

Creating a Menu of Change-Healthy Food in Health Care



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**Vice Superintendent, Dalin Tzu Chi General Hospital,
Taiwan**





1421 beds
1353 staff

Taichung 2007



859 beds
1894 staff

Taipei 2005



930 beds
2009 staff

Hualien 1986



968 beds
1792 staff

Dalin 2000



52 beds
109 staff

Yuli 1999



54 beds
94 staff

GuanShan 2000



Hospital



慈濟醫療志業

Tzu Chi Medicine Mission



Hospitals Participate in Climate Challenge ?

- Hospitals use a lot of natural resources
- Hospitals are the knowledge center for health
- Large number of people pass through



尊重生命 人本醫療

Hospital & Environment

GGHH Ten Goals

- Chemicals
- Energy efficiency
- Green building design
- Alternative energy generation
- Transportation
- Waste
- Water
- Pharmaceuticals
- Purchasing

● Food



Behavior Change in Diet

To Know Why?

To Know What?

To Know How?



To Know Why?



The Difference !!

Omnivorous diet required

2.9 times more water

2.5 times more primary energy

13 times more fertilizer

1.4 times more pesticides

Marlow HJ, Hayes WK, Soret S, Carter RL, Schwab ER, Sabate J. Diet and the environment: does what you eat matter? *Am J Clin Nutr.* May 2009;89(5):1699S-1703S.



World Watch Institute 2009/Nov/ Dec Issue



Uncounted, Overlooked, and Misallocated Livestock-related GHG Emissions

≥51.0

Percentage of
worldwide total

11.8

13.7

≥4.2

7.9

≥8.7

≥34.5

Misallocated in current GHG inventories:

5. Three categories (see text)	≥3,000	≥4.7
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Total GHGs attributable to
livestock products

≥32,564

≥51.0



How did livestock contribute to GHG emission

- Energy: burning fossil fuels to produce fertilizers for feed crops
- Manufacturing Industry
- Waste
- Land use change/forestry/agriculture
- (Respiration by livestock not counted)



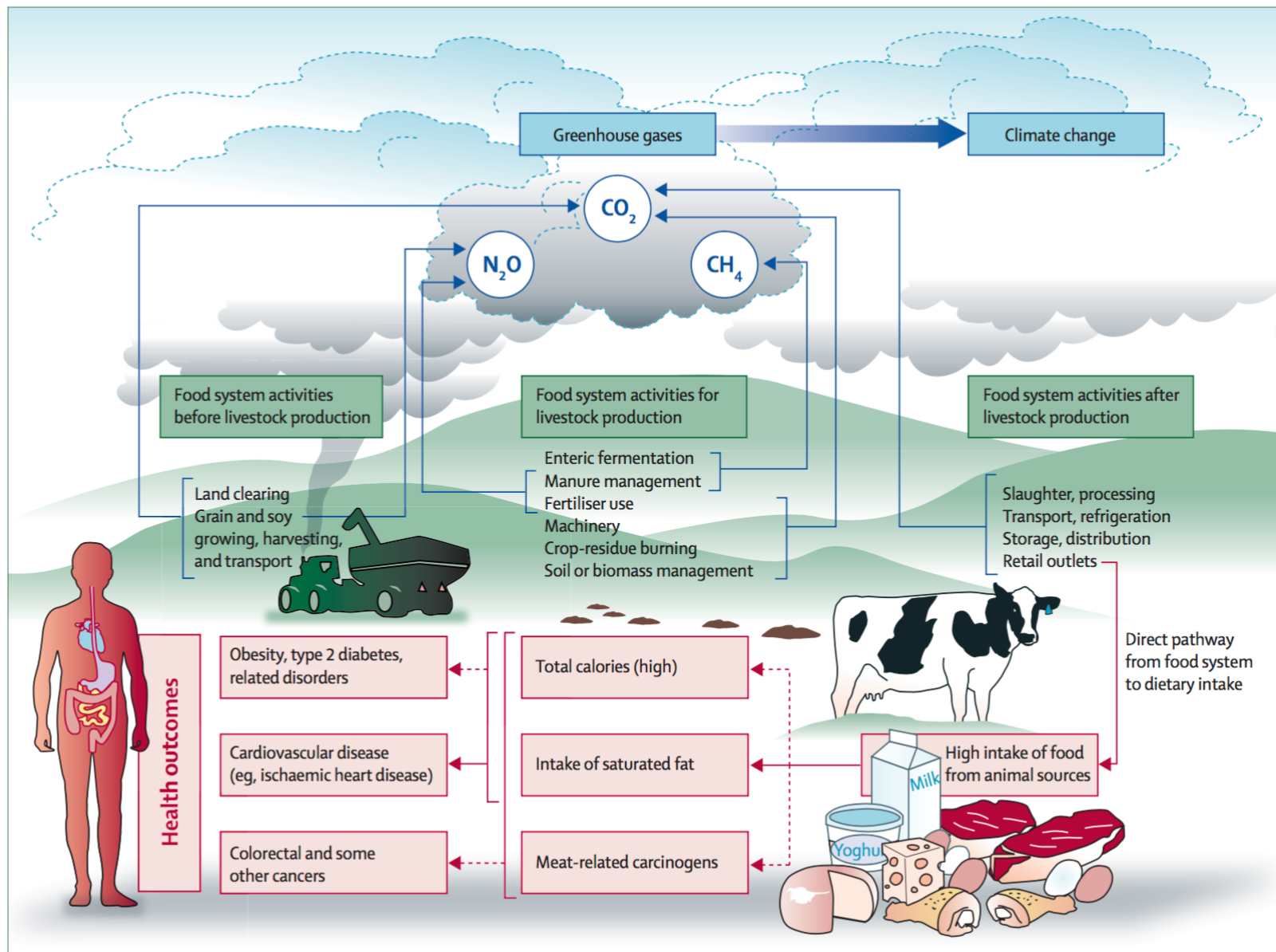
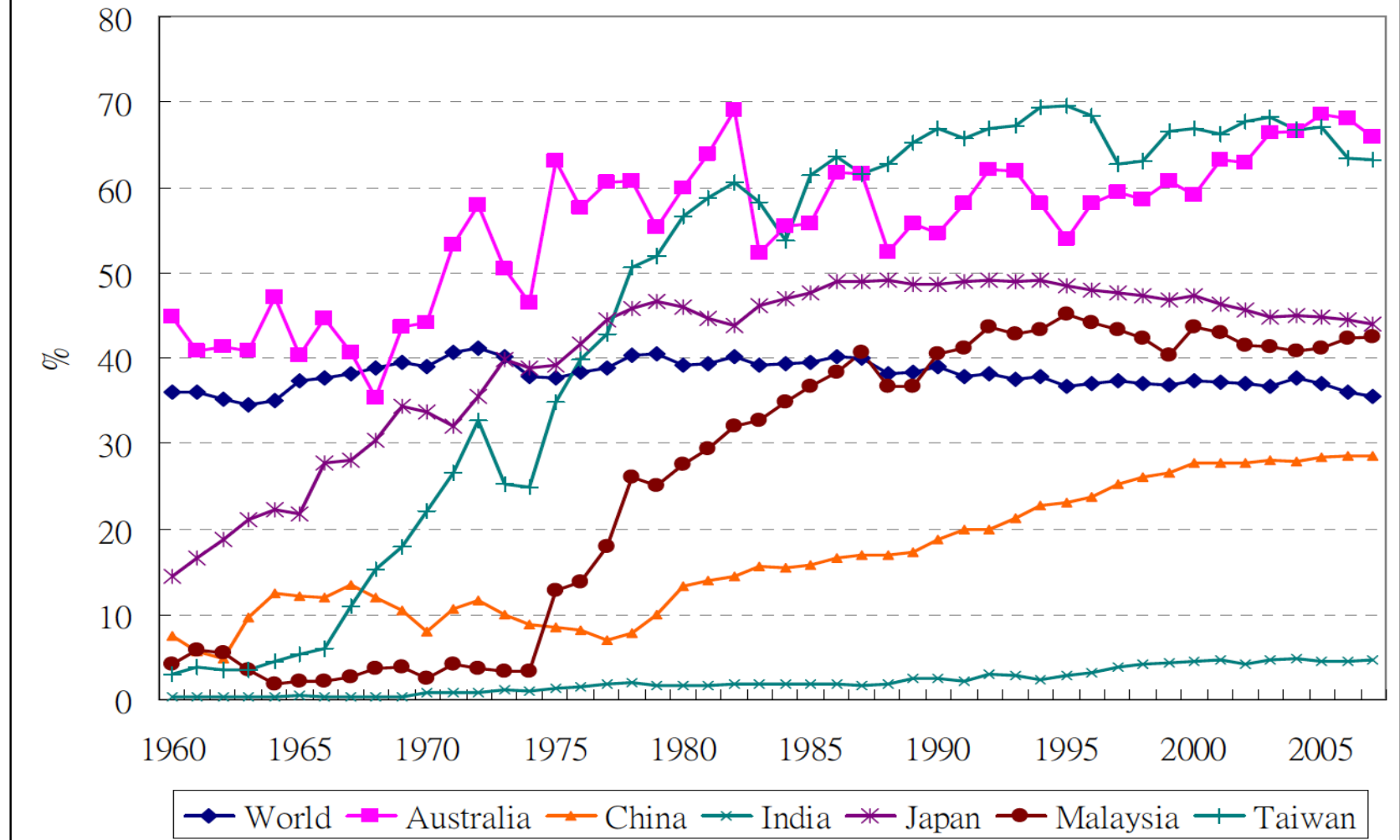


Figure 2: Processes in the food and agriculture system that lead to greenhouse-gas emissions and population health outcomes
Dotted lines indicate health outcomes that were not modelled in this study. CO_2 =carbon dioxide. N_2O =nitrous oxide. CH_4 =methane.

Lancet 2009; 374: 2016–25



Grain fed to livestock as a percent of total grain consumption (1960 - 2007)



Percent of grain consumed fed to livestock. Data retrieved from World Resource Institute online database

Chiu TH, Lin CL. Asia Pac J Clin Nutr (Dec, 2009)



Potential Contribution of Food consumption to Climate change

TABLE 3

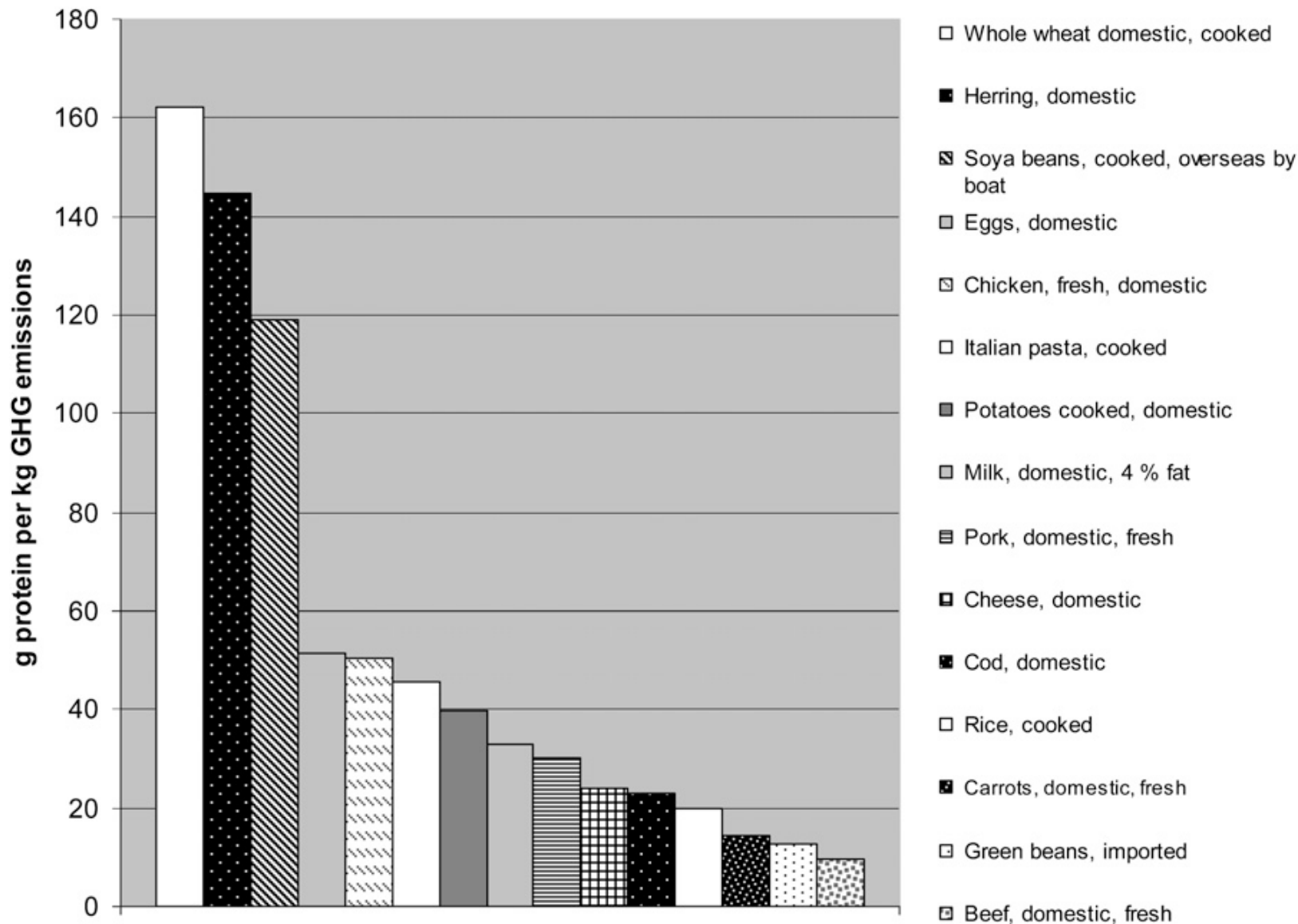
Carbon dioxide, methane, and nitrous oxide emissions from farm to table for 22 items commonly consumed in Sweden

Commonly consumed foods	Emissions ¹			Total
	Carbon dioxide	Nitrous oxide	Methane	
	<i>kg CO₂ equivalents/kg product</i>			
Carrots: domestic, fresh	0.38	0.04	0.0	0.42
Potatoes: cooked, domestic	0.40	0.06	0.0	0.45
Honey	0.46	0.0	0.0	0.46
Whole wheat: domestic, cooked	0.54	0.08	0.0	0.63
Apples: fresh, overseas by boat	0.80	0.02	0.0	0.82
Soybeans: cooked, overseas by boat	0.92	0.0	0.0	0.92
Milk: domestic, 4% fat	0.45	0.14	0.45	1.0
Sugar: domestic	1.04	0.03	0.0	1.1
Italian pasta: cooked	0.96	0.12	0.0	1.1
Oranges: fresh, overseas by boat	1.1	0.10	0.0	1.2
Rice: cooked	0.59	0.21	0.52	1.3
Green beans: South Europe, boiled	1.2	0.12	0.0	1.3
Herring: domestic, cooked	1.5	0.0	0.0	1.5
Vegetables: frozen, overseas by boat, boiled	2.2	0.05	0.0	2.3
Eggs: Swedish, cooked	1.7	0.74	0.04	2.5
Rapeseed oil: from Europe	1.5	1.5	0.0	3.0
Chicken: fresh, domestic, cooked	3.1	1.2	0.01	4.3
Cod: domestic, cooked	8.5	0.0	0.0	8.5
Pork: domestic, fresh, cooked	3.9	1.6	3.8	9.3
Cheese: domestic	5.0	1.3	4.5	11
Tropical fruit: fresh, overseas by plane	11	0.23	0.0	11
Beef: domestic, fresh, cooked	6.9	6.6	17	30

Annika C.K. & Alejandro D G. Am J Clin Nutr 2009;89(suppl):1704S–9S.



Protein content per amount of GHGs emitted



Annika C.K. & Alejandro D G. Am J Clin Nutr 2009;89(suppl):1704S–9S.



Rank	Food	CO2 Kilos Equivalent	Car Miles Equivalent
1	Lamb	39.2	91
2	Beef	27.0	63
3	Cheese	13.5	31
4	Pork	12.1	28
5	Turkey	10.9	25
6	Chicken	6.9	16
7	Tuna	6.1	14
8	Eggs	4.8	11
9	Potatoes	2.9	7
10	Rice	2.7	6
11	Nuts	2.3	5
12	Beans/tofu	2.0	4.5
13	Vegetables	2.0	4.5
14	Milk	1.9	4
15	Fruit	1.1	2.5
16	Lentils	0.9	2

Figures from the [Environmental Working Group's Meat Eater's Guide](#) and the [EPA's Guide to Passenger Vehicle Emissions](#).





慈濟醫療志業

Tzu Chi Medicine Mission



Green House Gas Production

- » Production
- » Refrigeration--Storage
- » Transportation
- » Cooking
- » Retailing



尊重生命 人本醫療

費提供碎冰



瘦肉精檢驗報告

澳洲牛肉

到貨檢驗，健康OK!

天然草飼之澳洲牛肉，健康美味，每批新到貨時作瘦肉精檢驗，為消費者嚴格把關!



黑豬肉

BLACK PORK

火鍋肉片 HOT POT



新鮮澳洲牛肉天然鐵質的最佳來源





各柑
產地：台灣
33 元/斤

葡萄柚
產地：台灣
24

蜜柑
產地：台灣
59

佛手
產地：台灣
99

90-富士蘋果 48
20

富士蘋果
15

富士蘋果
39

富士蘋果
59

富士蘋果
75

富士蘋果
85

富士蘋果
129

富士蘋果
129

富士蘋果
129

富士蘋果
129

富士蘋果
129



Amazonian Rainforests

- **70% Rainforest degraded for cattle rearing**
- **Home to 40,000 plant species, 427 mammals, 1,294 birds, 378 reptiles, 427 amphibians, 3,000 species of fish, and 200,000 indigenous people from 180 ethnic tribes**
- **Livestocks: <1.5% of global economy**
- **Other economic potentials for the rainforest?**

(Green Peace Report)



To Know What?



Vegetarian Meals for Patients

- No fish, meat, poultry or any animal flesh served in Tzu Chi Hospitals
- Lacto-ovo vegetarian meals, vegan options available
- Meeting Taiwan's DRIs through plant based diets
- Featuring fresh and local produces
- Minimizing processed and canned foods



Protein

- Major protein source: soy (tofu, yuba, bean curd, and other soy products), eggs, beans, milk and milk products
- Other protein sources: grains, vegetables, seeds and nuts
- High protein formula (for those with special needs)



GHG reduction in 6 Tzu Chi hospitals that serve complete plant-based meals

- CO2 equivalent emission calculation:
1kg of meat → average 13.7kg CO2
- An average meal in an omnivorous food court in Taiwan contains 70g (or 0.07 kg) meat per meal
- In 2011, a total of **2,543,669** vegetarian meals served in 6 Tzu Chi hospitals
- $2,543,669 \text{ meals} * 0.07\text{kg meat/meal} = 178,057 \text{ kg meat}$
- $178,057 \text{ kg meat} * 13.7\text{kg CO}_2/\text{kg meat} = 2,439,379 \text{ kg CO}_2$.
- Average **2,439,379 kg CO2** saved in the year 2011!



Stir fry egg plants

Asparagus with
baby corn and
sweet pepper

Broccoli and
carrots with
black
mushrooms

Laver (seaweed)
soup with gogi
berries

Tofu wrapped in
veggie ham

Noodles

Fresh fruit plate



Soy bean curd with red
and yellow pepper in
tomato sauce

Stir-fry
spinach

Tofu wrapped
in veggie ham

Stir-fry bok
choy and
carrots



Fresh melon



Rice with black sesame



Tofu and bean sprout
soup



A collection of various traditional Chinese dishes, including soups, stir-fries, and dumplings, arranged on a table. The dishes are presented in white ceramic bowls and plates. Some dishes include ingredients like mushrooms, vegetables, and meat, while others are more complex, featuring multiple ingredients and sauces. The dishes are arranged in a circular pattern, with some in the center and others around the perimeter. The background is a light-colored, textured surface.

Toona rice with pinenuts



Peanut – Azuki bean – Tapioca Dessert



Vegetarian Food Court for patients, families, visitors and staff

- Minder Garden (vegan buffet with 100+dishes)
- Thai House
- Hot Pots
- Noodle Shop
- Pancake Kitchen
- Traditional Taiwanese food
- Japanese Style
- Korean Style
- And more ...

大愛美食坊

心靈無煩惱 素食益康少 食物是環保 低碳氣管妙

【營業時間】：每日早上09:30至下午21:00

- 地址：台北縣新店市廣福路269號B1 ● 電話：(02)6628-9779
- 謝絕往來酒駕至大愛坊用餐，如有打擾，請即予以驅離，再委託家屬取餐。



熱
食
區

 <p>海緣餐飲坊 訂機6642</p> <p>烏糖/洋粉(河溝)、麻油麵線(阿菊)、鐵絲麵、米粉、香菇肉燥盤、紅油抄手、酸辣湯、日式蛋包飯、茄汁炒麵、蟹鉗麵羹、雞腿飯、水餃...等。 B1</p>	 <p>天味素食 訂機6638</p> <p>天味素食以素食小點為特色，素饅頭、餛飩類、酥餅、酥餅、便利迅速的素食選擇，更受本航運經理同仁們的歡迎好評。 B1</p>
 <p>明遠素食園 訂機6025</p> <p>提供各式豐富白飯菜及便當，以供選擇。請優先訂購。服務時間：週一至週五早上08：30~20：00 B1</p>	 <p>泰皇料理 訂機6641</p> <p>泰國真蔬食、台式素粥、花枝面、豆腐、紅燒雞蹄湯、香式雲吞麵、雲式甜酸蝦球、鳳梨炒麵、乾子巴結、艾梅意麵、清涼泰國綠咖哩、 B1</p>
 <p>自然緣慈活坊 訂機6635</p> <p>養生紅燉、藥膳、日式拉麵、韓式泡菜、傳統臨牀紅燉、義式燻烤系列、義大利麵、養生燕窩、鮮、美、手工麵條等輕食與健康、不加味精、用天然厚實養生料理。 B1</p>	 <p>1/2鬆餅廚房 訂機6639</p> <p>鬆餅、各式輕食、甜點、奶茶、咖啡、世界風味料理；韓式石鍋拌飯、新加坡叻叻、宜蘭野山豬排、冷米素牛肉燴飯、炸物、香脆雞、地瓜雞、雞排、薯條...等。 B1</p>
 <p>京記關東煮 訂機6632</p> <p>各式蔬菜、肉片、玉米、耐不凍、青豆、素鴨、燙青菜、湯、素肉圓、日式煎餅、茶葉蛋、日式泡麵...等。 B1</p>	

大愛美食坊

大愛劇場連綿不絕，分心料理美食，
 最美味最動人眼，四方同以健康為
 美妙滋味與香氣，分享智慧與愛，
 食品美味與中藏，竹節由最優質香
 所開張諸君健康，臺灣健康式生活



 明德素食園	 Café de la Paix	 自然獨	 天味素食	 淨緣餐飲坊		2F 	<p>1. 心懷健康與幸福</p> <p>2. 臺灣健康食品，臺灣健康式生活</p> <p>3. 健康飲食文化，健康飲食文化</p> <p>4. 健康飲食文化，健康飲食文化</p> <p>5. 健康飲食文化，健康飲食文化</p> <p>6. 健康飲食文化，健康飲食文化</p>
 伯朗咖啡	 悅朋	 一風堂	 京武園康堂	 泰皇宮泰料理		1F 	

Vegan Buffet







Vegetarian Food Court



To Know How?







慈濟醫療志業 Tzu Chi Medicine Mission

CEO and Superintendent



Reduce , Reuse & Recycle

- Patients use reusable plates, bowls
- Reusable chopsticks, 3 million pairs in 7 years







Da-Ai Farm-Reduce Food Mileage

On empty land around the hospital, we grow vegetable, rice.

As a rehabilitation program for our patients





Tzuchi's Experimental Farms in Taiwan





Tzuchi's Experimental Farms in Hualien







Food Mileage

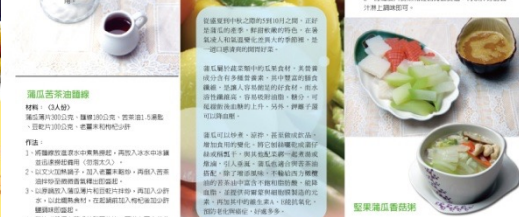
Low

- *Local*
- *Fresh*
- *Plant-based*



Plant-based Diets

Healthy Delicious Lights Friendly to Earth





LEADERSHIP

Prioritize Environmental Health

Create a Supportive Environment



Health Stairways- information about environmental issues



*Education Exhibits**Green Castle*

Hand-made recycled paper



Leftovers become organic fertilizer



Waste oil become soap





We can
change
the world
with every
bit 

Choose foods that are organic
Know what is in your food.
Together we can make an
impact in the food industry.



#97

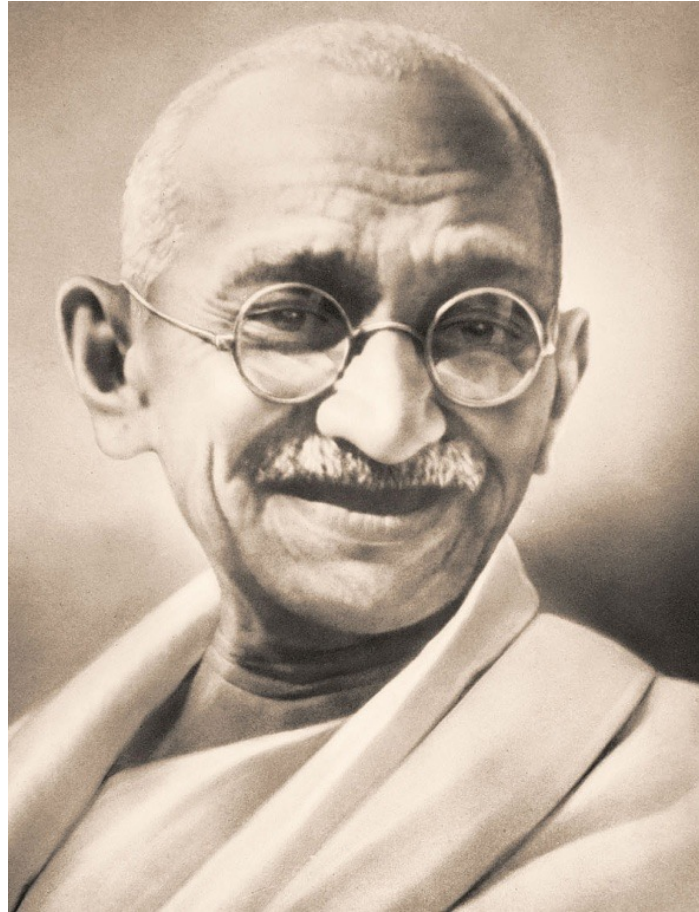
04-06-2010

visualdosis.wordpress.com

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佛教大林慈濟綜合醫院 Buddhist Da Lin Tzu Chi General Hospital

Be the Change You Want to See in the World



-----Mahatma Gandhi



Thanks for Listening !! 感恩!!

