistic costs is the only solution that private companies have in facing difficult economic situations, when they have to cut costs as much as possible. Therefore, if Tahara City cannot solve this problem, companies will leave the city. However, this issue cannot be solved by Tahara City, alone and there are several stakeholders, including Toyohashi City, Aichi Prefecture and the Ministry of Land and Transportation.

8-2. Successes and Constraints on the Development of Industrial Zones.

There are other issues concerning the construction of industrial zones, including the effect on the fishing industry. It was very difficult for the city to persuade fishermen to change their methods of fishing which was having an impact on their lives. Therefore, in order to persuade them, Tahara City promised them to maintain good environmental conditions, including the expansion of green environments within the industrial zones. However, a new trend has emerged and the city is considering to expand land for industrial use and to reduce the cost of land, which will result in the reduction green areas. Tahara City promised to maintain a green environment and it is difficult for the city to deal with this emerging trend. The city also has to protect the agricultural sector, as it is one of the main industries in the city.

In terms of the development of industrial zones, there are cases of fighting for the ownership of land. Therefore, the city has to solve these issues one by one. In addition, Tahara City is concerned about local small firms in the city, since those firms also need land in smaller sizes, for running their business. Aichi Prefecture tends to parcel the land in large sizes to attract big firms to come to the industrial zones, while Tahara City also wants to make sure that local firms can also benefit from the industrial zones. Hence, one solution is that the city will purchase the land from Aichi Prefecture and allocate it to small and medium enterprises to facilitate the development of industrial zones.

In terms of preserving the green environment, the city has made an agreement with all companies in the city to prevent any pollution created by the industries and is the requirements are even higher than those of the national government. As a matter of fact, the agreement on the preservation of the environment is applied only

for large companies, but in case of Tahara City, it is also applied to SMEs. As a result, many green parks have been built in the city to please the fisherman who had changed their pattern of fishing. In addition, the city has built a resort park but it is not successful and there are many complaints.

8-3. Future Perspectives

Tahara cannot reclaim any more land because of the pollution in the sea. Around the port, the sea is very shallow and it is very easy to make the land fields but it is separated from the open ocean and therefore water does not circulate well, producing less oxygen. There are still some slots of land remaining, equivalent to about 200 hectares, that are not yet bought by companies. Moreover, the number of people who engage in the agricultural sector is declining and agricultural land is becoming abandoned. Therefore, how to utilize the agricultural land is also another issue. It should be noted that one of the characteristics of agriculture in Tahara City is that farmers don't use much land for cultivating vegetables and agricultural products since the introduction of technology-intensive production methods have allowed the growth of products on limited spaces of land.

As mentioned earlier, Tahara has policies in place to attract companies to invest near the sea where there are industrial zones. Therefore, it is difficult for them to offer land in other areas, such as the abandoned agricultural lands. About 10 years ago, Tahara City considered using agricultural lands to attract companies for investment but there were many factors and negative conditions for the development of industry on agricultural land. In addition, from the company side, building plants inland is not desirable and most firms prefer building their plants near the sea, even though subsidy schemes offered by Tahara City are also for other areas in the city. In addition, as the corporate tax of Tahara City is also declining, with a limited budget, Tahara City doesn't want industrial firms to build their plants in different places since it would be difficult for the city to provide support for them.

Therefore, it could be easier for the city to improve the types of infrastructure that are important for industrial firms. In addition, it has been difficult to attract more companies to invest near the sea after March 11, 2011, causing great concern for the city.

Thus, another important task is to release the information concerning the issues of earthquakes and tsunamis, promoting greater transparency. The city tries to explain how it can respond in the event of natural disasters so that the firms located near the sea can feel secure and prepare to minimize the risks.

8-4. Plan to Attract Other Anchor Firms

There are many automobile companies other than Toyota that are already located in the region around Tahara City, such Mitsubishi in Okazaki City and Suzuki in Kosai and other cities. In the present situation, the city doesn't expect other automobile companies to come to Tahara City. Actually, the parts producing companies in Tahara City are also supplying automobile companies like Mitsubishi in Okazaki and Suzuki in Kosai City.

The city has tried to attract other sub-industries other than automobile-related industries, such as the aerospace industry. Aichi Prefecture is well known for its aerospace industry, with such leaders as Mitsubishi and other companies. This is an important strategy in case the automobile industry experiences a crisis or faces recession in future. After March 11, 2011, the city is thinking of attracting more environment related companies such as electric car and battery manufacturers.

Presently, a mega solar panel project is being implemented on a 50-hectare piece of land. The land for building this mega solar panel is owned by Mitsubishi chemical and the project has seven major companies as investors. Once delayed, the plan is underway and is expected to be finished within two or three years (2014 0r 2015). In addition, the project also includes building three windmills on the same land as the mega solar panel project. The plan is not only to produce energy, but also for research and development for the eco-battery industry as well. The city expects that this mega solar panel project will become one of the top ten largest mega solar panels in the world.

8-5. Plan to Deal with the Present Situation

To date, no company wants to leave the city because of its proximity to the sea. Tahara City releases information about the potential for a tsunami, enabling companies to take risk management measures. It has been predicted that there will be a large earthquake in the Tokai region, and in the event that it causes a tsunami, it is estimated that Tahara City could be affected within an hour. Therefore, Tahara City is concerned about how to respond within only one hour. The city often provides training sessions to help people to be well-prepared in case it is ever needed. Firms also try to be ready to respond to the risk as well. However, the city's main priority is the protection of the local people.

8-6. Impacts of Toyota Investment in Tahara City

One of the biggest impacts of Toyota's presence is the economic impact. Without Toyota, Tahara City could not have built the infrastructure, water systems and medical services to the degree it has. Not all the cities in Japan can provide these kinds of services. Another impact is job creation for young people created by the development of the industrial zone. However, the spillover effects are not satisfactory because few related firms have come to invest in Tahara.

9. Conclusion and Suggestions

9-1. Conclusion

Gathering all the useful information obtained through observation at the Toyokawa canal and Mikawa Port and from the interview with Tahara City officials and Sho Unyu managers during the 3-day fieldwork, it was found Toyota Motor Corporation's decision to invest in Tahara City's industrial zone has made a remarkable change for reputation of Tahara City. Prior to Toyota's investment, Tahara City was predominately

dependent on tax revenue and job creation from the agriculture and service sectors. Such dependence made it hard for the city to finance its public expenditures including roads, bridges, schools and hospitals, etc.. Toyota's settlement provides more opportunity for the city to spend revenue on public infrastructure due to the increased tax revenue and a subsidy from Aichi Prefecture to construct major infrastructural components such as land reclamation projects and highways. Since then, infrastructure projects have been constructed in and around Tahara to connect it with main highways and the Mikawa Port. This boom in infrastructure made it convenient for the development of the automobile industry in Tahara. Better infrastructure not only helps promote the development of the automobile industry, but it also has a spillover effect for growth and development of the agriculture and service sectors in the city, thereby raising the living standards of the citizens. What lead Toyota Motor Corporation to invest in Tahara City? We have found and summarized three main reasons for the investment decisions of Toyota Motor Corporation in Tahara City's industrial zone:

1. The active roles of the mayor and other related officials of Tahara City:
    - Successfully negotiated and created good relations with the top management of Toyota, resulting in investment in Tahara
    - Cooperated closely with the Aichi Prefectural Government for the creation of landfills for the industrial zone and other subsidies to build major physical infrastructure in the city
    - Built roads, bridges, drainage systems and health care centers and provided utilities to ease living conditions for workers, smoothing the operations for firms.
    - Successfully negotiated with local fishermen regarding the construction of the industrial zones and paid them compensation. As such, the city was able to supply enough lands to attract big firms.
    - Implemented the one-stop service and tried to disseminate information on the conveniences and advantages of the industrial zones on its website and through important business forums.
2. Technological innovation: invention of silicon based paints and plastic bumpers made by Toyota. These innovations eliminated rust problems to cars parked on salt-contained soil and allowing Toyota to build its factory in the industrial zone of Tahara City.
3. Good, natural location of industrial zone: the location of Tahara City's industrial zone is considered as the most preferred location for Toyota to place its factory, as the zone is in the industrial hub of the Mikawa area with quick access to Mikawa Port. It is convenient for Toyota to get raw materials and export its cars through the port.

Finally, we think that industrial zones in Tahara City themselves are not yet considered as a cluster or firm agglomeration because there is just the one anchor firm (Toyota) and a few related firms located in the industrial zones. However, if looking at the Mikawa area as a whole, we can say that there is already a fully developed automobile industry cluster in this area because the other big automobile firms are located in the nearby cities, such as Toyohashi, Gamagori, Kosai, and so forth.

9-2. Suggestions

Drawing on the findings of the study derived by fieldwork in Tahara City, four suggestions for continuing development of the automobile industry and the overall development of Tahara City, are offered below:

- The mission ahead for Tahara is to take care of existing automobile anchor firm (Toyota) and try to help/support more related firms to move close to Toyota's plant. Since there are few related firms in the industrial zone, it would help increase the efficiency of automobile production if more related firms can relocate their factories to the industry zones.
- Resolve the problems of traffic congestion to shorten transportation times, reduce costs, reduce CO_2 emissions in the city and increase efficiency.
- As it seems difficult to bring more automobile anchor firms to the city, the idea of looking for other industries such as the biotechnological industry, energy industry and information technology industry, should be encouraged. But before doing so, necessary conditions, such as human resources development, the building of key infrastructural components and improved living conditions for the employees of these particular industries must be met.
- Tahara City's effort to disseminate information about the industrial zone through its website, participation in business forums and other forms of advertisement-related media should be constantly continued.

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第２章　Working Group ２

The Sixth Industry:

Examining the Current Status and its Implication to Agriculture Development of Tahara City

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田原市における第６次産業の現状と将来的な展望に関する調査

＜要約＞

本調査では、日本有数の農業地域である田原市において、第六次産業の導入がどのように行われているのか、また、将来的にはどのような展望があるのかを、現地でのインタビューを元に考察した。第六次産業とは、農業、漁業などの第一次産業、加工、製造の第二次産業、そして、販売、サービスなどの第三次産業を包括して行う産業の事であり、現在政府により積極的に導入が推進されている。目的は、農家の収入の向上と農山漁村における自然エネルギーやバイオマスなどの資源の最大限の活用などが挙げられ、現在導入をしている地域では、農地の荒廃が進んでいるという特徴が見られる。しかし、田原市は、温暖な気候、優れた灌漑施設、恵まれた立地条件など、農業に適した環境があり、高い農業生産高を誇っており、農業は成功しているといえる。このような事前調査で得た情報から、田原市において第六次産業の導入は必要であるかという疑問点が浮かび、本調査行われる事となった。調査はインタビューを中心に行われた。ただし、農業において重要な役割を担っている愛知みなみ農業組合の協力は今回の調査で得られなかった為、調査の内容は限られたものとなっている。

インタビューの質問事項は、田原市の『農業についての現時点の問題／試み』、『将来的な試み』、『第六次産業についての意見／展望』の三つに分類した。インタビューの対象は、相違 ・相似点を考察するために、行政、民間、農家の 3 つレベルとして実施した。インタビューの回答から、各レベルに多少の違いは見られたが、どのレベルにおいても、現状、将来的な問題として、高齢化、後継者問題、生産高の維持、低い知名度、限られた市場、そして環太平洋戦略的経済連携協定（Trans-Pacific Partnership または Trans-Pacific Strategic Economic Partnership Agreement: TPP）による影響といった項目があげられた。『第六次産業の認識』については、各レベルで違いが見られたが、現段階において、田原市において、第六次産業の導入の必要性は低いと拝察した。しかし、田原市も高齢化、TPP による影響といった将来的な問題と共に第六次産業の重要性を認識しており、将来的な導入は考えられている。民間では、第六次産業はすでに試験的に実施されており、今後更に事業の拡大が考えられている。田原市においては、現段階で農業は成功していることから、農家の収入向上などの従来の第六次産業の目的とは異なり、現状の維持、将来的な問題を考慮した導入が考えられている。インタビューを通して、一辺倒に第六次産業を導入するのではなく、各地域の状況、環境にあったやり方で、導入は進められるべきだとわかった。

本調査は最後に、田原市において第六次産業を導入した際の、将来的な可能性を考察している。農産物の高い生産高に比べて、知名度が低い事が問題点にあげられていた。インタビューの回答から、田原市において第六次産業の導入は、農産品の知名度を上げる事に貢献する可能性を持つのではないかと考えた。田原市の特産品を生産し、知名度を上げる事により、懸念されていた市場の拡大、需要の増加、更に生産高の維持を果たすことが可能になると分析した。その為に重要な事は、農家、行政、民間(JA)の包括的な連携であると考え、それぞれのレベルでおこなわれるべき役割について考察を行った。行政がイニシアティブを取り、田原市特有の第六次産業の導入を行う事で、田原市の更なる発展へと繋がるのではないかと考察した。

1. Introduction

1-1. Background

Located in the middle part of Honshu Island of Japan, Tahara City occupies a particular region of Aichi Prefecture. Geographically, it situated on Atsumi Peninsula and surrounded by the scenic beauty of Mikawa Bay to the north, the mighty Pacific Ocean to the south, and the Irako Channel, with the impressive lighthouse, to the western side. These geographical advantages benefit Tahara City with a temperate climate (average 15 celcius degree), fertile soil and a significant potential for being a distribution base. These advantages enabled Tahara City to become one of the largest industrial zones in Japan, combining agriculture, livestock and fishing industries, as well as other important local industries, contributing to the economic vitality of this region.

Tahara City was created by the merger of three towns in the region. On August 20, 2003 Tahara Town and Akabane Town merged, followed by the incorporation of Atsumi Town on October 1, 2005. It was the first city to be created in the great wave of municipal mergers that was begun in Aichi Prefecture during the Heisei Era. This merger policy was undertaken due to the expansion of people within the region, population administrative needs and the concept of centralization to optimize the cities' potentials. Since the merger, Tahara City currently consists of 18,881 ha of land area, of which 34% is used for agriculture.

As a well-known leading producer of agricultural products in Japan, Tahara City has been supported by the existence of the Toyokawa Canal. This irrigation system was initiated by Mr. Juichiro Kondo and was constructed between 1949 and 1968. Before the canal project, the Tahara region suffered from drought and famine. The natural elongated shape of the region did not provide an adequate source of fresh water and the people could only plant sweet potatoes. Significant changes came after the construction of Toyokawa Canal. The total length of the main canal is 111.7 km and it irrigates around 18,000 ha of agricultural land, as well as provides fresh water to the industrial zone (29%) and for daily consumption of the households (25%). The water from the canal goes to six cities in this region: five cities in Aichi Prefecture (Toyokawa-shi, Toyohasi-shi, Tahara-shi, Gamagori-shi and Shinshiro-shi) and one city in Shizouka Prefecture.

Recently, the government of Japan has been considering implementing the sixth industry concept for the agricultural sector. The aims of this policy are mainly to increase the income of farmers and to deal with such future challenges such aging, depopulation and shortage of labor force (Ministry of Agriculture).[1] The concept of the sixth industry involves the combination of first sector (variety of agriculture/forestry/fishery products) with the second sector (food processing, wood crafts, etc) and the third sector (direct deal shop, tourism related services, restaurant, souvenir industry) (1+2+3=6). Furthermore, the sixth industry can contribute to improvement of quality and differentiation of products. By considering the contemporary issues and the future situation,,this research will examine the concept of the sixth industry in the context of the agricultural sector of Tahara City.

[1] Ministry of Agriculture, Home page, accessed by 8th of December, http://www.maff.go.jp/j/soushoku/sanki/6jika.html

1-2. Objectives

The research aims to examine the current status of promoting the sixth industry in Tahara City from the viewpoint of each of the stakeholders; administrative, business and farmer, specifically to answer the following questions:

1. How does each stakeholder perceive the sixth industry in Tahara City?
2. In what way are they promoting the sixth industry?
3. What are the implications and challenges of promoting the sixth industry?

1-3. Methodology

In general, this research was conducted based on direct interviews with targeted parties and field observation as the sources of the primary data. The interview was conducted in Tahara City from October 19-21, 2011. Resource persons were chosen, as much as possible, to represent the complete range of Tahara City agriculture stakeholders, from upstream to downstream (six people total). A set of preliminary questions was sent to the resource persons before the interview was conducted to get wider and deeper explanation within the limited period of fieldwork.

On the research proposal, it was planned to have interviews with the agriculture administrative officer, the Japan Agricultural cooperation (JA), a private company (Ishiguro company), and farmers. However, due to circumstances, the interviews with JA, as one of the important players in the agriculture sector, could not be arranged, thus limiting the findings as well as the analysis of this research. Secondary data was collected from printed material and online sources. All findings and analysis are focused on the necessity and benefit of promoting the sixth industry in Tahara City from the wide-ranging perspectives of all stakeholders.

2. Features of Agriculture in Japan

2-1. Agriculture development

The Japanese agricultural sector is facing many problems today. There are the issues of aging, the decrease of the population, successor problems and low food self-sufficiency. Today, less than 5% of the total population of 6.5 million is engaged in agriculture, and the number is getting lower and lower every year (Ministry of Agriculture),[2] Furthermore, more than 30% of the farmers are over 65 years old and the average age of farmers is increasing (Ministry of Agriculture).[3] Japan also has expansive amount of abandoned land, equal to approximately 3,633,000 ha in 2010. This is nearly the same size as Saitama prefecture (Norinchukin Research institute Co., Ltd.).[4] Japan has been marking very low rates of food self-sufficiency, becoming only 39 % (based on calories) in

[2] Ministry of Agriculture, Home page, accessed by 8th of December, http://www.maff.go.jp/j/zyukyu/zikyu_ritu/011.html

[3] Ministry of Agriculture, Home page, accessed by 8th of December, http://www.maff.go.jp/j/tokei/sihyo/index.html

[4] Norinchukin Research institute Co., Ltd, 内田多喜生 2011, 2010 年センサスにみる日本の農業構造、accessed by 8th of December 2011, http://www.nochuri.co.jp/report/pdf/nri1101re1.pdf

2010 (Ministry of Agriculture).[5]

Moreover, the Trans-Pacific Partnership (TPP), multiple free trade agreement, appears to be increasingly controversial for the agricultural sector. Countries that are considered to join this agreement are the United States, Australia, New Zealand's, Brunei, Chile, Malaysia, Peru, Singapore, and Vietnam. As Japanese agricultural products are much higher in terms of price than products from these countries, it is expected that demand of Japanese agricultural products will decline significantly. TPP has repercussions for not only the nation level but also at the local level.

2-2. Promoting the sixth industry

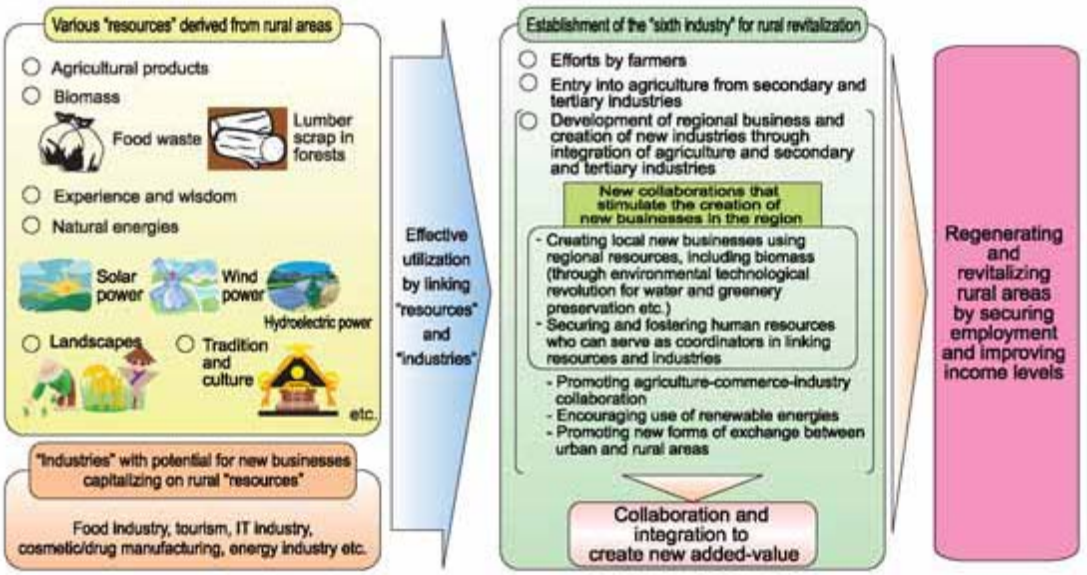
The Ministry of Agriculture, Forestry and Fishery (MAFF) has introduced and is promoting the sixth industry in order to regenerate and revitalize agricultural and rural areas.[6] Considering that the current crucial issues of aging, the declining population that engage in agriculture, the shortage of labor and market orientation will be significant problems in the near future, promoting the sixth industry is considered a means to deal with such challenges. The most important measure will be the provision and maintenance of income generating activities for rural people. Moreover, the sixth industry aims to maximize the use of natural resources in rural areas, for example agricultural and marine products, biomass and natural energy (Toukai Nousei Authority). Therefore, in order to encourage revitalization of rural and regional business development, as well as the establishment of new types of businesses, initiatives and efforts to develop agriculture into the sixth industry by utilizing various resources available in rural areas is essential.

Furthermore, the sixth industry initiatives aim to integrate production, processing and marketing activities into a holistic process of agriculture business practice; namely agriculture production as a primary industry, processing and manufacturing as a secondary industry, and retailing as a tertiary industry. Through this way, the aim is to create synergy collaboration and to promote integration by formulating new local businesses to create new added value, which will ultimately lead to the achievement of rural and regional development.

[5] Ministry of Agriculture, Home page, accessed by 8th of December, http://www.maff.go.jp/j/zyukyu/zikyu_ritu/011.html

[6] See the Annual Report on Food, Agriculture and Rural Areas in Japan for year 2009 and 2010 at http://www.maff.go.jp,

Figure 1: Initiatives for promoting the "sixth industry" to revitalize agriculture and rural areas (conceptual image)



Source: FY2009 Annual Report on Food, Agriculture and Rural Areas in Japan,

Accessed by 4th of December 2011, http://www.maff.go.jp/e/annual_report/2009/pdf/e_4.pdf

3. Situation of Tahara's Agriculture

3-1. Characteristic of agriculture

The level of achievement of agriculture development in Tahara City can be characterized by several factors including: the warm climate: the effectiveness of the Toyokawa Canal, which provides irrigation to farm land; a geographical advantage; and the contribution of eco-technology application (Tahara City Officer, Suzuki Masanao).[7] On average, the air temperature varies between 5 to 27 degrees annually, which provides a high potential for growing vegetables and floriculture, specifically. Blessed by warm temperatures and windy conditions also contribute to the establishment of eco-technology applications such as use of greenhouses, solar power energy, wind energy, etc. In addition, a large portion of land (18,000 ha) created and irrigated by the construction of the Toyokawa Canal in 1968 is being cultivated by many kinds of crops and plants.

In terms of land use, 33.9 percents of a total 18,858 ha land is used for farmland which means agriculture is recognized as a significant sector in this area. The amount of people who are engaged in agriculture is over 30%, thus the agricultural sector is playing a very important role in Tahara City in terms of sources of income (Tahara City home page).[8] Moreover, the average income of farmers in Tahara City is relatively high compared to other cities, as it was ranked the best in Aichi Prefecture in 2007 (Tahara City).[9]

[7] A lecture, "Overview of Tahara city" by Masanao Suzuki, Tahara City Officer on 24th of June 2011

[8] Tahara City home page, accessed by 8th of December, http://www.city.tahara.aichi.jp/

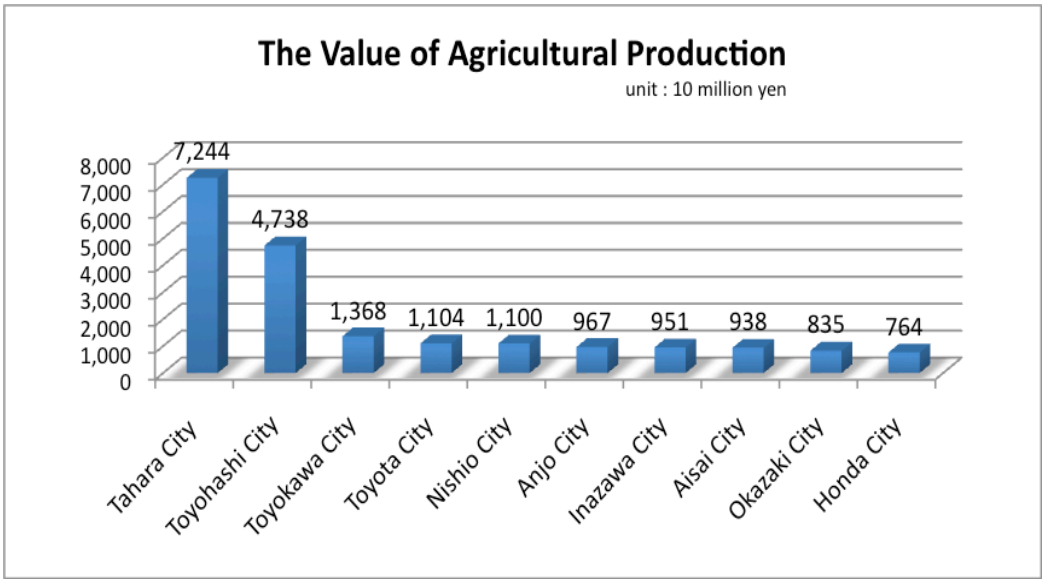
[9] Tahara City, 2010, "広報—Tahara", 「田原の農業は日本一」、accessed by 10th of December, http://www.city.tahara.aichi.jp/promotion/koho22/1201/tahara101201-02.pdf

3-1-1. Eco-Technology

Tahara City is promoting the latest technology within the agriculture sector. The latest technology for agricultural cultivation is the use of greenhouses. By using greenhouses, it is possible to cultivate food-producing plants in locations and at times when climatic conditions would adversely affect them and it prevents crop failure. The greenhouse crops include chrysanthemums, melons, carnations, tomatoes, roses, western flowers and potted plants. Recently, Tahara City also introduced solar panel technology for greenhouses in order to develop energy efficiency and to promote eco-friendly technology. Tahara City highly regards sustainability through environmentally friendly technology.

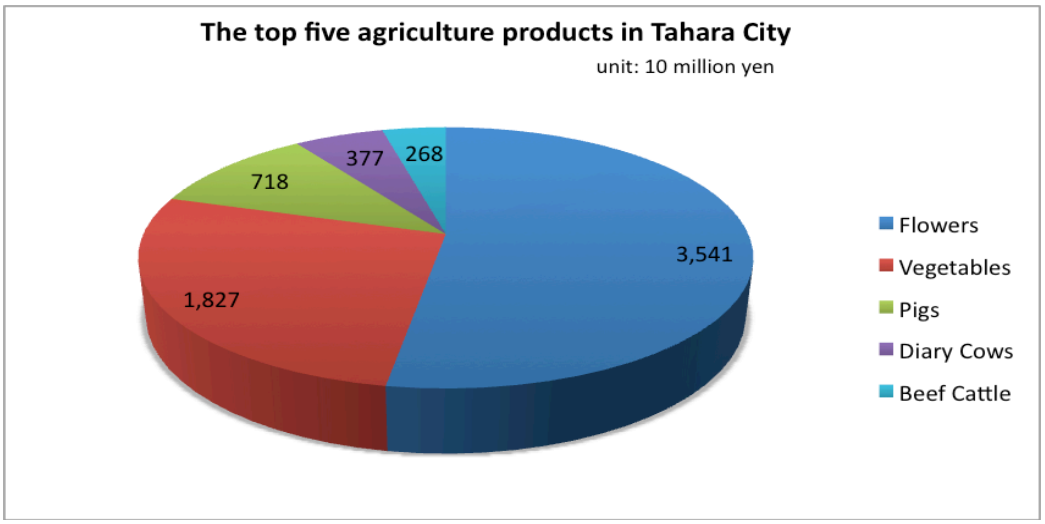
With the above-mentioned features, the agricultural sector in Tahara City was ranked at No. 1 in Japan compared to the other cities and the value of its production reached to 72.44 billion yen in 2006, (Figure 2). The chrysanthemum and cabbage production are the main contributors to the value of production in Tahara City (Figure 3).

Figure 2: The Ranking of Municipalities in Aichi Prefecture by Value of Agricultural Production



Source: The data for agriculture in Tahara, published by the Tahara Municipal Office, Agricultural Division, based on 2006 production

Figure 3: The value of agricultural production for the top five products



Source: Data of agriculture of Tahara, published by Tahara Municipal Office, Agricultural Division, based on 2006 production

3-2. Current issue and challenges

3-2-1. Current issues

3-2-1-1. Administration

Aging population

According to the interview with the agriculture administration officers, Tahara City is also facing aging issues. The farmers who work the crops are graying and dwindling in number. Abandoned, overgrown plots are a common sight in Japan because of how small farms are and how far prices have fallen, leaving many farmers finding it difficult to make ends meet. However, in Tahara City, the number of youth engaged in agriculture remains high compared to other regions in Japan.

Technology and human development

Although Tahara City is recognized to be high;y productive in agriculture products, they still consider it necessary to improve the quality of products by applying more advanced technology and to develop human resources to maintain the current productivity.

Limited markets

Since market access for agricultural products (crops), in particular, chrysanthemum, is very limited, they recognize the need for new potential markets as essential. They also realize that Tahara is not famous for specific agriculture products even though they are highly ranked in Japan for their agriculture. Therefore, they consider that producing new, specific products will increase publicity and promote Tahara City as the number one producer in Japan.

Abandoned land

Tahara City is still struggling with the issue of abandoned land and has been working on it by utilizing the agriculture support centre as a land bank. Most of the abandoned lands are situated in remote areas, inaccessible to water supply or they have an inappropriate shape making it difficult to be cultivated.

3-1-1-2. Business Sector

Aging population

It is important to address the aging issue for future agriculture development in Tahara City. Through human development (e.g. training, seminars) and introducing a new industry of processing agriculture products by implementing new models of green houses with current technology, the local government will need to be involved to try to solve this issue.

Technology and human development

Although productivity is high, improving the value of product by new processing technology of agriculture industry is considered crucial. Therefore, new models of green houses have been constructed in Tahara City. It is equipped with the solar panels to produce power and uses the power to control the temperature inside through a computerized control system. However, the cost of construction is rather high since it is such a new technology, though they are confident that in the future this technology will be more visible and accessible to farmers in Tahara City.

Limited markets

To expand the current limited markets in order to increase the productivity, it is necessary to recognize new potential markets and the patterns of consumer behavior in relation to the products.

3-1-1-3. Farmers

Aging population and decreasing number of farmers

Farmers in Tahara City find it difficult to convince their children to become involved in agriculture. Currently, when a farmer reaches retirement age, if they own their land, they will lend it to someone willing to farm, while farmers who rent them will return the land back to the owners. In the next 20-30 years, it is likely that future generations may be unwilling to be involved in agriculture. One reason may related to the gradually decreasing prices of the flowers, while other reasons may be related to the need for good will and hard work in order to work in agriculture.

Productivity

Based on the current situation, some farmers find difficulty to support their family life. To get additional

income, they need to increase their output to sell their products not only to the Japan Agriculture Cooperatives (JA), but also directly to other parties like the processing factories.

Uncontrolled & decreasing prices

Among flower famers 15%-20% have decided to sell their products at a fixed price, which has both advantages and disadvantages. These farmers may avoid the uncertainty of price fluctuation in the market, but on the other hand they cannot control or increase their own prices. According to the price system, even though the price of their product is fixed, it continues to decreas. Compared to previous situations, recently farmers are finding it difficult to support their family life and/or hire others to help them. All 440 members of the cabbage farmer association sell their product to JA to obtain the fixed price for their product. Thus, farmers can only increase their productivity in order to get more income. This association is responsible for 50% of the total agriculture in Tahara City.

Limited market

The farmers of flowers have been facing a decline in demand since chrysanthemums are used only for funeral purposes and are supplied only within domestic market. Therefore, they perceive that the TPP will be a breakthrough for them, helping to expand their market through exporting of their product.

3-2-2. Future challenges

Future planning is necessary in order to create solutions to resolve current problems and requires knowledge, facts and future assumptions. According to the results of observations and interviews with the three levels that contribute to the agricultural sector in Tahara City, the administration level, the private sector and the farmers, it is apparent that they have similar perceptions of each level of future plans. The description of each future plan follows:

3-2-2-1. Administration

According to the interviews with at the two administration levels: the Agricultural Administration Division and the Farming Support Center, agricultural production in Tahara City reaches 72.4 billion yen and became number one in production in Japan.[10] Even so, agriculture in Tahara City is facing the problems explained in the previous chapter, which include aging, human resource issues, abandoned land and limited markets. Based on these problems, the administrative level has set a future plan to create solutions to tackle the situation. To resolve the issue of aging and human resources problems, the administrative sector is using the technological approach to help transfer technology to the young generation by introducing new technology considered to minimize the generation gap. The technology program also may contribute to build human resources and farmer capacity. Creating solutions

[10] Based on the Commercial Farming Income Statistic in 2006. The data was from Tahara City Administration official.

through the technological approach can contributed to an increase in the quality and maintain the productivity of agriculture in Tahara City. Furthermore, to tackle the abandoned land issue, the administrative sector has established the banking-land system. This system is considered the future plan to maintain productivity of agriculture by maximizing the use of land.

The geographical advantages of Tahara City's location may contribute to the future plan by extending the agricultural markets and may resolve the current problem of market limitations of distribution, which include issues of distribution only within the Tahara City area. Due to geographical advantages, agriculture products can be distributed to all area in Japan, bringing the brand-mark of Tahara City's agricultures products to other parts of the country and bringing notoriety. In addition, the administrative sector should also consider expanding the worldwide marketing of its agricultural products by using the benefits of the Trans-Pacific Partnership (TPP) agreement. Though the agricultural products of Tahara City may not be well known, quality is high and they have the potential to compete with other products from other countries.

3-2-2-2. Business Sector

Ishiguro, a private company in Tahara City, also contributes to develop the agriculture sector. The main activity of this company is to improve the sustainability of agriculture by providing the tools and training for the use of greenhouses to be used as the agricultural experiments. It also serves to increase or enhance farmers' skills by conducting training and seminars. These activities are aimed at increasing the quality and maintaining the productivity of agriculture for the future.

Supported by advanced technology, 45,000 m^2 of agricultural land, 500 farmers and 300 employees, Ishiguro tries to extend their potential markets by introducing the new innovations in agricultural processing with products such as alcoholic cocktails ("Tomareru" and "Melon Heart"), tomato juice and ketchup. The geographical location of Tahara City also gives particular advantages to widen agricultural markets. In the future, both innovative products and geographical advantages will combine to create new markets for the agriculture sector of Tahara City, including a new worldwide market and competitive products in the context of TPP implementation.

In addition, with the advanced technology Ishiguro is introducing, such as solar panel technology, also has the advantage of being an eco-friendly technology. This technology aims to sustain to promote the environmental friendly technology and maintain the efficiency of energy that is used in the greenhouses. In the future, the integration of factors of advanced and eco-friendly technology, new-innovation of products and geographical advantages will lead to a good environment for establishing a new industry of agriculture in Tahara City.

3-2-2-3. Farmer

From the farmers' point of view, there will be a decreasing number of young people who engage in the agriculture sector in the future. This perception is directly related to the gradually decrease in price for the agriculture products. Thus, cabbage farmers can only to maintain or increase their productivity in order to make

more income because of prices are decided by the market.

Furthermore, chrysanthemum farmers see new potential markets due to TPP implementation, after which they will be able to export their chrysanthemums to other countries without barriers of export-import duty, thus increasing incomes.

As with other areas, in Tahara City, JA plays an important role in handling agricultural management and marketing. The farmers in Tahara City sell their products through JA, thus becoming dependent, with the hopes that in the future, JA will maintain and open new potential markets also leading to an increase in the farmers' incomes.

3-3. Perception of the sixth industry

Considering the current and future challenges of Tahara City's agricultural stakeholders, the perception of the sixth industry was examined and it was found that different and various perceptions of the concept are held at the three levels of the agriculture sector: at the administrative level, in the private sector and from the farmers.

3-3-1. Administration

From the point of view of the administrative level, the sixth industry in agriculture is perceived as the creation of new products by implementing the second and third aspects of the industry, which are processing and marketing/distribution. Concentration on the second and third aspects is feasible if the agriculture productivity and quality are already satisfied. Another consideration of the sixth industry is the extention of agriculture markets. From the highest level of productivity in agriculture in Tahara City, the administrative sector can then emphasize a focus to bring the products to wider domestic markets as an answer the market limitation problems they currently have. The geographical advantage of being located in central Japan, Tahara City would benefit from this idea. From this location agriculture products could reach all over Japan with moderate costs of distribution. Moreover, it is anticipated that agriculture products from Tahara City will be able to compete with foreign agriculture products in the context of the implementation of TPP. The administrative sector needs to consider the need for value-added processing for agriculture products and to promote marketing of Tahara City agriculture products.

Although it is well known that Tahara City is the leading producer of agriculture products in Japan, there is no one product that is particularly famous originating from Tahara City, causing difficulties to promote the sale and increase the price of its agriculture products. Thus, at the administrative level, the sixth-industry is viewed as a needed publicity tool to solve this problem. Recently, Tahara City launched a type of cocktail named "Tomareru" and "Melon Heart" to promote a specialty product of Tahara City's agriculture. So in implementing the sixth-industry for the agricultural sector, Tahara City administration aims to promote the publicity of its products and open wider markets.

3-3-2. Business Sector

As an agriculture player that is profit orientated, the private sector (in this context, Ishiguro Farm) perceives the sixth-industry as a challenging policy. For this sector, the sixth-industry should consist of acomprehensive and integrated agriculture development. They also share the same strategy as the administrative level in that it is important for the agriculture sector to maintain high productivity at the same time needing to widen the market for their products. The business sector strongly believes that the sixth-industry will bring benefits to their business. Thus, they are eager to find and implement available innovations, as well as to open networks to be able to implement the sixth-industry. Applying current technology to the farming fields and building cooperation with food processing and packaging manufacturers are some issues they are taking into account.

For the private sector, the use of technology starts with the primary industry of the sixth-industry, which is planting process. This process also takes into consideration the idea of adding value to the product. For example, innovative technology used for the fields is the use of computerized control on the greenhouses and the use of solar panels as one of the energy sources. In regards to processing, the next step of the sixth-industry, the Ishiguro Farm needs to connect with other business partners that have expertise in the processing of agricultural products. This partnership should not only handle the processing, but also manage the packaging of the processed product so it becomes ready to sell. This holistic approach of the sixth-industry from the point of the private sector still needs further assessment of market demand and feasibility of producing certain kinds of processed products.

3-3-3. Farmers

Perceptions of the sixth-industry from the farmer's point of view vary. However, they all agree that participating in the sixth-industry is time consuming and they are out of their capability and expertise. Their focus as farmers is to cultivate the land and maintain its productivity this is directly related to their income. They already feel overworked with their daily jobs, so paying more attention in promoting or implementing the sixth-industry is not included in their priorities. However, they welcome external partners to work hand-in-hand with them to promote the sixth-industry in Tahara City.

The findings also highlight the different goals of each farmer. For chrysanthemum farmers, the sixth-industry is a hope for opening markets for their products. It is well known that chrysanthemums are only used for funeral purposes in Japan and therefore, the domestic market is very limited. The farmers find it difficult to increase their productivity because the demand is not that high. If there is an over supply of chrysanthemums in the market, the price will go down and farmers will suffer. In that sense, farmers need the second and third sector of the sixth-industry to help them sell their products abroad.

For cabbage farmers, the sixth-industry is perceived as an opportunity to add value to their product so they can increase their productivity. Generally, cabbage could be sold as it is directly to the consumer and to manufacturers as the main material for Kimchi[11]. However, farmers are excluded from market and product distribution policy. Thus, they consider the sixth-industry outside of their capacity. In their opinion, if there are

[11] Kimchi is a traditional Korean food made of vegetables with varied seasonings

many manufacturers that can accept their products, they are willing to support it by increasing productivity. They hope there will be many external investors that come to Tahara City to develop agricultural partnerships for processing of their farm products.

4. Status of the Sixth Industry

4-1. Progress

4-1-1. Administration

As mentioned in an earlier discussion, statistically, Tahara City has been recognized as an area producing high-ranking agricultural products in Japan. This area alone contributed 72.4 billion yen in 2006. This area produces a variety of products but is noted for the production of vegetables (cabbage) and floriculture (chrysanthemum). In addition, the number of people involved in this sector is also considered high at 33.3%. However, it is undeniable that Tahara City must also recognize the serious issue of an aging population in the future since the population of young people who engage in agriculture is gradually decreasing. Yet compared to other regions, the number is still high.

By recognizing the current characteristics of Tahara City, promotion of the sixth industry seems not to be their most critical step. Since agriculture development is advanced enough, extending market orientation and initiatives are necessary, particularly in order to promote Tahara City as specialized and recognized agriculture production area. Tahara City understands that it is not well recognized despite its advantage and competitive agriculture products, compared to other regions in Japan. Hence, increasing publicity is a priority. Considering such issues and promoting high eco-technology applications[12] to maintain and improve productivity is currently being implemented. Furthermore, in order to promote and increase publicity, new products processed from the local agriculture products are being introduced. As an example, two cocktails “Tomareru” and “Melon- Heart,”[13] are made from tomato and melon and created through a collaboration with the business sector.

Picture 1: Flyers of new processed products “Tomareru” to increase publicity

Source: Author

[12] Tahara City is characterized as a geographically superior environment for promoting eco-friendly technology application, which is enhanced by a warm climate and sunlight for greenhouses and producing solar energy.

[13] Please visit http://www.mimasu-831.jp/ for details of other new processed products.

Furthermore, while recognizing the market size for agriculture products is small and narrow, Tahara City is considering the impact of future economic challenges such as issue of the Trans-Pacific Partnership (TPP) agreement. The direct impact of the agreement will be the change in market mechanisms under the free trade scheme. New foreign products can be easily imported and traded in Japan, which will likely have a high quality at a low price. The market provides a variety of products from both local and foreign areas, which will result in high competition. In this sense, local products should be able to compete with other imported products. Therefore, maintaining productivity is not a single variable to fulfilling market needs, but also maintaining quality of the product at a competitive price. Japan's products are recognized to have high quality,[14] at a high price.[15] Hence,, Tahara City is emphasizing the necessity of promoting the sixth industry in order to improve competitiveness in a global market.

4-1-2. Business Sector

As for the business sector, promoting and implementing the sixth industry are necessary in order to integrate agriculture development from downstream to upstream for agribusiness activities and processes. Undeniably, the business sector also realizes the trends and issues in agriculture, such as decreasing population, aging, small market size and particularly the inevitability of changes brought on by the TPP. Hence, initiatives have been undertaken and practiced step-by-step on a small scale. They are creating and establishing each aspect of production, processing and marketing for comprehensive agriculture development. Advanced eco-technology has been introduced in order, to not only maintain and increase productivity, but also to attract the younger generation and aged populations. In addition, trainings and seminars are also conducted to improve human resources capacity, are not only limited to knowledge, but also direct involvement by practicing in farm fields provided by the company. Since the productivity is already advanced, the food processing industry will bring benefits, not only to increase the value of products, but also to open and create new markets.

However, since the capacity of the company is still developing, implementation of the sixth industry in Tahara City will not be done by only one company-*as a basic characteristic of the implementation of the sixth industry is not done by one agency*, but through partnership and collaboration with other business partners. Currently, they categorize each specific, but related industry such as a company that focuses on stabilization and

[14] The Ministry of Agriculture, Forestry and Fishery (MAFF) establishes and requests the fulfillment of food and agriculture standards and provide valuable information to customers under the Law Concerning Standardization and Proper Labeling of Agricultural and Forestry Products. For details visit: http://www.maff.go.jp

[15] See "Expensive food and foreign competition in Japan" in "Agriculture in Japan: old, part time farmers, small farms, high-tech methods and imports and exports." http://factsanddetails.com/japan.php?itemid=941&catid=24&subcatid=159#13. See also the characteristic, attractiveness and competitiveness of Japan's agriculture, forestry and fishery products and processed foods (AFF products and foods) for foreign countries in "FY2010 Annual Report on Food, Agriculture and Rural Areas in Japan," http://www.maff.go.jp.

product development, including human resources and others are concerned with processing and marketing. Under this scheme, there are two possibilities for the future: each company will continue their specialized industry with a business-to-business partnership; or setting up and building their joint capacity to establish a holistic agribusiness sector.

4-1-3. Farmer

Engaging in the first industry, farmers recognize the necessity of introducing the sixth industry, particularly in facing future challenges. They are mostly concerned about improving their income and fulfilling productivity as the market demands. Farmers are working under the Japan Agriculture Cooperative (JA) scheme in which farmers work together to fulfill the market need. To some extent, the market decides and extension of the market depends upon JA. As of three years ago, income has been gradually decreasing due to decreased productivity resulting from weather and climate changes, as well as the existence of limited markets, that extend only within the city.

As for floriculture, the market is limited while productivity is high and sustainable. Adding value by creating new products will potentially widen market opportunities. The farmer, to some extent, has been experienced and practiced to involve in wholesale industries. However, considering to overloaded of work, particularly in production industry which requires intensive care, they surrender and realizing difficulty in managing those all industries at the same time. Vegetable farmers also face similar situations. Hence, they are putting the focus on maintaining productivity, open to and depending on initiatives from outside, to involve the processing and marketing industries that are necessary. They are expecting the business sector within and/or outside of Tahara City to be the key players.

4-2. Implication and challenges

This section examines what can be expected as an outcome if Tahara City introduces the sixth-industry and what the challenges would be for achieving it from findings of interviews. It was found that Tahara City has not implemented the sixth-industry on a large scale and that it is not currently necessary. Regions that are recommended to introduce the sixth-industry are generally facing the devastation of their agriculture and fishing industries. In the case of Tahara City, it has products that are of the highest productivity in Japan and the agricultural sector is well developed. Moreover, Tahara City has a warm climate, well-developed irrigation system, and geographical benefits. These features have enabled the establishment of a good agricultural environment.

Furthermore, under the management of the city administration, Tahara City has created an environment and systems for agricultural operations on a large scale. It enables farmers to grow vegetables that require large areas of land, like cabbage. Considering these points, implementing the sixth-industry is not crucial in Tahara City at the moment. However at every level, the city administration, the private sector and the farmers, problems are seen concerning the sustainability of this situation, and this survey revealed the possibility of the sixth-industry involvement to tackle to these problems.

Originally, the purpose of the sixth-industry was to increase the farmers' income and utilize regional

resources like biomass. However, Tahara City has already achieved these objectives and so a different outcome for promoting the sixth-industry can be expected in Tahara City. It shows that implementing the sixth-industry should done in the same way for every region. Each region has different features so it is important to understand the difference and present situation before implementing the sixth-industry. During the interviews, it was found that at each level there is anticipation of future problems such as the aging and decrease of the agriculture-related population, unstable prices and the impact of TPP. It is uncertain whether they can maintain the present situation and are currently looking for strategies to solve these potential future issues. In some aspects, the sixth-industry is considered to play a role and is currently being implemented on an experimental scale. Therefore, it can be said that Tahara City is in the process considering the sixth-industry to help solve their future challenges.

The following section demonstrates what would be expected and what is necessary for Tahara City to introduce the sixth-industry with summaries of the findings.

4-2-1. Administration

At the level of administration, they do not consider the implementation of the sixth-industry to be crucial at the present. Productivity is high and therefore, the importance of implementing the sixth-industry is very low. However, they are considering implementation of the sixth-industry for their future. Aging and decreasing population, limited markets, and the TPP are expected to create severe problems for the agriculture sector and they are expectant that the sixth-industry will be able to solve some of these problems. Under their assumption, valued-added products may increase the publicity of Tahara City, and these products can be sold, not only in the region but also abroad.

4-2-2. Business Sector

On the other hand, the private sector is already introducing the sixth-industry and they are willing to promote valued-added products. As previously stated, the Ishiguro Company has been producing the valued-added product of “Tomateru” and are considering the production of other new products. “Tomareru” is only sold within Tahara City at the moment but they plan to extend their market in the future. The Ishiguro Company thinks that what need for implementing the sixth-industry in Tahara City is strong cooperation between every level. Cooperation should be enhanced for promotion of the sixth-industry and creating up to downstream production would be the key for success. For future challenges, they are considering extending markets, maintaining productivity and increasing competitiveness in the context of the TPP.

4-2-3. Farmers

Farmers take different position for implementing the sixth-industry. They do not mind to try implementation of the sixth-industry, but do not want to take the initiative because they don’t have the time considering their present workload. Implementing the sixth-industry requires management skill, market analysis

and considerable starting capital as well. Therefore, they are looking for someone who can take initiative on their behalf. There are some differences between farmers of chrysanthemums and cabbages but they have common concerns about maintaining productivity, the aging population and limited markets. Moreover, they are not happy that the market decides the prices and they have no control.

Considering the above points, there are some common opinions among the three levels. The following graph simplifies these points.

Figure 4: Common points of interviews among the three levels

	Future Challenges	Problems
Administration	Maintain productivity Extend Market	Aging Decrease of population Limited market TPP
Private Sector		
Farmers		

Source: Author

The next section examines how implementing the sixth-industry can meet the challenges and solve the anticipated future problems. In the long-term, the sixth-industry may have the possibility to maintain productivity and extend markets in Tahara City by increasing publicity. Despite the high productivity, promotion of Tahara City is minimal as mentioned during interviews with administrative officials. If publicity is increased, it may extend both markets and demand. There are three points concerning the sixth-industry that may help to increase the publicity of Tahara City.

• Processed products can be sold in broader markets, due to longer expiration dates.

• Value-added products have the possibility to increase publicity through branding.

• Increased competitiveness, in both domestic and global markets through the establishment of a unique quality.

•Product differentiation

Figure 5: The impact of implementing the sixth-industry

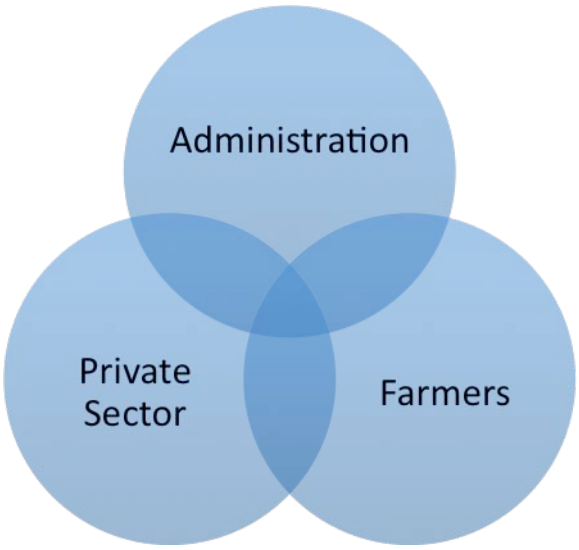
Source: Author

To increase publicity by introducing the sixth-industry requires unique ideas but once a product is branded,

Tahara can implement differentiation. Product branding may also increase competitiveness in both domestic and international markets. As Tahara City has a big trade port, the TPP agreement may have a positive effect with the possibility to increase exports of value-added products.

Finally, the following examines what is required for implementing the sixth-industry in Tahara City. As farmers stated in the interviews, some actors are required to take initiative for implementing the sixth-industry. By considering the situation in Tahara City, the city administration may be able to play this role. Moreover, enhancing cooperation among the three levels: administration, the private sector and farmers, is also significant. The administration can oversee management, coordination and market analysis as an initiator and the private sector can undertake the implemention. For farmers, the most important thing is fulfilling their obligation of productivity. Each level has an important role to play and this up- to downstream production may develop the agriculture sector in Tahara City more than the present situation. The JA should be included in this cooperation, but as an interview could not be conducted, this paper does not go into detail about this.

Figure 6: Ideal structure of cooperation



Source: Author

5. Conclusion

This study examines the current status of the sixth-industry in Tahara City. Through the conducted interviews, some different perspectives of introducing the sixth-industry were seen among the city administration, the private sector and farmers, but there were no negative opinions against it. Because Taraha City currently enjoys success in agriculture sector, the importance of the sixth-industry is not crucial, but all levels see some possibility for future implementation. Introducing the sixth-industry is still under consideration in Tahara City at the moment. However, all levels are considering whether they can maintain the present productivity and how to extend their

markets due to such issues as aging decreasing of population of people involved in agriculture, limited markets and the future impact of the TPP. Therefore, this study also examines possibility of introducing the sixth-industry for maintaining productivity and extending markets by tackling these problems. By producing value-added products, Tahara City may increase their publicity and contribute to extend their markets, leading to increased demand. In addition an increase of publicity may increase competitiveness in both domestic and international markets, with TPP playing a role to extend markets. Thus, the role of the sixth-industry is different from other regions in Japan. As each region has different backgrounds and characteristics, the local situation must be carefully considered before introducing the sixth-industry. For implementing the sixth-industry in Tahara City, what is required is comprehensive cooperation among the city administration, the private sector and the farmers. Each level plays an important role so that up- to down stream production can be enhanced for the sixth-industry. When it is achieved, the sixth-industry has a distinct possibility to develop in Tahara City.

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第 3 章 Working Group 3

Cultural Education: The Integration of Culture into the Curriculum of Elementary Schools in Tahara City: A Case of Kinugasa Elementary School

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愛知県田原市における文化教育
― 田原市立衣笠小学校の事例 ―

〈要約〉

調査背景

愛知県田原市は、日本でも有数の文化遺産を持つ市である。重要文化財の渡辺崋山関係の資料をはじめ、史跡や天然記念物など数多くの文化財が残されており、古墳や貝塚等の埋蔵文化財包蔵地は500 箇所以上にのぼる。 一方で、田原市が直面する問題として、少子高齢化に伴う若者人口の減少、また進学、就労のための若者人口の流出が挙げられる。このような現状から、田原市において、若い世代への文化継承が困難になってきているのではないかと考えた。

日本における教育は、1970 年に日本教職員組合が「ゆとり教育」を提起して以降、1998 年の学習指導要領改正において、さまざまな改革が行われた。その１つが「総合的な学習の時間」の新設である。特徴として、体験学習や問題解決学習の重視、学校・家庭・地域の連携を掲げ、それぞれの学校レベルで授業内容を決定することで、生徒の現状を反映した授業が可能となる。また、通常の授業や日常の学校生活においても文化継承のため試みが行われているのではないかと考えた。以上より、以下を調査目的とした。

調査目的

田原市において、どのような文化教育が行われているのかを調査する。そのために、以下の調査目的を定める。第一に、田原市立衣笠小学校においてどのような文化教育が総合的な学習の時間と通常の授業、日常の学校生活において行われているのか。第二に、田原市教育委員会や田原市にある文化施設はどのように学校の文化教育をサポートしているのか。

調査方法

文献調査、インタビューおよびアンケートを行った。インタビューは、田原市立衣笠小学校、田原市教育委員会、田原市博物館、田原市中央図書館、田原市まつり会館において行った。アンケートは、田原市立衣笠小学校の 5 年生の児童 53 名に対して行った。

調査結果

調査の結果、私達は田原市において文化教育が効率的に組み込まれていることがわかった。学校での文化教育を文化施設と連携させることで、座学のみでなく実践における教育を結びつけ文化教育を行っていることが調査により明らかになった。そして、このような取り組みを教育委員会がさまざまな形でサポートをすることで、田原市における文化教育に一貫性を持たせ、効率的な文化継承の試みが行われている。また、文化教育にさまざまな外部の人々を関わらせることで、児童の地域への理解を深める試みが行われていた。教職員の異動は均一かつ質の高い文化教育を行う上で支障をきたす可能性があるため、校区内に長年住んでいる地元の人々が文化教育に関わることが重要である。このような認識の下、田原市立衣笠学校の 3 学年以上の総合的な学習の時間においては、必ずゲストティーチャーを外部から招いている。

以上のように、児童への文化教育を行うにあたり、田原市として総合的に取り組んでいることが調査結果としてわかった。

1. Introduction

1-1. Social Background

The established standards and education contents of elementary schools and junior high schools are the same everywhere in Japan, regardless of regions of establishment, gender of students, etc. They are also the same for private schools and there is no distinction. However, in case of some religious private schools, they can implement religious education. This difference can also be observed in the case of the integrated study subjects; schools can implement local content in addition to the government recommended curriculum.

In 1972, the Japan Teachers Union, Japan's largest and oldest labor union of teachers and school staff, introduced rest periods (*yutori no jikan*). Since then, from the 1970s to the 1980s, several revisions had been made, such as closing school on Saturday and the abolishment of social and science studies. In 1996, the 15th Central Council for Education was asked about the education of Japan in the 21st century. They submitted a report suggesting that "the ability to survive" should be the basic principle of school education.

In 1998, teaching guidelines were revised in the Council's report and 30% of the school curriculum was cut while integrated study time was established in elementary and junior high schools. The goals are as follows:

1) To enrich humanity, sociability and the awareness of living as a Japanese within an international society.
2) To develop the ability to think and learn independently.
3) To inculcate fundamental concepts in children at an appropriate pace while developing their individuality.
4) To let every school form its own ethos.

The content of integrated study varies depending on the individual school. Moreover, every year the school can change its contents. This flexibility allows teachers and school administrations to include topics that students need to learn in adapting to local features, strengths and needs. For some regions that are facing a shrinking population, their choice of content is based on two situations: aging population and the movement of the younger generation to urban areas. We assume that cultural education (also natural contact, especially playing outside and spending a time with nature) may play a major role in the return of the younger generation to hometowns and villages.

2. An Overview of Education System and Integrated Study in Japan

Since World War II ended, Japan has experienced tremendous economic, industrial and technological development regardless of the economic hardships experienced at the beginning of its national restoration. These rapid changes have posed many challenges for Japan. Hence, a plan for educational reform in Japan was started in 1974 to address such fundamental issues as social and cultural needs, responding to the modern information and communication age, Japan's global role, needs of life-long education and schools' request for more roles in

curriculum planning (Arani & Reza, 2008). Although scores from international achievement tests such as the Third International Mathematics and Science Study (TIMMS) and the Programme for International Student Assessment (PISA) indicated that Japanese schools were providing their students with a solid academic foundation, the Ministry of Education Culture, Sports, Science and Technology (MEXT) expressed concern that the nation's youth lack the skills and attitudes that will be required of them in the future (Bjork, 2009). As a result, MEXT created a reform strategy that would encourage the schools to modify their curricula and practices in order to alleviate the problems experienced by students and cultivate the love for learning (Bjork, 2009).

In the study about curriculum reform in Japan, it showed that in 1996, the Central Council on Education suggested dramatic changes for school curriculums by encouraging schools to foster students with a zest for living (*Ikiru Chikara*) and recommended relaxed education (*Yutori* education) to help accomplish the goal of *Ikiru Chikara* (Macdonald, n.d.). While *Yutori* education encourages students to have various experiences in daily life at school, with family and the community, *Ikiru Chikara* education includes the qualities and abilities to solve problems for oneself, independent thinking, respect for human rights, a mind for justice and fairness, personal and creative growth of each child, etc. (Macdonald, n.d.). In 2002, in response to social and cultural changes, MEXT undertook significant educational reform by reducing the core curriculum by 30 % and introducing a curriculum reform called Integrated Curriculum (*Sogoteki na Gakushu*) (Macdonald, nd). In other words, this curriculum reform enables every school and its members, such as administrators and teachers, to assume the considerable responsibility of deciding its curriculum for teaching and learning. However, it should be noted that, according to Japan International Cooperation Agency (JICA), the Curriculum Council introduced the integrated study reform in schools from 1998 (JICA, 2004).

There are numerous empirical studies that were conducted in Japanese primary and secondary schools in order to identify how integrated curriculum was implemented and how students took part in this teaching and learning. Moreover, in deciding the school curriculum, individual schools have to clarify the aims of the school, determine the schedule, investigate the standard curriculum and establish a connection between curriculum and the aim of the school. They also need to organize the curriculum while considering the course selection and allocation of school days and hours (Kamatsu, 2002).

Integrated curriculum activities with different approaches have been introduced in different schools in Japan. In his study on education reform and social change in Japan, with a case study in Osaka prefectural schools, Macdonald showed that in Takahara Elementary School (TES), situated in a small area with factories and inexpensive apartments, has applied the three Fs (fashion, food, and festival) approach. There, students take part in ethnic clubs (*Minzoku*) with various activities. Japanese children join the clubs with students who are a mixture of ethnic backgrounds in target cultures such as Chinese, Korean, and Vietnamese. They learn a variety of different cultural aspects, including cooking, playing musical instruments from the target culture, simple expression of the ethnic language, and traditional games. The students in the clubs have the chance to apply what

they learn and perform at the city cultural center every fall. While Hayama Elementary School (HES) includes different subjects into their integrated curriculum, namely environmental issues, community-based education and Japanese culture via a content-based approach to English as a Foreign Language, Kamaya Elementary School (KES) carried out their integrated curriculum implementation by incorporating lessons on the environmental issues in India, in collaboration with a local NGO (Macdonald, n.d.). The community-based education approach has also been implemented in Takatsu Elementary School (TES) in Kawasaki City in order to find out the traditional culture in the community after teachers realized that students could not answer simple questions related to their own culture from the foreign visitors (Macdonald, n.d.).

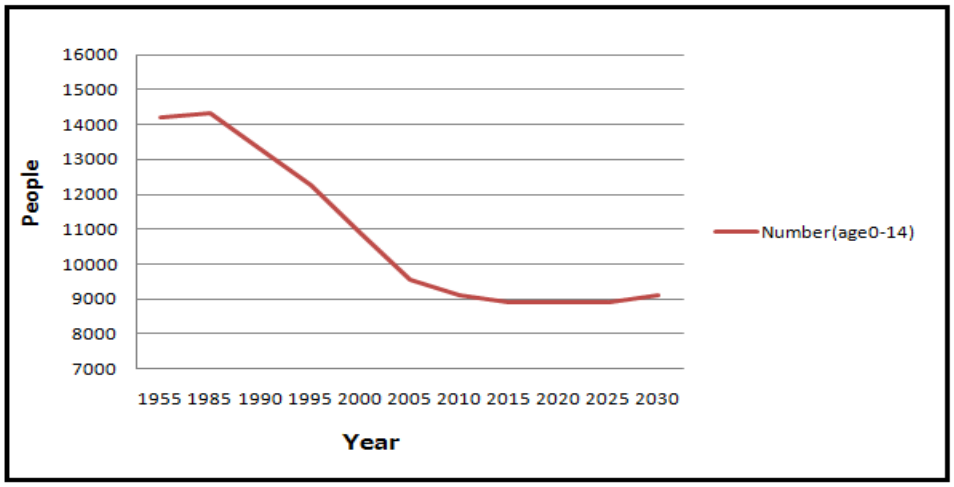
However, implementing the integrated curriculum has also had its limitations. For example, some teachers might not have a strong basic knowledge about the topic chosen by the students; teachers might be asked to oversee subjects that are not in the area of their specialization; and teachers' roles in assisting the students with projects are not clear (Bjork, 2009). In addition, other criticisms for implementing integrated curriculum have also been raised. One criticism argues that there is too much of a focus on the West by using English as a foreign language and that the cultures of English speaking countries are not really appropriate since this course of action is likely to ignore its Asian neighbors and Asian people residing in Japan (Macdonald, n.d.).

3. General Information in Tahara City

3-1. Deceasing Numbers of Young People

One of the characteristics of Tahara City is the decline of the younger generation. The figure shows that young people between the age of 0 and 14 have decreased by 35% in 2010 compared to that of 1955.

Figure 1: The number of young people



Source: 田原市総合計画書、p.14 (平成 18 年度)

3-2. Kinugasa Elementary School

Kinugasa Elementary School was chosen as the case study for our research for three reasons: information about integrated study could be obtained on the school's website; the contents of integrated study are of interest for this research; and Kinugasa Elementary School consented to cooperate. The general information of Kinugasa Elementary School is as follows (田原市立衣笠小学校ホームページ、2011):

1) Number of students: 305 in 2011

2) The goal of education:
- To bring up children who learn voluntarily（自ら学ぶ子）
- To bring up children who are considerate（思いやる子）
- To bring up children who have a zest for life（たくましい子）

3) Administration policy and areas of focused efforts:

Ⅰ. School that attracts students（「学校に通いたくなる」学校づくり）
- Improvement and establishment of students` basic knowledge（基礎学力の向上と定着）
- School community where students respect each other（認め合う集団づくり）
- Fostering students' social abilities appropriate to developmental stages（発達段階に応じた社会性の育成）

Ⅱ. Systematic organization of teachers and school staff（教職員の組織化）
- Report, contact and consultation（報告・連絡・相談）
- The prevention of scandals（不祥事防止への取り組み）
- Systematic school administration（校務分掌の組織的な取り組み）

Ⅲ. Collaborative education with community and home（地域・家庭との共同「共育」）
- PTA (Parent-Teacher Association) activities to support school（学校を支えるＰＴＡ活動）
- Activities which encourage students to communicate with local people（地域の人とのふれ合い活動）
- Volunteer work to support *Home Kinugasa learning* (「ふるさと衣笠」学習を支えるボランティア活動）
- To reflect the voice of parents and local people regarding school management（地域・保護者の声を学校運営に反映）

3-3. Integrated Study of Kinugasa Elementary School

3-3-1. The Schedule in 2010

The following was the schedule for integrated study for the year 2010. It has been included here in the analysis to show how this subject changes from year to year, depending on the individual school`s decisions.

Third grade:
- To explore Kinugasa area to find good points about the area and make a map

Fourth grade:

- To make a game for enlivening the city festival
- To experience traditional life

Fifth grade:

- To understand Indian culture through studying and making Indian curry
- To understand the origin of the food that they eat everyday

Sixth grade:

- To explore traditional remains and write a paper about the history of Tahara City.
- To have a traditional play about policeman Ezaki

3-3-2. The schedule in 2011

Third grade:

- Study about gifts from the earth

Fourth grade:

- To learn about Kinugasa forests

Fifth grade:

- To protect the hometown

Sixth grade:

- To learn the history of Tahara City by studying the life of a local person.

4. Research Objectives

4-1. Main Objective:

The main objective of this study was to investigate how culture is integrated into the education system of Tahara City. From the background of facing the increase of the elderly population and depopulation of the youths who move to big cities in search of education and employment, we were encouraged to conduct this study. One of the goals for integrated study is to inculcate fundamental concepts in children at an appropriate pace while developing their individuality. We believe a city with problems like Tahara would wish to encourage its young population to return back after their studies to help the development of Tahara. Cultural education could be one way of doing this and therefore, the main objective consists of the following:

4-2. Sub-objectives

Sub-objectives for the study included the examination of how cultural education is decided in the integrated study, to investigate how cultural education is taught in daily school life and to explore how the school board and public cultural facilities support the cultural education of schools.

5. Research Questions

The main research question was:

1. How does Tahara City integrate culture into its educational system?

This was aided by the following sub-questions:

1. How is cultural education taught within integrated study?
2. How is cultural education taught in daily school life?
3. How do the school board and public cultural facilities support cultural education in the schools?

6. Methodology

6-1. Research Site and Duration of Field Survey

The study was conducted from October 19-21, 2011 in Tahara City, Aichi Prefecture. During the course of the research period we visited Kinugasa Elementary School to interview the school principal and the head of educational affairs. We also delivered a questionnaire to the 53 students of grade five. We interviewed various officials at the Tahara Municipal Museum and Tahara City Central Library as well as the teacher's counselor at the Tahara City Board of Education and an official at the Tahara Festival Museum.

6-2. Research Methods

This study employs both quantitative and qualitative approaches and involves analyzing questionnaire data, semi-structured interviews and a class observation of the fifth grade students. As a supplement to the primary data as listed above, secondary data such as statistics, curriculum documents, lesson plans and other related documents were collected to get more relevant information about the cultural integration issue.

6-3. Participants

The key informants are the principal and the head of educational affairs in Kinugasa Elementary School, an official of the Tahara City Board of Education, a curator in Tahara Municipal Museum, a director at the Tahara City Central Library and an official at the Tahara Festival Museum. A questionnaire was also delivered to the students in fifth grade (53 students) because their curriculum was relevant to the research questions and objectives. For ethical reasons, consent was obtained from the participants and because the students were under the age of 18, permission was granted from teachers and the principal before delivering the questionnaire.

7. Detailed Findings

7-1. Kinugasa Elementary School

Picture 1: Kinugasa Elementary School

Source: Kinugasa Elementary School Homepage **(**http://www.city.tahara.aichi.jp/school/kinugasa-e/**)**

7-1-1. Integrated Study

Kinugasa Elementary School teaches culture to students in various ways. First, we investigated cultural education in integrated studies. This year's theme of integrated study is "I Love Kinugasa." There are three objectives as follows:

1) To help children acquire the ability to find study themes by themselves, learn voluntarily, judge independently and solve problems in a better way. (自ら課題を見つけ、自ら学び、主体的に判断し、よりよく問題を解決する資質や能力を育てる。)

2) To help children acquire the ability to think about their own way of life by fostering independence, creative and cooperative attitudes towards problem solving and study activities and by helping them master the way of learning and thinking.（学び方やものの考え方を身につけ、問題の解決や探究活動に主体的、創造的、協同的に取り組む態度を育て、自己の生き方を考えることができるようにする）

3) To help children to acquire the ability to connect knowledge and skills learned in academic, ethics class and special activities, apply them to learning and life and make them work in synthesis. (各教科、道徳および特別活動で身に着けた知識や技能を相互に関連付け、学習や生活において生かし、それらが総合的に働くようにする。)

These objectives came from the goal of the school's education plan, which is "to educate strong and spiritually rich students who are healthy and can harmonize knowledge, character and body." The goal of the

school education is based on the two parts: current situation of the students and wishes from their parents. Thus, integrated study itself is not something isolated, but one of the school`s classes for achieving the school's educational goals. However, the crucial difference between integrated studies and regular classes is that each school can decide the contents and curriculum of integrated studies. From interviews with the principal and the head of educational affairs, we learned how they make the curriculum of integrated studies at Kinugasa Elementary School. According to them, the best way to decide the contents is to ask students what they want to learn in integrated study class. However, the reality is that it is difficult to arrive at a consensus among the students. Therefore, teachers discuss what students should learn based on the current situation. After these discussions, the curriculum is decided. In this sense, each school can incorporate its ideas into integrated studies classes.

We found that Kinugasa Elementary School incorporated "Hometown Learning" (*Furusato Gakusyu*) proposed by the board of education into integrated studies. The integrated study curriculum was as follows（田原市立衣笠小学校、2011)：

Grade Three: "Gift from the earth" (Total 70 hours) (*Daichi karano Okurimono*; 大地からの贈り物)

1. The Tale of the Bamboo Cutter in Kinugasa (衣笠　竹取物語), 40 hours.

The first part was to think about what they could do with bamboo. Students investigated bamboo, and discussed what could be made with it. Then, they discussed how to make something with bamboo and finally made a blueprint with the help of guest teachers. For example, some groups made toys, such as small wooden dragonflies (竹とんぼ), stilts, and bamboo *pokkuri* (竹ぽっくり) which is stilts made from bamboo. Others made music instruments like percussion instruments and clavier.

2. The Great Power of the Soybean (偉大な大豆パワー), 30 hours.

Students planted soybeans and observed how soybeans grow. They then made soy products like green soybeans (枝豆), toasted soybeans flour (きな粉) and Tofu (豆腐).

Grade Four: "Learning Forests in Kinugasa" (衣笠っ子の森　学習の森)

Students in fourth grade studied about the "learning forests" (woodlot) near Kinugasa Elementary School. The purpose of this class was to protect and take good care of their forests. First, they explored and observed the learning forests and discussed what they could do. Second, students tried to make the learning forests more enjoyable by forming groups and making plans to beautify the learning forest. Finally, they showed their ideas to students in second grade.

Grade Five: "To Protect the Hometown" (ふるさとを守ろう)

Fifth grade students studied about Kinugasa Mountain. In the first phase, they explored Kinugasa Mountain, which is near the school. They then listened to the lectures of guest teachers who are experts of Kinugasa Mountain. In the second phase, the students were divided into groups and investigated the natural surroundings of Kinugasa. Local people helped the students study about the community`s natural environment. Finally, students had to think about how they present their findings to all of the students.

Grade Six: "To Learn from a Great Person in the Local Communities"(ふるさとの人から学ぼう)

Students learned about the community history through the local people. In this class, students talked with their parents to understand the community. Afterward, Kinugasa Elementary School invited guest teachers to talk with the students. In the second phase, students surveyed a selected person from their local area and presented their findings to everyone. In the Kinugasa Elementary School area, the person selected was Mr. Ezaki and students learned about how he spent his life.

Mr. Kunisuke Ezaki was born in Mie prefecture in 1861 and became a policeman in 1884. In 1886, cholera was prevalent in Aichi Prefecture. On 19th June, Mr. Ezaki went to the area where it was said that cholera was widespread and he distributed drugs while diagnosing the health of the population. Because of his high risk activity, Mr. Ezaki was infected with cholera. After his valiant efforts, he went back to his home on 22nd June and realized that he was infected with cholera. He refused to go back to Tahara City because there was no hospital for infected people. Also, if he had gone back to Tahara City he could have infected other people. Mr. Ezaki decided to stay alone, away from the people, and he died in a hut on June 23. (田原の文化財ガイドⅡ、2011).

Mr. Ezaki is an important person for not only the Kinugasa area, but also Tahara City. There have been some attempts to teach students about his will at the Kinugasa Elementary School. For example, students have a play entitled "The Story of the Policeman Ezaki" that they perform at school every year. This year, the play was held on November 19. After the play, students discussed in their integrated class studies what were the advantages of this experience. At the administration level of Tahara City, the Tahara police station holds a Buddhist memorial on the anniversary of his death to honor him.

Findings:

The first finding is the importance of experimental studies. We observed a fifth grade lesson and found that there is an efficient collaboration between books in the school library and students' study. The classroom was next to the school library and students were free to move between the school library and the classroom. Actually, most students went back and forth to borrow books for identifying insects and plants that they found on Kinugasa Mountain. This effective link between classroom lectures and field study was often confirmed in our field survey. For example, students in the sixth grade had the integrated class about Mr. Ezaki and learned

the history of Mr. Ezaki in classroom but were able to visit the Tahara Municipal Museum to observe the real saber that Mr. Ezaki used. Students in the sixth grade also had a study club about the *Eigan Mound* (栄厳古墳), as a part of their learning from a great person in their local community. One of the aspects of this class is to listen to a person from the department of cultural heritage (文化財課) of the Tahara City Board of Education. This direct contact facilitates understanding the history of the *Eigan Mound*. In addition to this class, there is great effort from teachers to integrate field studies with classroom lectures. For example, teachers visited *Zao Mountain* (蔵王山) to observe the overview of Kinugasa area, and went to *Toshitibara Marsh* (藤七原湿地), which is natural monument of Tahara City and *Takigashira Mountain* (滝頭不動) to look for the field study locations.

The second finding was the importance of guest teachers in integrated studies. According to the interviews from Kinugasa Elementary School, a school has to invite guest teachers for the integrated study program for grades above the third grade. For example, there are three organizations that are familiar with Kinugasa Mountain. The school invites experts from these organizations to give lectures. Experts from these organizations guide students around Kingasa Mountain and teach them the names of flowers, plants, and aspects of nature. One of these organizations is *Tarame Club* (たらめ会). The role of *Tarame Club* is to pave the Kinugasa nature sidewalk, publish Kinugasa nature photos and join the school excursion as guest teachers. Kinugasa Learning Forests management committee is the organization that is responsible for maintaining the learning forest and helping school education for the fourth graders. For the sixth grade, as mentioned above, someone from the board of education has lectures for students. In addition, Kinugasa Elementary School invites guest teachers who have lived in Kinugasa for long time and students have a chance to talk with them about the history of Kinugasa. Thus, we can see various aspects of cultural education in integrated studies.

7-1-2. Daily School Life

Regular Classes

Cultural education is taught not only during integrated studies, but also in regular classes. For example, interviews revealed that Kinugasa Elementary School teaches the issues of windmills and the energy of rapeseed in science and social studies classes. Students in fifth grade study about industry in social studies class and Toyota Motor Company appears in social studies text books, enabling students to learn about Tahara's industry.

The sub-reader "*Tahara*" helps students understand their own city's culture (たはら、2005). This sub-reader is for third and fourth grade students. The book covers a broad range of information about Tahara City. For example, Tahara City is famous for agriculture and its products are some of the best in Japan. One of the agriculture products in Tahara City is chrysanthemums made by horticulture (田原市, 2008). However, the concept of horticulture is not clear. The sub-reader "*Tahara*" explains horticulture in a very detailed manner with many photos. In addition, local people's comments are found in the sub-reader. In the case of horticulture, for

example, horticulture farmers explain what the difficulties are for planting chrysanthemums. Another example is that policemen explain how they protect the life of people in their own words. This was found to be a very unique aspect of their education.

Another finding is the close link between regular classes and integrated studies. For example, one of the aims of the regular class in moral studies is to make students love their hometown. The other aim is to teach students how to respect Japanese and foreign cultures. These aims are closely linked with the aim of integrated studies. If the regular classes collaborate with integrated study class effectively, students can learn about various cultures more successfully.

Daily School Life

We found various aspects of cultural education in daily school life. One unique example is that Kinugasa Elementary School incorporates Japanese annual events in the daily school life. In May, the school hoists carp-shaped flags to celebrate boys' day, while in March the schools celebrate the girls` festival. The purpose of these activities is to provide an atmosphere so students enjoy coming to school in addition to giving opportunities to learn about Japanese culture.

Culture is also taught through school meals. For example, the study group ate a school meal with the students and found that the yogurt served was from Tahara City. A number of dairy products from Tahara City are ranked number one in Aichi Prefecture. Other high-ranking agriculture products from Tahara City are cabbages, broccoli, lettuce and watermelon. Students try to understand about the food products they are eating, so during 'friendly meetings' (*Nakayoshi syukai*), the school's meal committee initiates a quiz for all students to understand the food they are eating. This is a strong example of cultural education through school meals.

7-1-3. Results of Questionnaire

Below is the summary of the nine-item questionnaire answered by 53 students in the fifth grade. Results will be discussed in section eight. The original questionnaire in Japanese is in Appendix 2.

	Questions	YES	NO	I do not know
1	Have you ever been to Kinugasa Mountain?	53	0	0
2	Do you like Kinugasa Mountain?	50	0	3
3	Do you like to attend the festivals in your city?	52	0	1
4	Have you ever been to Tahara Festival Museum?	39	14	0
5	Have you been to Tahara Museum?	51	2	0
6	Do you like to study festival or history in Tahara?	34	5	14
7	What kind of club activities do you join?	Sport Club: 44	Music Club: 9	
8	Do you like English class?	50	0	3
9	Do you like foreign language and culture?	37	3	13

7-2. Tahara Municipal Museum

Public cultural facilities, namely the Tahara Festival Museum, the Tahara City Central Library and particularly the Tahara Municipal Museum, play various significant roles in preserving and maintaining the social, historical, traditional and cultural heritage of Tahara City for the following generations. The Tahara Municipal Museum is not only the major source for cultural study and conservation but is also attentive to social and cultural change, presents the human identity in a changing world and contributes to endogenous development of social communities (UNESCO, 2011). In responding to the changing world and the aim of conserving cultural assets, Tahara City Museum was established in1995, with the special focus on an important person named Kazan Watanabe. It has become one of the core institutions in promoting cultural education in Tahara City.

According to our interview with an official from the museum, we found that Tahara Municipal Museum assumes multiple responsibilities in conserving the traditional and cultural heritage, tracing back hundreds of years, for students and the public as a whole. In the permanent exhibition hall, it shows the life of Kazan Watanabe, who was a famous scholar, artist and statesman. He was very active during the years of the Tokugawa Shogunate and was famous for serving Tahara people from the starvation during theTempo famine (Keene, 2006). However, the contents of the other three exhibition halls change every month and a half, often exhibiting other influential figures that greatly contributed to Tahara City. There are two kinds of staff who have the important task of choosing the contents of the exhibitions and administrating the museum.

Apart from holding the exhibitions, museum officials have closely collaborated with various elementary schools within the city. Museum staff is asked to visit each elementary school to deliver lectures to students according to the school's events. Since this is part of museum's policy, it is not only welcome to students and people in museum but also, the staff visits the schools to give lectures, thus students have learned a range of topics such as history, the arts and well-known figures of Tahara. This activity aims at promoting cultural understanding among the children.

Referring to the education policy of Tahara City, in which the students of a particular region are required to attend schools in the region where they belong, the city wishes that these children will have the opportunity to learn about influential figures in their own school districts. Therefore, elementary school students have to learn at least one important person in their region. In this sense, the museum strives to accommodate this education policy with the schools by launching various exhibitions for children's visits and for delivering the lectures. For example, students in Kinugasa Elementary School learned about Mr. Ezaki. Based on this example, students do not only learn about this important figure from their teachers in a class, but also from the museum presenters and their visit to the museum where they can observe the real saber used by Mr. Ezaki.

Hence, through intimate collaboration with schools in Tahara City, the Tahara Municipal Museum is able to demonstrate its important role in conserving and promoting traditional cultural heritage for the next generation.

7-3. Tahara City Central Library

The Tahara City Central Library`s main goal is to develop good reading habits among the people, and although it does not greatly contribute to support traditional cultural heritage, Tahara City Central Library is still actively involved in spreading tradition and culture through their mobile libraries.

The research group had the invaluable chance of visiting Tahara City Central Library and interviewed the head of this library. According to the interview, there are two libraries: the Akabane Library and the Atsumi Library, which are the branches of the main library. Thirty qualified librarians, of whom two thirds are working on contract agreement, are staffing the Tahara City Central Library. In terms of utilization, it is likely to be the young children aged about 12 years old that use books the most, followed by teenagers between 16 and 18 years old, adults between 19 and 22 years old and the elderly over 60 years old, respectively.

To meet the present demand of the students, school librarians who are working under the Tahara City Board of Education and the thirty city librarians hold meetings four times a year. Through these four meetings, the city librarians and school librarians discuss what kind of popular books the mobile libraries should bring to the elementary schools. It is noteworthy that the city library knows the plans of the students' summer homework so they can get the good books the students need.

Interestingly, Tahara City Central Library has created two mobile libraries in order to bring books closer to the children in each elementary school. These mobile libraries stay an hour at each school (two hours a month). Each class can borrow books from mobile libraries. Elementary school librarians request from the teachers a list of books that the students need and they go to the city library to apply for the requested books. Through this means, city librarians can buy books for the school or have them brought to school via mobile libraries. Students are able to borrow between three weeks and two months. Among the requested books, there are also books that include the promotion of cultural and international understanding. One of the most popular books is related to agriculture (rice growing), mainly because the schools place an emphasis on agriculture. Generally, children like books on animals and plants. School children have looked for dictionaries of plants and mushrooms, books on cooking and fortune telling and games including *Goh*, *Shogi* and card games. Within this framework, it can be implied that if the schools try to promote culture, they will request more books related to culture from the central library, thus resulting in the promotion of cultural education.

Like the city museum, the central library is trying to be an outside source to access educational materials concerned with tradition and culture by creating this system of mobile and central libraries. To be effective, it requires a very strong cooperation between librarians and the school teachers.

7-4. Tahara Festival Museum

The Tahara Festival Museum houses two important cultural assets for Tahara City: Tahara Kites and Tahara Dashi. The former consists of two famous types of kites: "*Hatsu Dako*" known as 'First Kites' and

"*Kenka Dako*" known as 'Battle Kites.' The latter is comprised of three different kinds of *Dashi*: *Kayamachi Dashi, Honmachi Dashi*, and *Shinmachi Dashi*. *Dashi* is a float which is a decorated platform, either built on a vehicle or towed behind one, which is a component of many festive parades. This museum is opened to the public free of charge. Not only is the Tahara Festival Museum well-known for its roles in preserving traditional culture and festivals, but also for its role in gathering the community to enjoy social activities during cultural events in the city. Usually in the beginning of May, the children fly *Hatsu Dako* to celebrate the annual children festival. These kites symbolize the children's healthy growth and prosperity. The *Kenka* are used by seasoned kite fliers, who battle to cut the strings of their opponents' kites during the competition. Dozens of teams gather to compete and hundreds of people come out to enjoy this great event hosted by Tahara City. Tahara Kites are also brought to an international competition launched in Georgetown, Kentucky for cultural exchange.

In the museum, the visitors are able to see a video showing the festival celebration and kite competition during their visit. The three *Dashi* and various kinds of kites are also exhibited. In this regard, the visitors are able to admire these cultural assets and acquire the knowledge related to culture so that they can pass it to the younger generation and people in the surrounding community.

Like the other two agents, the Tahara Festival Museum has also strengthened itself in promoting traditional and cultural education through school visits. The schools also invite the staff of the festival museum to teach the school children how to make kites. This hands-on experience does not only enable young children to witness the real practice of making kites, but it also helps them understand clearly the meaning of kite festival.

To sum up, among the three institutions, it appears that the Tahara Municipal Museum plays the most crucial and active role in supporting the historical and cultural heritage of Tahara City. However, the Tahara City Central Library and the Tahara Festival Museum have also made a great effort to do as much as they can to promote cultural understanding through various ways. Noticeably, the most common form of the three institutions in terms of their activity in promoting culture is the close cooperation with schools. Without this strong cooperation among the different stakeholders, cultural education for the young children would be extremely difficult to achieve.

7-5. Tahara City Board of Education

7-5-1. Approach of Tahara City Board of Education for Promoting Cultural Education

The main purpose of integrated studies in Tahara City is help students acquire real experience, to help them find and solve problems and to convey what they know to others.

Tahara City Board of Education is trying to improve the standard of integrated studies. Ten years ago, when the Ministry of Education launched the integrated studies program, the school administration and teachers discussed extensively about what to teach to the children. In the first year school administration and Tahara City

Board of Education adopted any new idea that came from teachers. From that initial point, the school has been planning the syllabus of integrated studies based on the experience of previous year's experience.

The enrollment rate for high school is 98% of the junior high school graduates in Tahara City. However, since the city has no university, students that graduate from high school enroll to universities in big cities such as Tokyo, Osaka and Nagoya. Therefore, university graduates are often getting jobs in those big cities and not coming back to Tahara City, which is one of the worries of city administration. Therefore, the Tahara City Board of Education decided to teach Hometown Learning (*Furusato Gakusyu*) to students in the early stage of their school years. The aim of the Hometown Learning is to teach the students that go out of the city how to face any issues that they come across outside of Tahara City and to instill in them that they should be willing to come back to hometown to find their roots. The curriculum includes local people, local nature and culture.

In 1996, the city established a two-year vocational school to teach social welfare studies in order to prepare professional workers for taking care of elders. Enrollment is limited to 40 students each year and the school offers a training program that prepares students for receiving the national license.

7-5-2. Textbooks

Japanese education is a government authorized system and schools are not allowed to publish textbooks, per se. The education ministry guidelines for the course of study are revised every ten years, at which point Tahara City Board of Education revises its own sub- reader along with the textbooks. Social studies in third and fourth grade of elementary schools teach about the local precinct and prefecture. However, the content of government authorized textbooks does not include local information. Therefore, the Tahara City Board of Education and schools collaborated in publishing the sub- reader "*Tahara*" which provides information about Tahara City.

7-5-3. Challenges of Integrated Studies

The Tahara City Board of Education supports school teachers to conduct the classes of integrated studies. One of the challenges facing the integrated studies program occurs when teachers are assigned to different school districts that are different from where they are brought up.

Homeroom teachers who teach at elementary school are reallocated every two to three years. Therefore, there are difficulties for them to teach local nature and culture. Each elementary school has one class at each grade; it is difficult for one homeroom teacher to conduct experience-based studies such as picnicking and harvesting. For those reasons, city and schools are collaborating on the implementation of integrated studies by inviting local elder people living around the school and having them teach about local culture.

7-5-4. Connection of Integrated Studies and Local Culture

In integrated studies for the third grade at Okusa Elementary School, students learn about the local school district and in sixth grade students they learn the history of the area, which connects the two together. Moreover, students learn about the breeding of animals and soybean cultivation in third grade and by extension of these studies, learn rice cultivation in sixth grade.

According to the allocation of students, Waji, Horiki and Irago Elementary School students enroll to Irago Misaki Junior High School. Newly enrolled students from those three elementary schools held a "Boast of Home School District Contest" (*Kouku Jiman Taikai*) after enrollment to Irago Misaki Junior High School. This proves the deep connection with the Hometown Learning program at elementary school.

The fourth grade students at Okusa Elementary School learn how to keep groundwater via traditional knowledge from the area. Okusa Elementary School is located in an area where there is a shortage of water. Once, the school invited an author who wrote a book about water accumulation. The book was read by students in advance, which taught students about the difficulty of maintaining a constant supply of water. Students then started to collect water from roof top of school building.

'Culture' is a keyword for fifth graders of Okusa Elementary School and students learning sweep net fishing with local fishermen. The students also learned how to clean and cook the fish.

8. Summary and Discussion of the Findings

Culture is very well integrated into the education system of Tahara City. Schools, museums, libraries and the Tahara City Board of Education all work together to integrate culture into the educational system. Schools, for their part, adopted the ministry of education`s directive and introduced integrated study as a school subject. What is good about this subject is that schools decide what to teach the students within their region. In our study, Kinugasa Elementary School decided to include information about Kinugasa Mountain, the surrounding forest, famous local people and general knowledge about cultural sites and events within the students` environment. This plan is not so difficult to integrate because there are several local sources of information. Local organizations, the museum, the library and local people are all involved in teaching students about their culture, the environment and all that they need in their everyday life.

Our analysis of the questionnaire completed by the students proved that the students of Kinugasa Elementary School are aware of the culture of their region. All of them indicated that they had visited Kinugasa Mountain. From their active participation in a follow up lesson to this mountain visit, it was concluded that they were interested in what they saw there and that they were willing to find out more. Students were observed working on finding the names of the plants they saw in the mountain. They did this with the help of books from

the library, which proved to be well stocked with books. There were no reports of difficulty in finding the right reference book. This shows that the library keeps books that are useful to the students' learning about their surroundings. When asked if they liked the mountain, 94% of the students indicated that they did, demonstrating that the school`s objective of teaching about the mountain is achieved to a certain extent.

The fact that there is very good coordination between the school and other institutions was proven by the students' responses that they had visited the museum; they like attending city festivals; and they like other cultures and languages. More than 60% of the students answered yes to these questions. This correlated well with the information obtained from the museum and library officials. The bottom line is that students are aware of cultural events and are actively involved in them.

It must be noted, however, that some students responded negatively to some of the questions. For example, 26% indicated that they do not know if they like studying about the museum and history of the city. Another 26% indicated that they have never been to the city`s festival museum. These figures, though small, could be an indication that there is of lack of satisfaction among the students with the choice of cultural aspects being incorporated into the curriculum. More needs to be done in order to reach out to these students.

From an education official, it was learned that the Tahara City Board of Education is committed to integrating culture into the education system, mainly because of the need to encourage young people to return back to the city after their university studies outside of the region. He acknowledged that because the city does not have universities, students could be justified in going to other cities for their higher education. However, the education board is intending to help them, through hometown education, to have deeper connection with their city and come back to stay. The cultural education includes the industrial culture of the city as well as life skills and the history of Tahara City. The board`s target is not only Kinugasa Elementary School but the whole of Tahara City with its 28 other elementary schools and 14 junior high schools. They all have integrated cultural aspects to their education systems that help them to love their hometown. The Tahara City Board of Education's budget support is systematic to ensure the success of this plan. In addition to these, the Tahara City Board of Education ensures that every Monday morning school principals talk about the annual events of Tahara City. The Tahara City Central Library also displays information about annual events in an effort to educate students about Tahara City. The sub-reader and Appendix 1 has more details regarding this and the other schools` contents of integrated study and cultural education in Tahara City.

However, an official from the Tahara City Board of Education pointed out some of the problems the city faces in their implementation of the integrated studies curriculum. One of these is the constant mobility of

teachers. He observed that teachers are transferred to other schools almost every 2 years and their new schools are in most cases, in regions where the teachers have little background knowledge because they came from somewhere else. This naturally makes it difficult for them to decide the contents of integrated study, especially in regards to cultural aspects. Through observations of how committed the city is to cultural education, it is likely that they will find a way of solving this problem soon.

9. Conclusion and Recommendation

This study set out to investigate how culture is integrated into the education system of Tahara City. We were motivated by the fact that Tahara City, just like any other city in Japan, is facing problems of an aging society. In the case of Tahara City there is the additional problem of the depopulation of the younger generation. We believe that cultural education can play a central role to solving this problem. Cultural education in this study is understood as everything that will help make people more aware of their roots. In that vein, we then realized that the Japanese education system shares the vision that the role of education is to introduce integrated study that includes cultural education. The choice of what constitutes cultural education was left to the discretion of schools and local communities. Tahara City took advantage of this and introduced a number of topics in the integrated study periods that will foster the students' love for Tahara City.

Our study concluded that cultural education is very well integrated into the education system of Tahara City because all stakeholders cooperated and were well coordinated. The education board supports cultural education through making sure that funds are systematically made available to the city library to buy relevant books as well as to schools to enable them conduct field trips, invite resource persons and conduct experiments. The museums, local organizations and the community are all involved in the education of the students. Teachers and schools have the autonomy to decide what they want to include in the integrated study curriculum and the day to day life of the students. All these make it easy to pass on the culture of Tahara City to the young generation. The students themselves attested to having a strong knowledge about Tahara City. Taken these observations together, we can conclude that the integration of culture into the education system of Tahara City is successful because of the stakeholders' cooperation and commitment to its success.

In regards to the problem cited by the education official of teacher mobility, we are sure that it can be resolved by either re-training them in the culture of their new school region or avoiding such movements all together. About the students who are not so positive about the cultural education, the schools and the stakeholders should work together to improve the culture integration by including all the students. Of course, we are aware that education is a combination of different aspects and not only cultural. We anticipate that the city will continue to work together towards achieving their common goal of education and that cultural integration will continue to play a part, as it might be a key to solving the depopulation problem of Tahara City.

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Appendix 1. Curriculum of integrated study

Elementary School in Tahara City

School / Grade	Akabane	Wakato	Waji	Horikiri	Irago	Kameyama	Nakayama	Fukue	Kiyota	Izumi
3	Cultivation	Hill	Exploration	Exploration Meal	Hometown Welfare	Breeding	Nature	Breeding Cultivation	Life Craftsman	Nature
4	In Old Days	Sea	Hill	Exploration Goodness	Environment	Grasshopper	Hometown	Life Rice	Contact	Life Rabbit
5	Environment Food	Meal	Proud	Rice	Welfare Cultivation	Rice Vegetables	Welfare	Laver	Rice	Environment
6	Exploration	Hometown	Way of Life	Meal Welfare	Environment Information	History Welfare	Environment Welfare	Cultivation	Culture	Ancient People

School / Grade	Muture	Kanbe	Okusa	Tobu	Nanbu	Doho	Chubu	Kunigasa	Noda	Takamasu
3	Bamboo	Doctor	Precint	Cultivation Tradition	Cultivation Life	Precint	Craftsman	Soybean	Soybean	Soybean
4		Environmnet The Welfare	Life	Nature	Hill Environment	Environment	Festival	Disaster Prevention	Breeding Cultivation	Breeding Environment
5	Rice	Rice	Culture	Rice	Rice	Rice	Ancient People	Nature	Rice	Breeding Manufacturing
6	Ancient People	Tradition	History	History Welfare	History	Welfare	Future	Ancient People	History	Manufacturing

Source: Tahara City Board of Education

Junior High School in Tahara City

School / Grade	Tobu	Tahara	Noda	Akabane	Irago Misaki	Fukue	Izumi
1	Welfare	Friendship	Welfare	Welfare	Area	Welfare Environment	Area
2	Way of Life	Way of Life Disaster Prevention	Work	Way of Life	Member Of Area	Hometown Work	Course
3	Course	Course Environment	Environment	Course	Area	Each theme	Society

Source: Tahara City.

Appendix 2: The questionnaire for elementary school pupils (original)

	質問内容	はい	いいえ	わからない
1	衣笠山に登ったことはありますか？	53	0	0
2	衣笠山は好きですか？	50	0	3
3	田原祭りは好きですか？	52	0	1
4	田原祭り会館に行ったことはありますか？	39	14	0
5	田原市博物館に行ったことはありますか？	51	2	0
6	田原市のお祭りや歴史について勉強するのは好きですか？	34	5	14
7	現在、学校で何のクラブに入っていますか？	運動部:44	音楽部:9	
8	英語のクラスは好きですか？	50	0	3
9	外国の言葉や文化を勉強するのは好きですか？	37	3	13

第 4 章　Working Group 4

SUSTAINABLE TAHARA CITY

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持続可能な田原市

要約

1. 研究の背景

石炭，石油，天然ガスなどの化石燃料は限りがある資源である。排出される二酸化炭素は地球温暖化の主要な原因であるし，含まれる硫黄分が大気に排出されると大気汚染による呼吸器疾患や酸性雨による森林や湖沼の汚染という環境問題を引き起こすことにもなる。そのため，省エネルギーを促進する一方，環境問題が発生しにくい太陽光発電，風力発電，バイオマス燃料などの自然エネルギー(再生可能エネルギー)の開発と普及が急がれている。

日本は化石燃料に乏しく，石油危機以降，原子力による石油代替のエネルギー開発に邁進してきた。しかし東日本大震災以降，原子力発電の安全性が見直されるようになった。その代わりに，自然エネルギーへの関心度は急速に高まり，その普及が大きな流れになっている。

田原市は，「たはらエコ・ガーデンシティ構想」をもとに，地域資源を活用して環境と共生する豊かで持続可能な地域づくりを目指してきた。2003 年には，「環境共生街づくり関係府省連絡会議」において，全国のモデルとなる取り組みに選定された。また，田原市は，2011 年のサステナブル・シティ調査のランキングのトップになった。この調査は「日経グローカル」誌によるもので，環境，経済，社会(公正，平等)のバランスのとれた都市のランキング調査である。2009 年の田原市のランキングは全国 8 位からの躍進であり，太陽光発電などの自然エネルギーの普及とゴミの資源化に力を注ぐ田原市が評価された。

われわれは，「たはらエコ・ガーデンシティ構想」の 7 つのプロジェクトの中で，エネルギー問題に関わる「省エネルギー推進プロジェクト」と「エコ・エネルギー導入プロジェクト」に焦点を当て，市民の参加と受容について二日間で調査を行なった。

2. 調査目的

まずは省エネ及び新エネルギー推進に関して，エコ・ガーデンシティ構想が，田原市の持続可能な地域づくりにおいて果たしている役割を明らかにすることである。次に，田原市民の新エネルギーに対する受容度を明らかにすることである。

3. 調査方法と限界

田原市役所職員に対するインタビュー調査と，福祉専門学校の学生及び市役所の職員に対するアンケート調査を行なった。それに，太陽光発電と風力発電の関連施設への視察と政府文書の分析をした。なお本研究は時間的制約とアンケート調査対象の制約などの限界性が挙げられる。

4. 調査結果

まずアンケート調査の統計を分析することにより，田原市民における環境意識及び新エネルギーへの受容度を明らかにした。特に新エネルギーへの受容度と市民が予想する価格の関係が分かるようになった。次にインタビュー調査と聞き取り調査により，省エネ及び新エネルギーの推進における現状と問題点を明らかにした。省エネに関して，コミュニティーレベルの市民参加がこれからもっと期待されるだろう。新エネルギーに関して，太陽光発電と風力発電が田原市の持続可能な地域づくりにおいて大きな役割を果たしている。

5. 結びにかえて

環境政策を推進する上で，市民コミュニティーの役割が大きいと考えられる。また，市場需要と供給の関係から，新エネルギー市場の需要の拡大は価格の低下につながると考えられる。

1. Introduction

1-1 Japanese policy on energy and the environment

In the 1970s, Japan experienced an energy crisis. The oil crisis was caused by the country's fragile energy supply combined with the demand structure. Since then, the government has made efforts to solve the problem by facilitating the diversification of energy sources and encouraging effective energy conservation in the industrial sector. Also, nuclear energy has been a national strategic priority since 1973. Thus, Japan's oil dependency has been lowered from the highest level of 77% in 1973 to the 48% in 2009. As of 2010, the energy derived from conventional sources is 68.5 %, followed by nuclear energy at 22.5%, large hydro energy at 5.8%, and renewable energy at only 3.2%.

Japan's energy conservation efforts were strengthened in the 1990's due to the Kyoto Protocol that aimed to tackle the global warming problem. Under the Kyoto Protocol, the member nations agreed to cut their greenhouse gas (GHG) emissions. Like other members, Japan agreed to reduce its greenhouse gas emissions by 6% during 2008-2012 compared to 1990 levels. In addition, the government announced Japan's aim to reduce GHG emissions by 25% in 2020 compared to1990 levels.

An effective energy policy is the key player for Japan to resolve energy dependency and to promote a better living environment for citizens. The Act on the Rational Use of Energy was founded in 1979, and was the initial stage of energy conservation in order to counter fossil fuel-based energy dependency. The act was reinforced in 1983, 1993, 1998, 2002, 2005 and the last one was amended in 2008 to meet the changes of the society. In the last version of 2008, energy conservation measures were strengthened in both at the commercial level, including offices, convenience stores, etc. and the household level, aimed at the rationalization of energy use, especially fuel and petroleum.

The Agency for Natural Resources and Energy (ANRE)'s Basic Energy Plan which, was founded in 2003, is a fundamental plan to obtain effective outcomes. It defines the next 10-year direction of measures on the demand and supply based on the three principles of energy security, adaptability to the environment and utilization of market mechanisms. Since 2007, the energy plan emphasized the promotion of nuclear power generation and renewable energy; strengthening of strategic and comprehensive actions toward energy security; strengthening of energy conservation polices; and strengthening of technologies. However, nuclear power is considered unsafe and threatening after the earthquake of March 11, 2011 and the Fukushima Daiichi Power Station accident. In order to lower the dependency on nuclear energy, Japan must put an emphasis on renewable energy resource and energy saving.

The March 2011 earthquake and the subsequent accident at the Fukushima Dai-ichi Nuclear Power Station have turned much attention to the production of renewable energy than ever before. In fact, Japan already has mechanisms in place since 2003 to promote the production of energy through renewable energy sources. The Renewable Portfolio Standard (RPS) system, introduced in 2003 under the RPS Act, obliges electric utilities to obtain a certain amount of renewable energy at a certain ratio. This scheme is said to have

contributed largely to the increase of renewable energy usage in Japan, thus far. Most industrial power generation facilities using renewable energy sources are already subject to the RPS and were granted subsidies from the local government, mostly in photovoltaic (PV) power. However, subsidies in PV power were discontinued in 2005 (Edahiro, 2011). Regarding the energy production in the residential and non-residential households, there is a mechanism, created in 2009, called the "Excess Electricity Purchasing Scheme". Under this scheme, the purchasing is applied to the excessive solar energy, since the main goal is to promote energy saving. However, the two schemes mentioned above are limited to purchasing solar energy produced by solar panels. In order to enlarge the purchasing of more renewable energies such as PV, wind energy, biomass, and geothermal energy, the Japanese government will launch a new scheme called the *Feed-in Tariff for Renewable Energy* in July 2012, under the *Act on Purchase of Renewable Energy Sourced Electricity by Electric Utilities*. The new mechanism is the combination of the previous scheme of purchasing excessive electricity and the feed-in tariff scheme and it encourages a wider variety of renewable energy production. Under this new scheme, the energy from various renewable resources will be purchased by the electric utilities under a period contract; however, costs incurred by the utility in purchasing renewable energy sourced electricity will be collected from the entirety of electricity customers. The government's procurement price calculation committee will determine the surcharge price, taking into consideration the surcharge unit price per kW that is incurred by the consumers. In this sense, the scheme is to promote the renewable energy, energy saving, and lessen government subsidies. However, consumers will incur the surcharge price of electricity.

1-2 Energy and environment policy in Tahara City

Japan's energy policy has been established to increase energy self-sufficiency and achieving stability in the energy sector by undertaking measures such as reducing excessive dependence on primary energy sources and promote the development of renewable energy resources for a sustainable economical and social environment for the country and its citizens.

In regards to energy saving, Tahara City has been promoting energy saving while introducing of new energy and eco-friendly lifestyles to conform to their geographical conditions and current situation. The local government of Tahara City indentified the importance of converting material-consuming lifestyles to a simple lifestyle of energy saving and placed an importance on new energy that is environmentally friendly. Therefore, the local government of Tahara City has put lot of effort to promote energy saving, as well as renewable energy resources. According to Nikkei Shinbun (2011), the largest solar power plant will be built in Tahara City. The city also plans to build wind energy plants, which are expected to provide 6000kW to 17,000 households and the mega solar energy plant, which will produce 50000kW from 2013 (日本経済新聞朝刊, 2011).

Tahara City has embraced the energy policy set by the Japanese government and has incorporated it with their own distinctive location for the sustainability of the city. However, the citizens' energy saving

participation may take more effort than just promotion from the local government level. Moreover, the citizens' acceptance and understanding about renewable energy is necessary, especially compared to that of conventional energy.

1-3 Rationale of the research topic

As a contribution to the environmental aspects of sustainable development in Japan, effective energy conservation and environmentally friendly energy is the key player. The research will focus on two targets: the progression of the energy saving activities in Tahara City and the level of renewable energy acceptance by the citizens. The purpose is to provide more insight into the actual practices and challenges. Both targets of our research have been featured in the Eco garden city.

Regarding the first point energy saving, in order to reduce energy consumption, in addition to technical approaches such as building planning and energy saving equipment, the promotion of "energy-conscious" behavior among users is very important. It is said to have a significant effect on reducing energy by improving residents' behavior (Ouyang & Hokao, 2009). The research conducted by Ouyang and Hokao (2009) in a residential area in China showed that improving residents' behavior in household life by energy-saving education could save electricity more than 10%. The most appealing advantage of energy saving activity is that it can be conducted without any initial investment, yet there is a clear economical benefit with a more effective result and less negative effect on the standard of living (Ouyang & Hokao, 2009). The research by Ouyang and Hokao (2009) also suggested that the local government, institutions, universities, public media, etc., should focus their attention on low-technological measures in ordinary domestic life and giving sufficient information to citizens about energy saving to encourage them to form good daily habits of energy saving. In other words, policies should coordinate and involve the people's participation among all social status and age groups. For this reason, the research will focus on the Tahara City's energy saving promotion to encourage the citizens' participation and the challenges that might occur in energy saving promotion.

Second, regarding renewable energy introduction, Tahara City is the leading city in Japan in terms of introducing renewable energy. Two of the significant features contributing to the environmental sustainability and the development of Tahara City are solar and wind energy. Solar and wind energy have been introduced as prospective alternative solutions to fossil fuel-based energy and nuclear energy, which are instable and harmful. However, there is the remaining question of how much the citizens will accept the introduction of these new energies. Eden (1996) said that in terms of local environmental issues, public participation is vital because they have first-hand experience and are more familiar with the issues. The success of policy implementation is the result of understanding the local people's moral, ethical, cultural and behavioral dimensions in regards to environmental issues. It could be said that a successful policy is one that involves people's participation from various status, age, groups etc. Because people's acceptance toward renewable energy is important in the success of implementing the introduction of any renewable energy and

there is a potential rise of price for electricity, this paper will strive to identify the level of acceptance of Tahara City citizens toward the introduction of renewable energy.

1-4 Research questions and objectives

Research Questions

The research questions are set as follows:

1. What is progress and challenges for the energy saving project and renewable energy introduction project in the Eco-garden city concept of Tahara City?
2. What is the level of renewable energy acceptance of Tahara citizens?

Research Objectives

The research objectives are set as follows:

1. To identify the progress and challenges of energy saving promotion
2. To identify the progress of the renewable energy introduction
3. To identify the level of renewable energy acceptance among Tahara citizens

1-5 Research methodology and limitations

1-5-1 Literature review

Literature review was carried out in order to collect basic information on related policies and find the underlying issues from previous research, official documents and reports.

1-5-2 Fieldwork

The study area for this research was based in **Tahara City, Aichi Prefecture** of Japan. Our target location was Tahara City hall and a vocational college called "Tahara Municipal College of Human Services."

1-5-3 Data collection and statistical analysis

Data collection was done by interview and questionnaires. The interviews conducted with Tahara City government officials to get the information on the current progress of the energy saving and the renewable energy promotion, as well as the challenges. The survey targeted city government officials and the students at the vocational training college, to identify the environmental concerns and level of acceptability of renewable energy. The number of Tahara officials and the college students surveyed were almost balanced, with a total of 85 respondents.

1-5-4 Limitation

Due to the size of the Eco-garden city projects in Tahara City, the research narrowed the focus on two projects among the seven. The two projects are the energy saving project and eco energy introduction project. In regards to the eco energy introduction project, solar energy and wind energy will be the focus.

Furthermore, in order to identify the current progress in Tahara City, an interview and questionnaire was conducted to identify each target. However, due to time limitations and availability of the respondents, the respondents were narrowed to the city hall officials and the students from the vocational college.

2. Eco garden city

2-1 Background

Located on Atsumi Peninsula facing the Pacific Ocean, Tahara City has a population of a little more than 60,000 people and area of 188.81 km^2. Comparatively, Tahara City is small, yet motivated. From every aspect, the government of has been taking action to face global challenges and regional issues with the concept “Think globally, act locally.”

"Tahara Eco garden city Initiative" has been selected to be the national model of urban development in harmony with the environment due to the uniqueness of its location and by its ability to utilize available local resources. The officials of Tahara City, with the participation of the various stakeholders, had constructed various environmental projects within this concept called the Eco garden city. The basic principle of this concept is to create sustainable development in harmony with the rich environment. Seven major initiatives were introduced to represent the ideas behind Eco garden city that were not only concerned with environment issues, but also enhanced the lives of the people in the community and helped improve the local economy. The seven projects are Colza Flower Eco Project, Waste Recycling Project, Eco Energy Introduction or New Energy Introduction Project, Energy Saving Project, Compact City Project, Green Network Project, and Eco Industrial Project.

2-2 Energy saving project

Corresponding with energy saving policy, Tahara City has been promoting energy saving and eco-friendly lifestyles that conform to their geographical condition and current situation. The local government of Tahara City indentified the importance of converting a material-consuming lifestyle to a simple lifestyle of energy saving and spiritual richness. Energy saving is not only suppressing the increasing cost of energy, but also improve the quality of business and the citizens’ lives. Therefore, the local government of Tahara City has put lot of effort to promote energy saving, as well as new energy consumption, with the cooperation from the business sector and citizens.

Among the seven initiatives, the Energy Saving Project directly involves closely with the way of living of the people in Tahara City. The Energy Saving Project has three approaches: The Architectural Approach, the Equipment Approach, and Eco-Life. The Architectural Approach is done by architecturally planning construction that corresponds with energy saving. It includes building planning, energy saving design and insulation equipment. The Equipment Approach aims to increase the use of various energy saving technologies on a large-scale for plants, offices and households and to promote the use of low-pollution

vehicles; Eco-Life consisted of activities, ways of living, transportation through public awareness and awards given for participation to promote energy saving.

The activities of Eco Life are Eco-Life Day (once a month), fostering advocacy for energy saving, distribution of energy saving gimmicks (e.g., Eco-bags, energy-saving and environmental calendars, households electronic account books, etc). The project also encourages the citizen to do outdoor activities, utilizing the climate and the natural areas of Tahara City (e.g., playing in the ocean, rivers, ponds; flying kites; enjoying the seasons, etc.). In terms of transportation, the project promotes the use of public transportation as alternative, optimization of vehicle ownership per household, Eco-driving (energy-saving operation), etc.

2-3 Eco Energy Introduction Project

This project aims to promote the introduction of clean energies such as solar energy, heat utilization, low-emission vehicles and fuel cells to lessen the environmental impact on society. First, this project initiates the use of clean energy in public facilities, such as introducing the use of solar energy and eco-friendly cars such as hybrids and electric cars for the local government use. Second, the project assists citizens and companies by providing subsidies and vital information. Last, in order to promote clean energy use, the projects organize research on the use of wind energy, solar energy, energy storage and more. The common barrier to achieve this project is mainly the costs of installation and maintenance, according to the interview with Tahara city.

3. Energy saving in Tahara City

3-1 Energy saving promotion in Tahara City

Tahara City has promoted various activities based on the guideline mentioned in the Eco garden project. The activities range from promoting buildings that consume less energy, promoting energy saving events, raising public awareness at school, promotion through mass media and more.

First, due to energy and environmental problems, Tahara City has considered building better housing that is well-suited to the environment and creates a lifestyle that can minimize consumption and allow saving of energy. In order to achieve the objectives above, government, the business sector and citizens are working together to promote the “Energy Saving Project.”

Tahara City hosts an annual environmental day to raise the awareness about excessive energy consumption. The city also promotes energy saving in schools where students act as messengers about energy saving to their parents and family. For example, in the summer 2011, Tahara City had an energy shortage problem. The city found a way to promote energy saving through school education. The result was found to be effective and that school children could act as messengers for the awareness of energy saving to their families.

In terms of promoting energy saving through the mass media, the city has put information on the city's homepage, television, and other media outlets to promote the citizens' participation for energy saving. The city also created a mascot in a shape of superheroes to boost the awareness. Putting a slogan on the shopping bags and distributing pamphlets to raise the awareness about energy saving are also tools used to reach people. The city tries very hard to get people's involvement as much as possible.

Finally, according to the Tahara City officials, the city tried to avoid promotion of energy saving by giving economic incentives, such as rewards of cash or prizes. The city does not want the citizens to participate in energy saving because of the potential for cash or prizes in return, but rather they want the citizens to be motivated from within and encourage other members of their families or friends to save energy. The rewards that the city are pleased to give to the citizens who contribute to the energy saving consist of coupons or certificates of admiration.

The promotion of energy saving has taken many forms by the local government to encourage citizens to participate. The city avoids any kind of promotions that involve cash incentives and encourage citizens to participate for sake of their city.

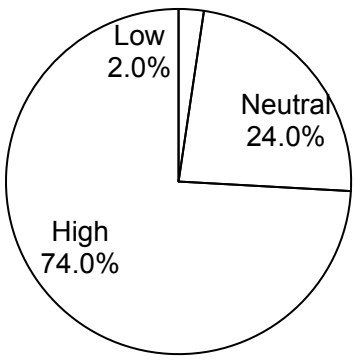
3-2 Challenges to energy saving in Tahara City

Though, Tahara City has consistently promoted the importance of energy saving among its citizens, there are still challenges that the city needs to tackle. First, environmental concerns among citizens are not a priority compared to other issues in the city. Second, citizens think that energy saving is the government's role. Third, the local government could only distribute information at the surface, not from within the community. Forth, citizens should realize that government policies on renewable energy production promotion will lead to energy saving and conversely, energy saving promotion will lead to the development of renewable energy resources. Last, there is a need to promote the research on low energy consuming appliances.

3-2-1 The level of environmental concern

According to our survey, the level of the citizens' environmental concern is 74%, which is quite high, demonstrating that the citizens pay attention to environmental issues.

Figure 1: Environmental concern among citizens of Tahara City



However, according to the survey by Tahara City, among the many issues faced by the city, environmental concerns rank as one of the lowest, while the medical care and elder people's welfare rank among as the top two (田原市市民意識調査, 2011). It could be interpreted that the citizen's are aware of the environmental issues but if listing priorities, environmental concerns rank behind others. In this sense, there is a need to have a more efficient way of informing the community about environmental concerns and other environment related issues help the citizens realize from the within themselves.

3-2-2 Tahara citizens' point of view on energy saving

According to the result of a questionnaire to a sample of Tahara citizens in 2007, 41.5% of the citizens think that more effort for energy saving at the household level is important. On the other hand, some citizens demonstrated a neglect of energy saving, with 32.2% answering that they cannot practice energy saving, though they are aware of it; 4.3% answered that not many results can be gained by energy saving; 4.6% won't take part in energy saving because it is inconvenient; and 5% answered that they have not thought about energy saving.

When asked about what can be done to improve energy saving, 64.3% think that municipalities should take the lead in addressing energy saving; 32% think that municipalities should publish papers to urge residents and businesses to conserve energy; and 23.9% think that municipalities should provide workshops to provide information about energy saving. The research by the Tahara City in 2007 revealed to an extent, the citizens' point of view that the municipality should take the lead in energy saving instead of from the citizens themselves.

3-2-3 Involvement from the community

Tahara City has promoted various energy saving activities and has distributed information through various means. However, there is no assurance that the promotion can penetrate to the local level of the community. Promotion from the local government is not enough, thus, the promotion from the community level may prove to be an ideal alternative option. According to the Tahara City survey in 2011, the bond among the community is very strong and there is a sense that the members of the community tend to participate in the community activities more than other activities in general. From the survey, the respondents were first asked, "Will you participate in the city's activities again?" Most of the answers were "no," but later in the next question, when asked, "Will you participate in your community activities," those who answered "no" in the previous question, answered "yes." It may be a unique feature of the Tahara community that led to the second answer.

Energy saving from the community level is important to ensure the sustainability of the city in terms of energy, economy and environment. To achieve the promotion of energy saving in Tahara City, the focus should be also on the community level, not only promotion from the local government. It will be more efficient to have a member of the community persuade other member of the community to actively involve this energy saving project.

3-2-4 Understanding the relation between the energy saving and renewable energy

The purpose of energy saving, which has been promoted by the Japanese government, does not mean only to save energy. In fact, the purpose of energy saving has gone beyond energy saving activities to encourage and accelerate the promotion of renewable energy as well. In other words, energy saving is a message that we need to conserve energy and at the same time appeal for the introduction of renewable energy, because energy saving is not a sufficient scheme in itself. Conversely, promoting the renewable energy production will lead to energy saving since energy produced by renewable energy resources will be purchased. The government's subsidies for the installation of solar panels, the scheme for purchasing excessive energy and the newly established Feed-in Tariff scheme to purchase the energy produced by residential and non-residential households, clearly demonstrate the government's strategy to encourage people to participate in renewable energy production and energy saving. The more they save the more they can sell the energy they produce. Thus, it is importance that citizens can grasp this core idea. To what extend do the citizens understand these core ideas about energy saving and the renewable energy? In this sense, the challenge is to create awareness for the citizens regarding the relationship between renewable energy and energy saving and its importance.

3-2-5 The research on low energy consumption appliances

More or less, consuming energy generated from fossil fuels is unavoidable at this time. Therefore, in order to lower the usage of fossil fuel generated energy, as well as conserving energy; the focus should point to the technical potentials, such as the building of 'energy-efficient houses' that are environmentally friendly and healthy to live and the use of low energy appliances, which utilize energy efficient technology. If a majority of citizens used low energy consuming appliances, such as stoves, clothes washers and dryers, refrigerators, dishwashers and room air conditioners, etc., in the daily lives, the rate of energy consumption will reduce the energy consumption to certain level. It is difficult to just eliminate the use of fossil fuel generated energy, however, reducing through low energy consuming appliances is an alternative option.

4. Renewable energy and the level of acceptance by Tahara citizens

4-1 Solar energy

Solar panels are one of the features seen in Tahara City with 50% of households utilizing solar panels. In order to encourage the citizens to generate solar energy, the government provides subsidies approximately two-thirds of the solar panel installation cost to the citizens who agree to put solar panel on their house. The amount for installing a solar panel on the roof may cost from two to three million yen, resulting in a personal cost of approximately one million yen for the installation of solar panels. The scheme is said to be successful so far, according to interviews with Tahara City officials.

According to the interview with Tahara City officials and secondary data, the introduction of solar panels has resulted in many advantages (see Table 1). First of all, energy generated by solar panel appeals to

both households and industrial factories. The citizens can install solar panels to generate energy for themselves. So far, government subsidies for solar panel installment have been working efficiently. However, not only households are benefitting; the solar energy has contributed to the agriculture sector and many public buildings such as hospitals and schools. Second, the construction of large solar energy generators, such as Mega solar panels, can promote optimal use of idle lands in Tahara City where there are plenty of wide areas. Third, the construction of solar energy also contributes to the promotion of Japan's solar panel manufacturing industry in the sense that solar panels will be produced in Japan with a result that investment in research on solar panels will be increased. Another advantage of using solar panels is that it requires little maintenance, which is the main advantage over some other renewable energy sources. Last, solar energy is an environmentally friendly energy source. It does not produce greenhouse gases that pollute air quality, nor does it produce annoying noises.

However, solar power also has its drawbacks. First the cost of the first installation is very high, especially for a typical household. Second, it can only be installed on a newly built house. An old house cannot bear the weight of a solar panel set. To install a solar panel on an old house requires a foundation to support the weight of the solar panel adding more costs to the installation process. Another drawback is that it can only generate energy when it is sunny. When the weather is cloudy or at night the solar panel cannot produce energy. In addition, the price of electricity generated by the solar panel is expected to be more expensive than the existing electricity generated from conventional energy.

Nevertheless, solar energy has a great potential to bring valuable energy to the city and its citizens. The disadvantages of the solar energy could be reduced or solved in the future, if for example, the cost of installation can be reduced in the future through subsidies or contracts allowing the citizens or businesses to sell the energy they produce. Solar energy has the potential to contribute benefits to the economy, society and environment. Most importantly, in making solar energy production possible, there are many stakeholders involved, ranging from the government, electric utilities, companies and citizens, which could further sustain the production and research development for this renewable energy.

Table 1: Summary of advantages and disadvantages of solar power

Advantages	Disadvantages
Easily located (unused farmland, agricultural areas and households)	High cost of installation
Promotes Japan's industry in producing solar panels (panels produced domestically)	The price of solar energy is expected to be expensive
Little maintenance	Not applicable for old house
Solar cells are non- polluting	Solar panel generates energy only during the day and good weather

4-2 Wind energy

Located on Atsumi Peninsula, Tahara is considered as one of the windiest areas in Japan. Currently, Tahara City has 13 windmills owned by private companies and a small one owned by Tahara City. The small windmill owned by the city generates 300kW and has demonstrated a stable wind with approximately 8.3% /s, capacity utilization of 35% per year and is the top class in the country.

According to interviews from Tahara City, it is found that the wind power has three key advantages in terms of environment, productivity, and the long-term economy for the sustainability of Tahara City. The first advantage is that windmills can produce a large amount of energy compared to other renewable energy sources. Second it is an environmentally friendly energy, quite like solar energy. It does not produce harmful by-products for the environment. Finally, it is cheaper than solar energy when it comes to the cost of producing electricity because of its large capacity to produce energy.

Nevertheless, wind energy also has its disadvantages. One of the main disadvantages is that most windmills have to be exported from outside of Japan, which means the already expensive price plus the cost of transportation and construction, make it very expensive. The cost of construction of a windmill varies depending on the size. The small-sized 300kW of energy windmill owned by Tahara City costs around 130 million yen, while the largest windmill, which produces 2000kW of energy, may cost around 500 million yen. These numbers are extraordinary resulting in the biggest problem of all, finding the initial capital to build the windmill at the beginning. Another setback for windmills is that they require a high cost of maintenance. Because of these high costs, the government used to have a plan to subsidize private companies. In the past, if a private company wanted to build a windmill, 50% of the cost would be covered by the government and the other 50% would be paid by the company. However, the government's plan to subsidize wind energy was abolished due to budget constraints and changing policies. At the time of the interview, the government and private companies were in negotiations concerning energy purchase prices of energy produced from the windmills. Another concern is that windmills are said to produce low frequency sound that is harmful to the health of those living nearby. According to Tahara City, the city has found no adverse effects caused by the windmills so far. However, the city has a clear policy concerning people's health. Whether the windmills really cause the low frequency sound or not, Tahara City orders the construction of the windmills to be 500 meters away from residential areas for the safety of the citizens.

The geographical features of Tahara City make it an ideal location for the construction of windmills to produce energy. Wind energy has the potential to provide Tahara City with a substantial amount of energy. However, the biggest barrier is the initial high construction costs, which hinders possible investment in this energy. Moreover, wind power does not have quite the appeal for citizens compared to solar energy. Thus, if these obstacles can be removed in the future, wind energy could bring more benefits to the city and the citizens.

Table 2: Summary of advantages and disadvantages of wind power

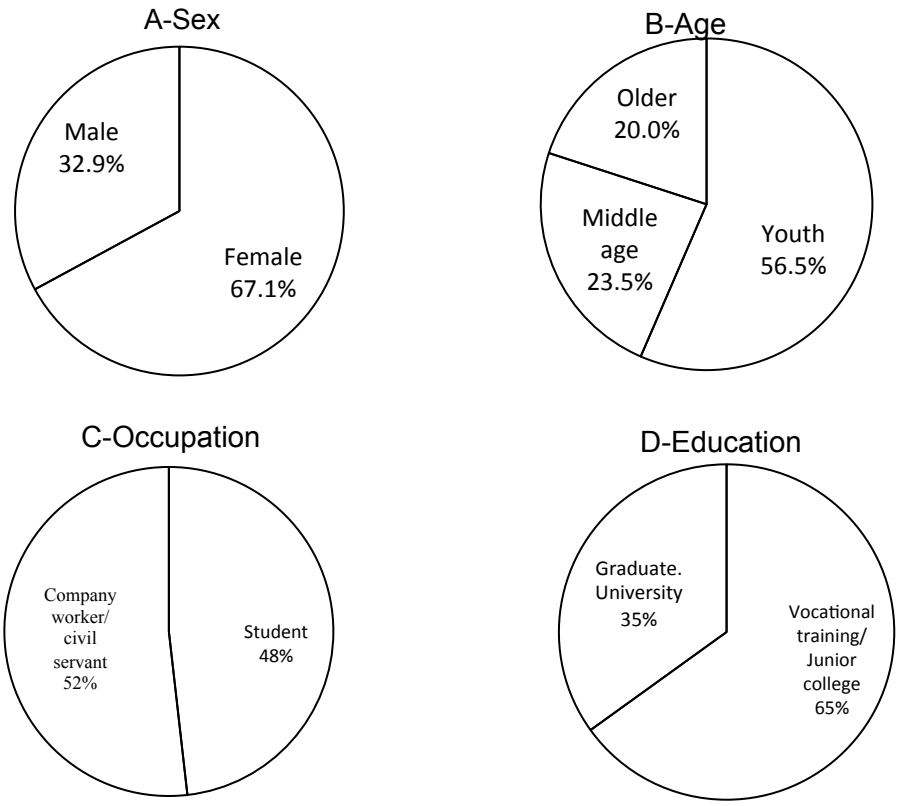
Advantages	Disadvantages
Wind energy is clean, with low emissions for CO_2 and other harmful gases	Most windmills have to be imported with expensive costs and high price expectancy.
Wind power produces substantial power.	Operated by private companies and the electricity produced is expected to be quite high
Price is expected to be cheaper than solar energy.	High maintenance (technology and cost)
	Low-frequency sound

4-3 The level of renewable energy acceptance by the Tahara Citizens

Respondents' demography

Our research surveyed both men and women with 67% of the respondents being female and 33% male. Regarding the age groups, 56% were under 34 years old (youth), 24% ranging from 35 to 44 years old (middle age), and 20% older than 44 years old (older). Regarding the job classification, 52% of the respondents were city hall staff and 48% were students. Regarding educational level, 35% have achieved graduate/university level education and 65% have had vocational training or junior college education.

Figure 2: Respondents' demography



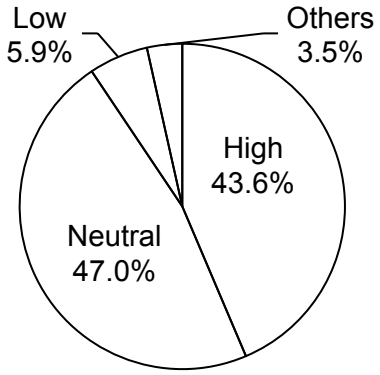
Renewable energy acceptance level:

Renewable energy acceptance is a composite index of many other indicator variables including:

- Acceptance of the construction of renewable energy facility in the neighborhood
- Acceptance of solar power
- Acceptance of wind power
- Acceptance of windmill construction in the neighborhood

According to the results of the questionnaire survey (Figure 3), 47% of the respondents have a neutral level of renewable energy acceptance, followed by the 44% of respondents who have a high acceptance, and 6% of respondents who have low acceptance.

Figure 3: Renewable energy acceptance

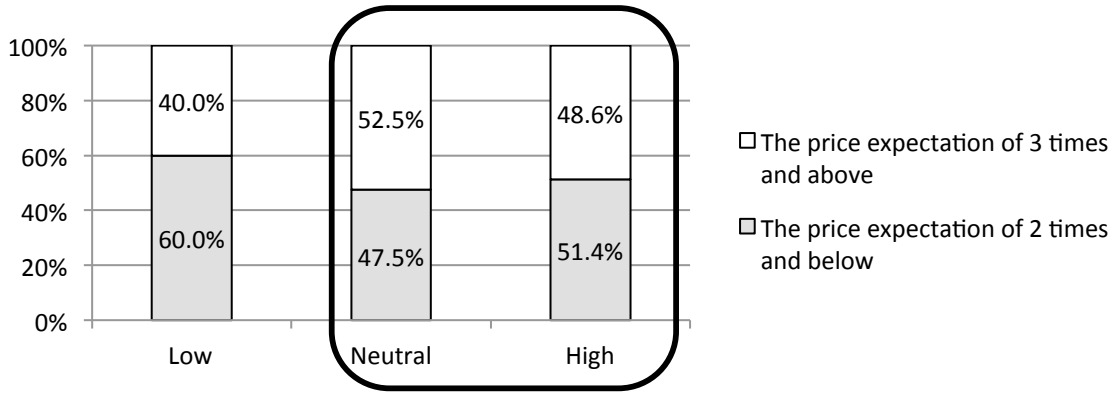


The co-relation between price expectation and renewable energy acceptance

As previously mentioned in Figure 3, the percentage of respondents who are neutral and high in accepting the renewable energy, consist of more than 90 percent of the respondents. In order to find what made the respondents answer neutral or high in accepting renewable energy, the research calculated further analysis. According to Figure 4 below, the respondents who are neutral in accepting renewable energy tend to expect that the price is three times or above. In contrast, the respondents who highly accepted the renewable energy tended to expect the price to be two times or lower. It could therefore be interpreted that the neutral respondents were unsure about acceptance because they expected that prices might be higher than conventional energy.

In short, there is a co-relation between renewable energy price expectation and renewable energy acceptance. The higher expectation of renewable energy prices, the lower the renewable energy acceptance among respondents.

Figure 4: The price expectation and the level of acceptance



5. Conclusion remarks

The local government needs to develop a scheme to have members of the community understand about the importance of the energy saving. Thus, the local government should enhance the participation from the community level through schemes that directly involved members of the community. Such schemes could be as simple as having a member of the family acts as the energy saving instructor, promoting energy saving activities in the neighborhood and information sharing among members. This would be preferable to effectively deliver information to every member of the community and to motivate participation in energy saving. Promotion through education is equally important. Education for understanding energy saving, renewable energy, understanding government policies and their importance to economic, social and environmental sustainability may be a long term process, but it will yield results for a better future.

There is a co-relation between the citizens' price expectation and the level of acceptance. It could be said that if people expect that renewable energy is expensive compared with conventional energy, they tend to not accept renewable energy. Thus, it is important to inform the citizens that renewable energy has more benefits in long term and it is good for the environment. For example, if citizens are involved in renewable energy production, they can reduce their electricity expenses by selling the excessive energy to the electric company. Also, if the citizens want to sell more energy, they would need to practice energy saving in order to have more energy. In short, if the citizens can practice energy saving and produce their own renewable energy, there is a significant advantage in terms of electricity expenditure, energy saving and enhanced renewable energy production, which is good for the environment at their locality.

Energy saving promotion is not just about reducing the consumption of energy, but it is also a catalyst to develop renewable energy. Solar energy is expected to bring significant advantages in regards to the sustainability of Tahara City. With much idle land available, Tahara City can take advantage and construct mega solar panels that will generate a large volume of energy. Moreover, not only can solar energy be produced by the electric utilities, citizens can also produce it. Regarding wind energy, it also has potential to generate renewable energy for Tahara City on a large scale compared to that of other renewable energy

sources, however high start-up costs and the need for maintenance are the main obstacles for investment in wind energy. Without the resources to start, wind energy is considered a long shot for proper development compared to solar power in Tahara City. However, if this barrier can be lifted in the future, there it could be very beneficial for Tahara City.

The high cost of the renewable energy is one of the main causes for hesitation in the area of renewable energy production. As mentioned before, the substantial start-up costs are a barrier for industrial companies or individual households to generate their own energy. What should be done to ease this problem? There are mechanisms initiated by the government, such as the purchasing of the excessive energy from the households and a new mechanism called the Feed-in Tariff that are considered as solutions to these initial barriers. Another solution has been seen in the form of joint cooperation by companies to produce renewable energy. At the time of the research, six companies with expertise relating to solar and wind power generation were working jointly to create Japan's largest mega-solar and wind power generation scheme with the cooperation of Chubu Electric Power. The project completion is planned for 2013 and it is anticipated that it will produce 50MW of solar energy and 6MW of wind energy to be sold to Chubu Electricity Power. It is also expected to cost around 18 billion yen and occupy approximately 820,000 m^2 of land, which is about 17 times the area of the Tokyo Dome. A project of this magnitude is not only essential for the economy and environment, but will also reduce the citizens' expenditure on electricity in the sense that the project will drive more research and development of technology and reduce costs. In the future, if researchers could substitute the current materials for less expensive materials, costs will be reduced and it will benefit both private companies and the citizens. Also in the future, regulations have to be revised to cope with changes, as well as introducing new regulations and guidelines.

With all the challenges, Tahara City has two unique features that make it a sustainable city. A unique geographical location and weather with a large amount of land to produce solar and wind energy and a unique community bond which could be encouraged to participate in energy saving and production of renewable energy. These are the qualities that the local government should never overlook and maintain along with their clear and effective policy for the suitability of Tahara City.

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Annex - Time table for GSID domestic field work 2011

	Time	Location	Activity	Target	Notes
Pre-**Date** fieldwork			Finalization and Delivery of Questionnaire and Letter of Request		● Assistance needed: Early announcement and distribution of questionnaire and Letter of Request
Oct 19		Nagoya University	Meeting Point		
			Commuting from Nagoya to Tahara		
	09:00~ 09:30	Tahara Municipal College of Human Services	Questionnaire distribution to students	**At least 40** students	●Questionnaire Respondents: *1st or 2nd year students*
Oct 20	10:00~ 12:00	City Hall	Interview *Chief of Health Division* *Chief of Eco-energy Promotion Office*	2 officials/ 1hour each	● Interview : 1. Chief of Welfare Division 2. Chief of Eco-energy Promotion office 3. Chief of Health Division ●Questionnaire will be collected on site after sending to Tahara City in advance.
	12:00~ 13:00	Lunch			
	13:00~ 15:00	City Hall	Interview *Chief of Welfare Division*	1 official/ 1hour	
			Questionnaire collection	**At least 40** workers	
	15:00~ 16:00				-
Oct 21	09:00~ 10:30	Tahara Recycle Center (Tanseikan)	Visit Tanseikan		
	10:30~ 12:00	Eco park	Visit Eco park and wind mills		
	12:00~ 13:00	Lunch			
	13:00~ 14:30	Tahara City Hall	Questionnaire checking and document arrangement		
	15:00~		Commuting from Tahara to Nagoya		-

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http://www.gsid.nagoya-u.ac.jp/project/fieldwork/Dfw/ind

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