



# Ethnic Communities' Council of NSW Inc.

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## Power of Choice – giving consumers options in the way they use electricity

The constituency of the Ethnic Communities' Council (ECC) is as diverse as the Australian society so that there will need to be a diverse range of choices offered to meet the needs of different members of different communities. In order to exercise the 'power of choice' consumers need to understand not only what is being offered but how the option chosen will impact on their electricity costs.

For example:

1. The older members of the Italian, Greek and other cultures that arrived in Australia in the late 1940s and 50s are reverting to their first language as they age. Their electricity costs are increasing as prices rise although their consumption has not increased. They are frugal with resources already and are impacted by the proportion of their electricity cost that is called 'service to the property' which will likely account for over 25% of their costs. This is a larger proportion than the medium to large users. When faced with the additional complexities of a smart meter and time of use pricing, their understanding and capacity to pay will be further diminished.
2. Many newly arrived migrants and refugees find understanding the supply of electricity and its cost extremely difficult and it would require time for them to become accustomed to the existing arrangements before engaging them in the complexities of smart meters and 'time of use pricing'. They are vulnerable to 'door-to-door' sales and sign contracts when they have limited understanding of their ramifications due to their lack of English skills. An education program delivered by trained cultural facilitators is **best practice** for improving this group's understanding of energy efficiency and conservation.
3. The ethnic communities' members who arrived during the second wave of migration such as Arabic speaking migrants from Lebanon, China and Vietnam have a good command of English and if provided with culturally appropriate information will adopt new technologies. It is this group who could participate in peak load reduction if it were explained appropriately using smart meters and 'time of use' pricing.
4. This will not be the case for those who have arrived more recently on a business or professional visas. They are knowledgeable about computer/technology and a smart meter would offer them control of their usage. However this group would require the promotion and support information in their languages to ensure that they are comfortable about the adoption of new technology.

The ECC introduced a new and innovative water saving technology for ethno specific small to medium businesses. The managers and owners of the businesses were only receptive to the technology when all of their issues and concerns were addressed by informed bilingual

educators from their own culture. To demonstrate the benefits of the technology, a DVD was produced that showed other members of their business community speaking about the benefits of the technology and demonstrating its use.

The above scenarios are derived from anecdotal evidence at the present time. The ECC is conducting research to ascertain the issues and concerns of the diverse groups described above as well as four ethno specific businesses. This research has been funded by the Consumer Advocacy Panel. The ECC aims to have the research completed and the report published in early 2012.

#### **Chapter 4 Consumer participation and DSP opportunities**

##### Consumer participation

For the examples 1 and 2 described above, the most effective way to assist them with demand management and reduce their energy use, is by face-to-face education about how to conserve energy and live more energy efficiently. This education needs to be provided by members of their own communities and supported by inclining block tariffs. The combination of

- A lower tariff for the first 10 – 20 kWh used a day and an escalating price as the usage rises above that amount, that is an inclining block tariff. Also setting the 'service to the property' as a lower proportion of the costs.
- This group often have either old or second hand appliances that are not energy efficient but are unable to pay for the new more efficient appliances. This means that they are unable to take the next step in conserving energy after making behaviour and low cost changes within the home (eg excluding draughts by filling gaps around windows and doors) The retailers and distributors could provide financial assistance to this group for purchasing the energy efficient appliances similar to the **No Interest Loans Scheme (NILS)**
- Unfortunately this group is already conserving energy by reducing the amount of heating in winter to conserve energy and reduce costs, often to their physical detriment.

The drivers for Group 1 as described above are clearly reducing the cost of energy so pricing tariffs at a lower rate and reducing the service/connection charge will create a driver for energy conservation and energy efficiency.

Group 4 those entering on business or professional visas would adopt the introduction of new and innovative technology such as smart meters or generation of own energy during peak demand, if explained in an appropriate way that was successful in the Water Saving in Asian Restaurants Project (see attached final report) and if the message highlighted the reduced costs. Again the promotion of the technologies would need to be culturally appropriate and provided in the language of the target audience.

The driver of reduced costs that can be provided by 'inclining block tariffs' is not available to consumers at present. This pricing strategy does not require any changes or developments in technology. Generating energy on site for use during peak demand has storage issues that need to be resolved by developing more efficient technologies.

#### **Chapter 5 Market conditions required for efficient DSP outcomes**

There are a number of changes to the tariff system and ways of measuring individual energy use that would assist with the take up of cost effective DSP. Consumers have a great deal of trouble reading what is written in small print on their bill and a great deal of education is needed in energy literacy. This requires these new understandings to be provided the ECC constituency in the relevant language and in a culturally appropriate form.

Training of 'point of sale' and 'service' staff in energy literacy that can be included in any promotion, sale or service of appliances would assist in increasing energy literacy however the

retailers and distributors also need to be able to discuss DSP options with their customers particularly when negotiating a contract.

Cost reflective prices and inclining block tariffs do not benefit all Culturally and Linguistically Diverse (CALD) community members as there are some with large families living in hardship who would need assistance with paying for their energy use under such a pricing regime.

There are a wide range of DSP opportunities that are not available to the more disadvantaged members of CALD communities. Many newly arrived migrants and refugees are housed in rented or public housing. This housing stock is without insulation, has electric storage hot water and inefficient heating and cooling. This group as described above cannot afford energy efficient appliances and there needs to be a scheme similar to NILS, perhaps provided by the retailers of energy so that such appliances can be bought and paid off over time.

The tariff changes that work as pricing signals do NOT require smart meters but support DSP. The pricing structures at present provide little incentive to low energy users in the community and those who are already conserving energy and living energy efficiently. The high energy users who are familiar with technology and have ease of access would benefit from smart meters with 'home area display' or linked to their computers or mobile phones.

Many members of CALD communities may be unwilling to reduce their energy consumption, particularly during peak demand and are willing to pay for it (Groups 4 above and possibly 3). This group would include businesses such as Asian restaurants. These CALD groups have demonstrated a willingness to adopt new and innovative technologies if it is introduced in a culturally appropriate way and could embrace generating their own fuel during peak demand. So this group would be targets for the DSP option of generating their own energy and storing it for peak demand periods or shifting peak demand using new technology.

The ECC hopes that it is recognised in the review that the diversity of needs in ethnic communities and between ethnic community members necessitate diverse response and strategies for offering a 'power of choice' for demand side participation.

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Yours sincerely

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# ***Saving Water in Asian Restaurants Project***

***Final report***

***May 2010***



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## Executive Summary

Stage 3 of the **Saving Water in Asian Restaurants Project** delivered by the NSW Ethnic Communities Council has proven to be an effective sustainability project, conserving almost a million kL of Sydney water a year and educating Asian businesses in appropriate water management strategies.

Through a range of complementary education strategies and financial support, the Saving Water in Asian Restaurants Project has effectively achieved project outcomes of

- promoting the economic and environmental benefits of a reduction in water use to Asian style cooking restaurant owners and staff
- providing information on actions can be taken to reduce water use in kitchens
- explaining the opportunity to achieve an estimated 50% reduction in annual water use of the kitchen by purchasing and installing a 'waterless' wok stove
- offering a subsidy to restaurant owners as an incentive for the purchase and installation of 'waterless wok' stoves
- evaluating project effectiveness.

This second phase of the project **engaged 556 Asian style restaurants** across the Sydney and Illawarra regions. This includes 185 Chinese, 233 Thai, and 138 Vietnamese restaurants. **105 restaurants** joined up to the project, installing a total of **162 waterless wok** stoves in their restaurants.

In total, the project resulted in an estimated annual water saving of **91,058 kL per year** for all stoves measured. When the additional water saving estimates are included for the six restaurants where measuring failed, the annual estimated water savings is 5,621kL per year. This increases the estimated annual water saving to **96,679 kL per year**.

In general, a difference in water savings outcomes can be seen between restaurants that are:

- located in Clubs/Pubs/Casinos compared to those located in a food court or stand alone
- serving Chinese cuisine compared to Thai, Vietnamese or Asian cuisine.

With this stage of the SWARP expanded to include Thai and Vietnamese restaurants, additional educational materials were produced and distributed. Evaluation of Chinese, Thai and Vietnamese language materials reported that this **bilingual education material effectively communicated project aims and objectives**. Our qualified Chinese, Thai and Vietnamese bilingual environmental educators were rated highly on their water conservation and waterless wok stove knowledge and for their supportive and helpful practices. Asian restauranters indicated a **strong preference for communicating with bilingual educators and for the availability of bilingual program materials** as not all staff/management spoke/read English.

There was some difference in uptake of the project between different cultural/language groups, with the bilingual educators reporting that the Vietnamese restaurant community was somewhat more difficult to engage. This may be due in part to financial difficulties experienced by small businesses or some cultural issues not explored fully within this report. Due to the nature of the cuisine cooked in their restaurants, the Vietnamese restaurants also had comparatively less water saving on a kL/annum basis. This is not to

suggest that it is no merit in engaging the Vietnamese restaurant community in this project – rather that an even more targeted approach may be necessary to yield stronger results.

In relation to media outcomes, the Chinese media was engaged most effectively. There was limited support or uptake from Thai media outlets and there was no known specific Vietnamese media for the Sydney community. Any future initiatives could seek to engage Asian media for maximum impact within these business communities.

The **market for waterless wok stoves is increasing and expanding** with suppliers enhancing existing products based on consumer feedback and other stove suppliers joining the market. Due to an expansion in the market, the price of stoves has dropped which is increasing uptake of the technology. The majority of project participants commented that they would recommend the waterless wok stove to other businesses however it is noted that there are persistent design flaws with the waterless woks. These flaws are being addressed and waterless woks continue to be improved based on feedback from this project.

Project outcomes suggest that ensuring the availability of environmentally sustainable technology alone will not encourage product uptake and market transformation. New technologies should be supported by culturally and linguistically appropriate education and communication strategies.

There is **strong interest within the Asian restaurant community for continuing this grants based education project**. It is acknowledged that in the current economic climate some small family restaurants are experiencing financial constraints that inhibit them from taking up the project. However this is not necessarily an issue for all Asian restaurants in the Sydney/Illawarra region.

Project evaluation outcomes clearly support continued funding for this project – it is a **government awarded program** that simultaneously meets NSW environmental and social policy goals. Through bilingual education and program materials, it effectively engages a previously ignored but important part of the NSW business community in water conservation. The cost effectiveness of the project could be improved by reducing the costly requirements for individual monitoring of water saving in restaurants and establishing stonger guidelines or specifications for selecting possible project participants that have higher water usage.

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# 1. Project objectives

The Saving Water in Asian Restaurants Project (SWARP) aims to reduce the use of potable water in Asian style cooking restaurants in Sydney and Wollongong. The project objectives are to:

1. promote the economic and environmental benefits of a reduction in water use to Asian style cooking restaurant owners and staff
2. provide information on what actions can be taken to reduce water use in kitchens
3. explain the opportunity to achieve an estimated 50% reduction in annual water use of the kitchen by purchasing and installing a 'waterless' wok stove
4. offer a subsidy to restaurant owners as an incentive for the purchase and installation of 'waterless wok' stoves
5. evaluate the effectiveness of the project.

These project objectives were achieved through a number of complimentary strategies which were proven to be successful in Stage 1 of this project. This includes:

- training and employing qualified bilingual environmental educators
- clearly communicating the project to stakeholders
- enhancing project delivery through engagement with business and government leaders
- engaging relevant Asian style cooking restaurant owners and staff
- providing financial support to encourage uptake of water conservation technology
- measuring and monitoring of water saving achieved through conversions
- supporting technological innovation and market transformation
- evaluating project

These strategies are discussed in more detail in Section 2 of this report on activities and outputs. Project outcomes are discussed in Section 3 of this report.

This project builds on existing water conservation initiatives with Asian restaurants including:

- extensive research conducted in 2003-04 by National Project Consultants on behalf of Sydney Water. Through this research, audits of Asian restaurants revealed their comparatively high water use and potentials for real savings in water use. Based on this research, NPC worked with suppliers to design and produce a water-efficient wok stove, termed the 'waterless wok'. During 2004-05 there was some limited uptake of the waterless wok but there appeared to be limited enthusiasm about this new environmentally sustainable technology.
- Stage 1 of the Saving Water in Asian Restaurants Project (SWARP). In Stage 1 the Ethnic Communities Council of NSW designed a highly effective water conservation program, with technical advice from National Project Consultants. The project engaged 101 Asian style (Chinese) restaurants across the Sydney and Illawarra regions. 23 restaurants joined up to the project, installing a total of 67 waterless wok stoves in their restaurants. In total, the project resulted in an estimated annual water saving of 60,860 kl per year for all stoves measured. Chinese language promotional brochures, DVD, case studies and a website were produced and distributed to project participants.

## 2. Project activities and outputs

### 2.2 *Employment and training of qualified bilingual environmental educators*



Six experienced bilingual environmental educators were employed to assist with project delivery.

- Jane Lin worked as a Chinese bilingual environmental educator in various positions for over the past nine years and was a primary educator for SWARP Stage 1.
- Elsa Cheung Wong So Yin is a Chinese bilingual environmental educator employed by the ECC, having worked there for the past four years delivering education projects on household sustainability and water conservation education. Elsa was one of the primary educators for SWARP Stage 1 and has been working with Asian businesses on water conservation for 4 years.
- Quoc Tran Dzuong speaks Vietnamese, Mandarin and Cantonese. She has been employed with the ECC for 4 years delivering community based sustainability education and has been working on this project, primarily with the Vietnamese community for 2 years.
- Tim Hunyh is a Vietnamese bilingual environmental educator who has been employed with the ECC for 6 years delivering community based sustainability education and has been working on this project for 2 years.
- Thanh Thuy Pham is a Vietnamese bilingual environmental education who was employed newly for this project. She worked in partnership with Tim Hinyh.
- Pornthip (Aoy) Chuai-Urachon is a friendly and enthusiastic Thai bilingual environmental educator who has worked for the ECC on this project for 2 years.



Peer education was primarily used to train new bilingual educators about the waterless wok and water conservation for Asian businesses. Jane Lin and Elsa Cheun Wong So Yin worked collaboratively with other educators to inform them about the specifications of the wok, water conservation issues in Asian businesses, and tools and techniques to approach businesses. A wok supplier was also engaged to teach educators about the wok specifications that would be of interest to restuaranters.

In partnership with the project coordinator, the bilingual educators were responsible for contacting and visiting restaurants, explaining water conservation issues and the 'waterless wok' rebate project, ongoing liaison with businesses that took up the rebate, mediation between businesses and suppliers where necessary, translating publications, interpreting at events, recording data, media monitoring and taking part in the project evaluation.

### **2.3 Clearly communicating the project to stakeholders**

The project's communication strategy was to conduct activities designed to reach the Chinese, Thai and Vietnamese restaurant communities. This included

- publication of project brochures in English, Cantonese, Mandarin, Thai and Vietnamese
- production of a new DVD in English, Cantonese, Mandarin, Thai and Vietnamese
- website
- conference and meeting presentations
- recognition and celebration

#### **Brochures**

To support project delivery the following brochures were produced ([www.eccnsw.org.au](http://www.eccnsw.org.au)):

- A new DL brochure was produced in English, Thai, Chinese and Vietnamese explaining the project and the rebate and providing contact details.
- *Save Water and Save Money in Asian Restaurant Kitchens* in Thai and Vietnamese. These were the same brochures that were produced in Stage 1 in English and Chinese.
- *The Waterless Wok Stove* in Thai and Vietnamese based on the Chinese brochure produced for Stage 1. For English speakers the Sydney Water Brochure was used.

Case studies from 4 Chinese restaurants (in English, produced in Stage 1) were also provided to restaurateurs to help them understand the benefits of participating in this project.

#### **DVD**

A new DVD was produced that took a slightly different approach from the first DVD. The DVD provides information about how stove works, and describes the benefit of the stove to the environment and the restaurateurs including footage of restaurateurs who are really happy with stoves. The DVD shows owners and chefs that have first hand experience of their stoves – they provide a demonstration using the stove and then speak about how they have benefited by installing the stove. The DVD was shot using a mix of stoves and in different situations, eg in a suburban restaurant and a food court. The DVD has been shown at the award presentations and will be useful for ongoing education about water conservation in Asian restaurants. It will be a useful education tool for Council educators, Sydney Water and the Department of Environment, Climate Change and Water (DECCW).

#### **Website**

Information about SWARP can be publicly accessed via the Ethnic Communities Council of NSW website at [www.eccnsw.org.au](http://www.eccnsw.org.au). As a result the Coordinator has received requests for information from other states of Australia and from overseas particularly European countries.

## Launches and showcase events

A launch was held for the Vietnamese community, though it was not felt to be particularly successful as there was limited attendance by Vietnamese restaurateurs. The launch was organised in partnership with Fairfield Council and was publicised on the first page of the Fairfield Champion

The launch for the Chinese community was held in conjunction with the Awards Presentation for Stage 1 of the project. This event was well attended by Chinese restaurateurs and heavily promoted via Chinese media.

A small launch was held for Wollongong Asian Businesses, including Chinese, Thai and Vietnamese restaurateurs.

No launch was held for the Thai community for a number of reasons including the lack of success of the Vietnamese launch and difficulties formally engaging the Thai Restaurant Association.

## Recognition and Celebration events - 2009 Awards Presentations

A series of events for participating restaurateurs were held across Sydney and Wollongong, to celebrate the achievements of these Asian businesses in conserving Sydney's water. Each of the awarded restaurants was presented with formal recognition certificate and a sticker to place in their shopfront window so that passing customers would be aware that the restaurant was saving water.

### Chinese Businesses Award Presentation–Golden Century Seafood Restaurant, Chinatown

Held on Thursday 5 November 2009 at 11.00 am, the Chinese Awards Presentation was attended by 61 people including restaurant owners, project partners and officials. Jane Lin was the interpreter and MC, who spoke in Cantonese and English. Awards were presented with by The Honourable Mr Henry Tzang MLC who spoke about pride to be giving awards to restaurants that he visits throughout his time in Australia.

Restaurant champion, Earnest Wong spoke about the project and how important it was that people had joined the project and the amount of water that the Chinese business community had saved and congratulated those restaurants who had taken up the opportunity provided by the ECC. It was a win for the environment and a win for the restaurateurs who save money.



### Vietnamese Businesses Award Presentation – Bau Trong, Canley Heights

35 people attended the Vietnamese Awards presentation which was held at 10 am on 3 November 2009. The Mayor of Fairfield City Council, the Honourable Nick Lalich spoke about his memories of launching the project how proud and happy he was to be sharing this experience with the Vietnamese business community. Luke Nguyen from Red Lantern spoke about how his restaurant is working towards sustainability. Luke Nguyen was mentioned in the Sydney Good Food Guide for the sustainability aspects of his restaurant. The outstanding MC and interpreter was Tham Nguyen.



### Thai Businesses Award Presentation – Thai Princess, East Sydney

27 people attended the Thai Award Presentation on 10 November 2009. The launch was held in the afternoon (3-5) so that as many restaurateurs could attend as possible. A fantastic Thai feast was provided by Pattarapong Khantong (Joe) of the Thai Princess, who also spoke with the audience (first in Thai and English) about the importance of being involved in this project – saving water but also showing to the Australian public that Thai businesses and Thai community were also taking up the challenge of caring for the environment. The launch was attended by the Thai Consular General, Mr Kiattikhun Chartprasert, Surasaj Duong-Rutana, Managing Director, Thai-Oz newspaper, NSW ECC Executive Officer and staff, restaurateurs Sydney Water staff and a waterless wok supplier. MC and translator was Pornthip ChuaiUrachon.



## Wollongong Asian Businesses Award Presentation – Thai Carnation, Wollongong

The Wollongong Asian Business Award on Tuesday 17<sup>th</sup> November 2009 from 11.30, and was attended by 15 people including Thai, Vietnamese and Chinese restaurateurs. Helen Scott and Jane Lin were MC for the day, with awards presented by Susan Dixon, Manager, Sustainability Programs Division Wollongong DECCW. Adam from the Thai Carnation spoke positively about his visit from bilingual educator Jane Lin, Even though he had a new store he felt encouraged to change to a waterless wok stove because he felt it was important for saving water and the environment and was positive about his involvement in the project.

### **Media and Awards**

Bilingual media was invited to all project events and launches. Media reports are provided at Appendix B and discussed in the project evaluation.

We successfully promoted the project by entering and receiving state and national environmental awards including:

- Premiers Award for Sustainability 2009 Green Globe Awards
- Winner 2009 Community Sustainability Award Green Globe Awards
- Highly Commended, United Nations Association of Australia 2009 World Environment Day Awards.



### **Conference and meeting presentations**

The project coordinator presented and shared project learnings at a range of meetings including:

- presenting large water providers in Melbourne (City West, Warra Valley, South East) about the waterless wok program, and with permission from Sydney Water and DECC, assisted them to adapt the project and our materials for their local area.
- presenting to a group of Sydney local council officers who were funded by Sydney Water to work with businesses on water conservation
- attending 3 Sustainable Club Cluster meetings (two in Sydney one in Illawarra) organised by the Sustainability Programs Division of DECC.
- meeting with the Australian Hospitality Ware-washing Association to discuss water conservation and the necessity for having bilingual educators to effectively engage with ethnic businesses and kitchen staff.
- working with large shopping centre managers including Marrickville Metro, GPT (successfully) and Westfield Liverpool (unsuccessfully) to explore options for implementing waterless woks in their facilities.

- working with 'Business Tread Lightly' program, a Shoalhaven/Illawarra project meeting at Shoalhaven Council to discuss the potential for adapting this project in their local area.
- attending a presentation by Melbourne media held in Bankstown to educate Vietnamese restaurateurs how to save water in their kitchens

There were also international email enquiries from European countries requesting information about the program.

## ***2.1 Enhancing project delivery through engagement with business and government leaders***

A multi-faceted approach was taken with this project by seeking to engage different players in the project delivery, including

- Local councils. In some local government areas, such as Marrickville where there is a significant number of Vietnamese restaurants in the area, the project officer teamed up with the sustainable business officer within council and together they visited the restaurants in the area. These visits were followed up by visits from Quoc Tran the Vietnamese bilingual educator. It was believed that by engaging councils, there would be more uptake of the project. However it seemed that being associated with the council officers sometimes had a negative impact rather than a positive one
- The Thai project officer sought to engage the Thai Restaurant Association. A number of meetings were held with presidents and members of the association, however an opportunity to speak at an event of meetings was never provided. The Thai bilingual educator commented that the Thai community is somewhat more fragmented than the Chinese community. There may be groups or collectives of people, such as those from North Thailand, or South Thailand, but these groups are not particularly well organized and do not have a unified public voice. This situation complicated engagement with the Thai community on a more general public scale.
- The Stage 1 Chinese project steering committee was kept informed of activities and events. This group of people included representatives of the Chinese Restaurant Association.

## ***2.4 Engaging relevant Asian style cooking restaurant owners and staff***

The approach to engaging Asian style restaurants is the project built on the approach implemented for stage 1. It was a multi-faceted approach that included

- a survey of related businesses on online yellow pages
- liaison with local government officers, some of whom were able to provide a database of businesses for their local area
- a database of all Thai restaurants in Sydney was available online from the Thai Restaurants Association.
- information and meetings provided by government agencies such as Sydney Water and DECCW, particularly about large businesses such as retail centres and clubs
- focussing restaurant visits to specific geographic areas that were known to have high proportion of restaurants, for example Newtown for Thai, Cabramatta for Vietnamese.
- referrals from waterless wok suppliers.

Occasionally restaurants will contact the educators themselves. Referrals from other people are more common now as the project is growing. Referrals may come from

- suppliers seeking business
- Suppliers and plumbers who are helping restaurants with renovations
- friends or other businesses who have already installed stoves
- clubs and centre management (eg RSL or shopping centres).

Bilingual educators were promoted as the point of contact for restaurateurs.

Using available lists, referrals and contacts the bilingual educators would contact businesses individually (either by phone or in person) to inform them about the project. There was no preset structure for contacting individual businesses and each educator approached the issue in their own way. Importantly, bilingual educators tried to visit restaurants at times when they were not busy, either before or after lunch. It is important to be considerate of the business operations and requirements, especially for smaller restaurants where the owner may also be the chef.

Educators would request to speak with the owner or manager about the project. If the owner/manager was unavailable, a brochure and DVD would be left with the staff, though it was difficult to ascertain to what extent this information was actually passed on. If the manager was available and interested, the educators would discuss the 'waterless wok' rebate project and water conservation in general. These initial visits or phone conversations would last from 20 – 45 mins. A few weeks later, the educator would contact the business again to determine if they were interested in the project. Potentially a time consuming process, educators may have to visit or call a restaurant 3-4 times so they can talk to the owner.

If restaurateurs were interested in participating in the project, the educators would arrange to visit the restaurant. The educator would explain how the project worked and the responsibilities of the participant and ECC. The steps of the process were provided in writing in English and Chinese. They would then be provided with a list of suppliers and asked to provide the ECC with a quote. On receiving the quote the educator would revisit and an agreement was signed.

Once an agreement was signed an NPC engineer would visit the restaurant to determine the number and placement of the water meters. When the meters had been installed the NPC would revisit to attach a data logger to record the water used for 14 days before and 14 days after the waterless wok stove was installed. This time for data logging was twice the time period for Stage 1. The educators would supply the restaurateur with a table (in English and Chinese) to be completed by the kitchen staff to record the time the stoves were turned on and off each day. This information was required to determine the number of litres saved per hour and day by installing a waterless wok stove.

556 Asian style restaurants were contacted during the project timeframe. This includes 185 Chinese, 233 Thai, and 138 Vietnamese.



## 2.5 Providing financial support to encourage uptake of water conservation technology

As with earlier stages of this project, a rebate is provided for restaurants to install the 'waterless wok'. Restaurateurs were offered a rebate of \$1,000 for each burner which for most restaurants was \$2000 for each waterless wok stove that would be installed. There are a number of conditions placed on this financial support including:

- be replacing traditional stove (not establishing in new restaurant or expanding the business)
- the old traditional stove had to be sent for dismantling at a metal recyclers and the receipt provided to the ECC as proof
- willingness to have a metre installed and have its data logged for 14 days prior and after installation of the waterless wok stove.

To further assist with upfront costs of installing the waterless work, a loan of \$2,000 was offered with a 12 months interest free period.

In total 105 restaurants received funding to install waterless woks, with 3 of these receiving the additional loan. Of these restaurants 47 are Chinese, 41 are Thai and 17 are Vietnamese. From these restaurants a total of 162 'waterless woks' were installed. Most commonly, 2 burner stoves were replaced. Table 1 lists restaurants that received funding, amount of funding received, if additional loan was taken and any issues with data collection.

Table 1: Details of restaurants provided funding to install waterless woks

Restaurant name	Date installed	No of stoves	No of burners	Total subsidy \$ provided	Notes re data collection
Ah Yuen Chinese Seafood	18/07/2009	2	5	5000	
Arun Thai	4/02/2009	1	2	3000	
Asian and Thai Restaurant	5/11/2008	1	3	3000	
Asian Takeaway Rockdale	9/09/2008	1	2	2000	
Auburn RSL Club	26/07/2008	3	6	6000	
Bananapalm	26/06/2008	1	2	2000	
Bankstown Sports Club	30/11/2009	4	10	10000*	
Bau Truong Cabramatta	29/06/2007	1	3	3000	
Bau Truong Canley Heights	14/04/2008	2	4	4000	
BBQ King	5/02/2008	2	2	4000	
Billy Kwong	4/12/2009	1	2	2000	
Cao Thang Viet/Chinese Restaurant	10/07/2008	2	6	6000	
Capital Thai	8/06/2009	2	4	4000	
Chat Thai Haymarket	4/06/2009	1	3	3000	
Chat Thai Manly	4/06/2009	1	3	3000	
Chedi Thai	9/06/2009	1	3	3000	
Chef Hong Kong	27/11/2009	1	4	3000	
Chen's Noodles/ Leichhardt Market Town Shopping Centre	10/06/2009	2	4	4000	

China Dish	25/02/2009	1	3	3000	
Choys Restaurant	30/03/2009	1	2	2000	
City Noodle Café	19/03/2008	3	6	4000	
Colour of Love	26/06/2009	1	3	3000	
Cookie Thai Restaurant	21/06/2009	1	2	2000	
Daily Kitchen Chinese Takeaway	5/07/2009	2	5	5000	
Diem Viet	26/06/2009	1	3	3000	
Evergreen Chinese Restaurant	13/11/2008	2	5	5000	
Gail (Baan Bua)Thai Restaurant	30/03/2009	1	2	2000	
Gia Hoi	9/09/2008	1	2	2000	Measurements before available but logger and meter thrown out during installation, use similar rest Tre Viet
Golden Unicorn	13/06/2009	4	7	7000	
Happy Inn	14/04/2008	5	8 (2x1, 3x2)	8000	
Hokka Hokka		2	4	4000	
Jasmine Rice Thai	28/11/2007	1	3	3000	
JJ Takeaway Chinese	5/01/2009	1	2	2000	
Johnney's catering	25/02/2009	1	3	3000	
Kingsgrove RSL Club	12/10/2008	1	2	2000	
Koba Restaurant	16/07/2009	1	2	2000*	
Kuk's Thai Restaurant	24/01/2009	1	2	2000	
Lam's Chinese Asian Food	11/06/2009	2	4	4000	
Lao Fu Quing	1/09/2008	1	2	2000	Unable to attach meter result extrapolated
Laska Express	18/10/2008	1	2	2000	
Lee's Malaysian	15/12/2008 and 5/4/09	3	6	6000	
Little Thailand Thai Restaurant		1	2	2000	
Longrain	1/09/2008	1	2	2000	
Love of Eden	22/07/2009	1	2	2000*	
Macquarie University 1.Lees Asian Food Court	26/09/2008	3	6	6000	
Macquarie University 2.Thai Kiosk	26/09/2008	2	4	4000	
Minh Hai BBQ P/L	16/07/2009	1	2	2000	Remeasuring
Mix'N'Toss (Now named <i>Drunken Geisha</i> )	14/07/2008	1	2	2000	
Mr Koh Excellent Chinese	16/11/2007	2	5	5000	
Ngoc-An	13/08/2008	2	5	5000	
Nobel Terrace Chinese Restaurant	1/12/2008	1	2	2000	
Noodle King Bondi Beach	23/09/2009	2	4	2000*	
Open Thai (Malay	25/02/2009	1	2	2000	
Orchid Garden	1/07/2008	2	4	4000	
Orient Express Noodle Bar	21/01/2010	2	2	4000	
Pad Thai Five Dollar	19/06/2008	1	3	3000	

Pai-Tong	8/04/2008	2	5	4000	
Peacock Gardens Restaurant	27/12/2007	2	6	6000	
Pho Minh	25/02/2009	1	3	3000	Not measured
Pho Viet	2/06/2009	1	2	2000	
Phouong Vietnamese	26/03/2009	1	3	3000	
Pimarn	17/12/2007	1	3	3000	
Red Lantern	14/01/2008	1	3	3000	
Saffron Thai, Brooklyn Hotel	4/12/2008	1	3	3000	
Sambal Malaysian restaurant	10/07/2009	3	6	6000*	
Sensational Thai	3/03/2008	1	2	2000	
Simply Noodle	30/01/2008	2	4	4000	
Singapore & Malaysian Temeresk	29/06/2009	2	4	4000	
South Rooty Hill Takeaway	10/12/2008	1	2	0	Not measured as measuring was too slow so based on Wok'n'Roll W'gong and no subsidy
Spice market	25/08/2007	1	2	4000/loan \$2000 repaid	
St Marys Band Club	14/04/2008	2	4	4000	
Star Wokstation	29/05/2008	1	2	4000/loan \$2000 repaid	
Stir Crazy Noodle Bar	3/07/2009	3	6	6000	
Sun Ming Coffee Lounge & Rest	5/01/2009	2	5	5000	
Sun Ming Coffee Lounge & Rest	7/04/2009	3	6	5000	
Sushi Street	25/02/2009	1	1	1000	
Tansala Thai	12/09/2008	1	2	3000	
Thai Carnation	20/03/2008	2	4	2000	
Thai First Time Restaurant	27/04/09	1	2	2000	
Thai Foon Restaurant (Nth Syd)	14/05/09	1	3	3000	
Thai Foon(Darling Harbour)	18/09/2009	1	3	3000*	
Thai Garden House	4/11/2008	2	5	5000	It was impossible to put in a meter as the plumbing was all embedded in the wall.
Thai Jumpa	12/06/2009	1	2	2000	
Thai Kanteen	5/09/2007	1	3	3000	
Thai Passion	27/03/2009	1	2	2000	
Thai Princess	20/03/2008	1	3	3000	
Thai Riffic	17/12/2008	1	3	3000	
Thai Rim Nam Restaurant	20/11/2008	1	2	2000	
Thai Terrific	27/11/2008	3	5	5000	
Thai Tha Hai	16/06/2008	1	3	5000/loan \$2000 repaid	
Thai Times 9	8/8/09/2009	1	2	2000	
The Best Thai	22/07/2008	2	4	4000	
The Old Siam Thai	25/03/2008	2	4	2000	
Thim Thai Restaurant	25/06/2008	1	2	2000	
Thip Tong	31/03/2009	1	2	2000	

Thu Thuy Restaurant	30/03/2009	1	2	2000	
Tra Mi	10/12/2008	1	2	2000	
Trans	13/06/2007	1	2	2000	
Tre Viet	20/02/2008	1	2	2000	
Tung Tong Roong Thai	12/12/2008	1	2	2000	
West's Leagues Club	24/06/2009	2	4	4000 **	Not measured so based on St Mary's Band Club's results. Rebate paid by Wollongong City Council
Wok n Roll	26/02/2008	2	5	5000	
Wok n Roll (Wollongong)	20/04/2009	1	2	2000	
Yai Thai	21/06/2009	1	3	3000	
Zilver	9/06/2008	3	6	6000	
		161		324000	

Note that funding for stoves marked with \* were sourced from repayments made on stove business loans. In SWARP round 1 we gave out loans worth \$23,800 and were repaid \$23,800. In this SWARP round we lent \$6000 and were repaid \$6000. Remaining funds from these repaid stove business loans that were not used to subsidise stoves were used to fund awards and celebration events.

Note that funding for stove marked with \*\* was sourced from Wollongong City Council.

Note that from the total funding of \$324,000 listed above, \$312,900 was funded directly from the SWARP 3 budget component.

## ***2.6 Measuring and monitoring water savings achieved through conversions***

The National Project Consultants (NPC) were employed as technical support to measure and monitor water saving achieved through conversions to the 'waterless wok'. NPC were responsible for

- developing waterless wok stove specifications and assessing suppliers stoves
- making site visits to assess restaurant kitchens for appropriateness and to assess where metres would go
- affixing datalogger
- collecting at least 14 days of consecutive water use data from restaurants
- measuring and reporting on individual restaurant water savings.

Water saving data produced by NPC is discussed in more detail in Section 3.1 of this report and the disc containing the individual restaurant reports.

In addition to the initial measurements, there was also a 12 month review undertaken of more than 30% of the restaurants. The bilingual educators revisited the restaurants and went through the following process to collect data:

1. Contact the restaurant on the list
2. Visit the restaurant with a digital camera
3. Photograph the stove/s and meter/s
4. If they could read the meter then record the date and the measurement

5. Before leaving the restaurant the educator explained that they needed to return in 14 days to reread the meter as required by the funding from the NSW government
6. They returned to the restaurant in 14 days to again read the meter and record the date and the second reading.

As there was no additional funding for this component of the project, bilingual educators were not able to receive training in reading and interpreting water monitors. This issue was raised by the project coordinator with DECCW. This had some negative impact on data outcomes which is discussed in more detail in Section 3.1.

## ***2.7 Supporting technological innovation and market transformation***

Over the life of this project there has been ongoing change in the market for waterless wok stoves. At the beginning of the project there were 3 companies supplying the 'waterless wok' stove. 2 of these suppliers closed but another 3 came on board. These were well known brands including B&S, Goldstein, Luus, Delta and Wok888, who only sell waterless woks.

## ***2.8 Evaluating the project***

Project evaluation includes a range of interconnected strategies to assess the project's appropriateness and effectiveness, including:

- monitoring and projecting water savings
- reflecting on project processes through ongoing dialogue between project coordinator, bilingual environmental educators and restaurant staff and management
- recording informal feedback from participating restaurants
- interviewing the project team, including project coordinator and bilingual environmental educators
- surveying participating restaurateurs about the education and rebate project – mid term (2008) and at the end of the project (2009)

An independent evaluator was engaged to develop evaluation tools. As the evaluator was not bilingual, bilingual educators (Thai, Chinese and Vietnamese) were employed to assist with data collection with the participant surveys conducted via telephone.

Results of project evaluation are incorporated into Section 3 of this report.

### 3. Project Outcomes

#### 3.1 Water Conservation Outcomes

The SWARP project had significant water conservation outcomes. In total, the project has saved an estimated 91,058 kL per annum of Sydney water. On average, restaurants reduced their water consumption by 78% and save 2.7 kL per day as per figures below

▪ Averaged Water Saving per Restaurant per Day (kL/Day)	2.7
▪ Averaged Water Saving per Restaurant per Annum (kL/Annum)	929
▪ Averaged Percentage Saved per Restaurant (%)	78
▪ Total Number of Wok Stoves replaced	147
▪ Average Number of Stoves Replaced per Restaurant	1.5

There were 6 restaurants that were not able to have their water savings measured. These restaurants are identified in Table 1. Data for these restaurants has been extrapolated from similar restaurants and the estimated water savings is 15,845 KL a day, which is 5,621.06. This increases the total estimated water savings to 96.679 per annum.

There are also 5 instances where data provided by NPC is not the same as data collected by the project coordinator. For these restaurants, NPC has underestimated the number of stoves that were replaced in the restaurants. It is unclear if this is a simple typographical error, or if there is not complete measurements. For example for BBQ King, NPC provide water savings data for 1 wok stove though 2 stoves were actually replaced. It is unclear if the figure of 3823 kL/annum is for one stove or two stove. No changes were made to NPC data to ensure the integrity of this independent data collection, however if amendments and data extrapolated to include additional stoves this would increase estimated water savings. The 5 restaurants where data is not consistent are BBQ King (2 not 1), The Best Thai (2 not 1), The Asian & Thai Restaurant (Mandarin Centre), Golden Unicorn Chinese Restaurant and Noodle King Bondi Beach.

Three restaurants reporting the highest amount of water saved (kL per annum) were Sizzling Court Bankstown: 4944.4kL (94%), Sun Ming Parramatta: 4702.1kL (91%) and Golden Unicorn Chinese Restaurant: 4578.4 kL.(98%).

Restaurants reporting the lowest amount of water saved were Loving Eden: -10.2kL (-22%), Jasmine Rice: 3kL (2%), JJ Takeaway: 5.5kL (21%) and 1<sup>st</sup> Time Thai: 6.2kL (25%). These were the only four restaurants that saved under 10kL per annum.

There is no clear explanation for the relatively low water savings from these restaurants, nor the one incidence of a negative reading (ie an increase in water consumption). It should be noted that in a few instances leaks were detected due to poor plumbing after the new waterless wok stove had been connected. This was not necessarily reported to the

ECC but reported to the supplier and plumber. In these instances it was too late to restart the data logging once the leak was fixed. This may account for some of the low readings received from NPC data. NPC were unaware of this issue.

When considering the average percentage of water saved per annum by restaurants, there were only 3 restaurants that saved under 20% (Loving Eden, Jasmine Rice and Pai Tong) and there were 35 restaurants that saved 90% or over. The highest percentage water saving per annum recorded by a restaurant was the Daily Kitchen Chinese Restaurant which saved 99%. The average percentage saved by restaurants was 78%.

When analysing the water consumption data, some key differences can be noted between restaurants that service different cuisine types and the type of restaurant.

In regards to cuisine type it can be shown that in general Chinese restaurants will tend to save more water than Thai, Vietnamese or Asian restaurants. As shown in Table 2, Chinese restaurants saved per annum an average of 86%, compared to 73-77% for other cuisine types. The average kL per annum for Chinese restaurants was 1,643 compared to 1129 for Asian restaurants, 682 for Vietnamese restaurants and 437 for Thai restaurants.

Table 2: Water saving data by cuisine type.

	Chinese	Thai	Vietnamese	Asian*
Number of restaurants	24	39	11	24
% of all participants	24%	40%	11%	24%
Averaged Water Saving per Restaurant per Annum (kL/Annum)	1,643	437	682	1,129
Averaged Percentage Saved per Restaurant (%)	86%	73%	76%	77%

\* NPC provided data that identified some restaurants as 'Asian restaurants'. 'Asian restaurants' are those restaurants that are not clearly considered to be Chinese, Thai or Vietnamese. Some of these Asian Restaurants are Japanese or Korean. The majority of the Asian restaurants are owned by Chinese people and the cuisine is predominately Chinese.

It is suggested that a major reason for this difference in water consumption and reduction is the cooking style for different cuisines. In Chinese restaurants, the majority of meals are cooked via stir fry, which requires short bouts of extreme temperature. In Thai restaurants, a common meal is curry which requires less intense heat. Similarly in Vietnamese restaurants who will often serve pho and other soup based meals.

Another variable to be considered when analysing water saving data is the type of restaurant, which is whether it is a stand alone, in a food court or a club/pub/casino. Table 3 shows that restaurants located in clubs/pubs/casinos will on average save the most water compared to other restaurant types. These restaurants saved per annum an average of 2052 kL compared to 1068kL for food court restaurants and 787 kL for stand alone restaurants.

Table 3: Water saving data by restaurant type.

	Stand Alone	Food Court	Club/Pub/Casino
Number of restaurants	73	18	7
% of all participants	74%	18%	7%
Averaged Water Saving per Restaurant	787	1068	2052

per Annum (kL/Annum)			
Averaged Percentage Saved per Restaurant (%)	75%	83%	93%

Food courts and Club/Pub/Casinos are often open for much longer hours than stand alone restaurants and have a larger number of potential customers on site at all times of the day.

### **12 month review of restaurant water conservation**

Thirty seven restaurants were visited after 12 months. As predicted by the project coordinator, over 50% of the meters were unable to be read. However the ECC has photographs of the waterless wok stoves still in use in all of these restaurants.

The 12 month review data shows no consistency in the water use results. Some of the restaurants increased their water use and others halved the water used by the stoves. Restaurateurs reported that the businesses have not changed greatly in the number of customers, the hours the restaurants are open or the hours the stoves are in use although there has been a slight downturn in business due to reduced economic activity generally across the sector. As stated to DECCW staff, the project coordinator believes that the costs involved in conducting a 12 month water monitoring review outweigh potential benefits. The costs associated with water meters, monitoring and educators time to investigate are not rewarded with quality data.



## 3.2 Education and Communications Outcomes

A range of complimentary education and communication strategies were effectively implemented to achieve project objectives of

- promoting the economic and environmental benefits of a reduction in water use to Asian style cooking restaurant owners and staff
- providing information on what actions can be taken to reduce water use in kitchens
- explaining the opportunity to achieve an estimated 50% reduction in annual water use of the kitchen by purchasing and installing a 'waterless' wok stove.

The evaluation surveys provided valuable information on the effectiveness of different engagement strategies, specifically the effectiveness of publications, bilingual educators and media.

### Publications

Feedback on Thai, Chinese and Vietnamese publications were generally positive with the majority of respondents accessing material and finding it informative and helpful.

#### Chinese

Half of respondents accessed the promotional material. 7 had read the brochure; with 3 respondents noting that it was 'very informative', 2 reporting that it was informative, and two suggesting it was 'good enough'. Two respondents mentioned that they had seen the DVD in Chinese and commented "*it's useful, Face to face talk is better*". 2 had not read any promotional material. One respondent said they had '*No time to read*' and another noted that '*everything was arranged by the management, the restaurant themselves did not know about the brochure and DVD*'

#### Thai

Almost all respondents (except 2) had read the brochure and all but one found it useful. His comment was: "*The supplier gave me Elsa's name (ECC) she visited and gave me a brochure. The brochure wasn't that helpful. But I hadn't thought about water savings.*" The DVD was only provided in English, and respondents were asked if it would have made a difference if the DVD was available in Thai. 9 respondents agreed that that they would prefer to have a Thai DVD, '*it would be better*', '*more clear*', '*of course, it's easier*'.

#### Vietnamese

Majority (8 of 11) respondents had read the brochure, most found it useful although one owner and one manager suggested the brochure needed more detail on aspects of the wok, including how to change it. One respondent reported that 'the brochure was clear, informative and useful'. Two respondents had watched the DVD, both thought it would have been more helpful if it had been in Vietnamese with one owner commenting: "*the DVD is short and does not have many details about the method of using the stove. We need more information of the stove in details*".

## Benefits of engaging qualified bilingual environmental educators

Evaluation survey data shows that bilingual environmental educators were effective in promoting the economic and environmental benefits of a reduction in water use to Asian style cooking restaurant owners and staff and providing information on actions that could be taken to reduce water use in kitchens

Almost all survey respondents reported that they had been contacted by a bilingual environmental educator about the program. The bilingual educators knowledge of water conservation and the waterless wok program was rated highly, with the majority of respondents rating educators as good, very good and excellent (across all language groups).

### Rating of bilingual educators program knowledge

Bilingual educator	No comment	1 poor	2 average	3 good	4 Very good	5 excellent
Chinese	4				2	3
Vietnamese				3	3	1
Thai	2		2	9	5	6
			2	11	10	10

For Chinese educators: The majority of respondents described their interactions in a positive fashion, noted good interactions, educators were very good and helpful, their knowledge was good.

For Thai educator : Respondents described their interactions with the educators in a positive fashion, ranging from 'good' and 'not bad' to 'impressive', 'excellent' and 'wonderful'. She was commended for being 'very nice', 'very easy going' and 'great explaining and friendly'. One owner said: *"Her knowledge was good, when she couldn't answer a question she put me in touch with Helen who was helpful."* There was some difference in ratings between the mid term and final evaluation, with the Thai educator rating more highly in the final evaluation.

For Vietnamese educators: No specific descriptions of the educators were provided from respondents. There was some difference in the responses between the mid term and final evaluation. In the final evaluation 3 respondents said they were not contacted by bilingual educators. One respondent said *"There was no one who came to the restaurant to promote this waterless wok project. Maybe we are not as important as other restaurants in the area"*. Another respondent report that she was aware of a meeting at Food World restaurant but said her restaurant was not invited.

Interestingly, the Vietnamese educator reflected that Vietnamese restaurant staff generally seemed a bit apprehensive about being approached by the bilingual educator. *"Most of Vietnamese restaurants, bit quiet, bit worried, they don't believe it, bit scary. Some try to refuse it, say they will think about it, take papers and think about it. Some try to avoid it, by saying boss is not in, they can't make the decision or anything"*

Respondents from all language groups identified a preference for working with bilingual educators, though some of them were able to communicate in English.

- For the respondents from the Chinese community, 3 (out of 5) identified a clear preference for involving bilingual educators and communicating in Chinese, as '*Chinese is easier to understand*'. 2 reported that there was no difference for them between Chinese and English.
- For respondents from the Thai community, almost half of the respondents (10) identified a clear preference for involving bilingual educators and communicating in Thai, as they can't understand or not good with English (3); hard to understand terminology, take longer to understand misunderstand (4); they prefer Thai (2). 11 respondents said that they spoke English, 1 commented that although he spoke English it was good to speak in Thai with the educator.
- In the Vietnamese community more respondents commented that they spoke English (6). 3 expressed a preference for speaking in Vietnamese and preferred if the educator was bilingual and 1 respondent did not speak English.

The bilingual educators reflected positively on their role in the project, though they identified a number of potential challenges to consider for future phases or similar projects.

- It is important to consider the amount of time educators spend visiting and contacting restaurants. Often educators would visit/contact them 3-4 times before they could sign an agreement. After an agreement had been signed they spent more time negotiating and assisting restaurants. This is a time-consuming and ongoing process. This should be appropriately costed in the project budget.
- It is important to try to see the owner or the boss. Passing information to staff is not an effective way to communicate as it is difficult to know if they receive the information. Ideally, a face-to-face meeting is better than talking on the phone as it is easier to convey messages.
- Sometimes restaurants thought that the educators were trying to 'sell something'. Once they learnt that they were not selling something, rather that they were offering assistance to save money, businesses were generally more responsive.
- Educators were sometimes put in a difficult situation of having to fix problems between the owners and stove suppliers. If owners were not happy and were not getting any response from suppliers then they would contact the bilingual educators. Even though it is not their role, they became negotiators or 'meat in the sandwich'.

The project coordinator reflected that the effectiveness of bilingual educators was related to their high level of skill and knowledge. For some bilingual speakers who were new to environmental education, it was challenging to do this role effectively. Although they put a lot of energy into their tasks, there may have been some educators that did not promote water conservation as much as the wok rebate. This role is challenging in that it requires 'cold calling' business which is difficult for some personality types. "You need a particular type of bilingual environmental educator with a kind of determination to do this type of work."

## Using media effectively

There was significantly more uptake of the waterless wok story in Chinese media than Vietnamese or Thai media. The Chinese media reported on the Awards Ceremony/Launch held in 2007 and the Awards Ceremony held in 2009.

The project officer and bilingual educator suggested a number of possible explanations for this difference

- the Chinese community is well organised and have a number of Chinese newspapers and are therefore more inclined to have media reports on events such as this.
- The involvement of the Chinese steering committee was influential. Members of this committee had media contacts and were able to recommend an approach that would gain the most support from the business community. It was difficult to enlist the advice of leaders of the Vietnamese and Thai communities which meant it was not possible to set up a steering committee for this project.
- The events held for the Thai and Vietnamese communities were not appropriately targeted and marketed.

Through the project evaluation, some Thai restaurant participants suggested that it would be useful to increase promotion of the project particularly through Thai media such as Thai Magazine. One respondent reported:

*"I got the info from the Net, the program is not very well publicised. It should be publicised through the Restaurants Association, through Council and through the wok suppliers. There is a Thai Restaurants Association but not everyone is a member. You need to reach out to small restaurants."*

The project officer reported that there had been attempts to engage the Thai media but with limited uptake. She was informed that she would have to purchase advertising for the story to be printed. One story on the Thai Awards ceremony published in Thai Oz newspaper.

Evaluation research suggests that complementary strategies of events, supporting media and trained bilingual educators were effective in informing participants about the project. While bilingual educators were the main way that restaurateurs found out about the project (18 respondents) in a number of different ways including:

- friends/other businesses (3)
- internet (2)
- suppliers when they were looking to renovate or replace stoves (2)
- TV and later received a letter about the program (1)
- radio and contacted the ECC (1)
- Darling Harbour exhibition (1)
- a letter from the ECC and then attended a meeting about the project (1)
- club management (1).

Informal feedback from the restaurateurs that attended the Awards presentation indicates that the award and stickers were well received. Those that could not attend have had their awards and stickers delivered by a member of staff.

## **Learning about water conservation**

Through evaluation research it is evident that project participants are aware of water conservation issues within their businesses.

### **Ideas about water conservation**

Respondents were asked if they could identify other ways to save water in their restaurants (other than the waterless wok stove). The majority of respondents who took up the subsidy also identified water conservation techniques they were using. These included:

- Using a trigger nozzle/squirt gun that turns off when not in use (2)
- Using a dishwasher, having it full when using, rather than washing by hand (3)
- Turning off taps when not in use (5)
- Using a bucket of water to clean vegetables (1)
- defrost food overnight (3)
- Not using water to defrost meat, but defrosting it gradually (1)
- Reusing water used for washing vegetables to water the plants (2)
- Reminding staff to save water (5)
- Reduce flushing from tap

Generally respondents couldn't identify any impediments to saving water with a number commenting that they don't use a lot of water generally. The only comments were from owners who cited design problems with the restaurant that impeded water saving and the cost of capital purchase of other more water efficient equipment. One respondent noted "Some people ignore to saving water because they think it's not concern their job.

Through their ongoing relationships with restaurant owners and staff, the bilingual educators reflected on different aspects of sustainable business practices.

- Many restaurants understand the concept of water conservation and seem to care about water use.
- Some owners will do it to show support because water is a very important resource.
- The majority of restaurateurs have been in Sydney for a while (at least 10 year) and know that water is important.
- Restaurant owners are concerned about water use, particularly where there is a cost associated. Many owners said that they have to constantly remind chefs to turn off taps. When they change to waterless wok stoves they don't have to do that and it makes it easier for staff and management.
- Being involved in this environmental project sometimes encourages restaurants to do other positive environmental behaviour, eg turning lights off and other energy conservation steps.

### **3.3 Technological innovation and market transformation outcomes**

#### **Uptake of technology**

Evaluation research clearly identifies factors influencing restaurateurs' to change to waterless wok stoves, including:

These included

- Saving water (14)
- Saving money (8)
- Needed to upgrade/replace old stove/refurbishing kitchen (7)
- Rebate /subsidy was an incentive (3)
- Decision of the club management (1)
- Save the world (1)

Note that evaluation respondents may have listed more than one reason. This information is consistent across all language groups.

Comments included:

*"I think it is a good idea to save water. I have worked in a number of big and small restaurants and I am amazed by the bad practices in some of them. Water saving practices are important and chefs and cooks need to be trained in how to save water and energy."*

*"The campaign has made me think about water saving in the restaurant. For example, when we refurbished the bathrooms we put in dual flush toilets. Also when I get a new glass machine and ice machine I'll be looking for products that are water saving."*

The restaurants that did not replace their stoves cited the following reasons:

- It's expensive (6)
- Owner not interested/doesn't accept (3)
- Stoves still in very good condition, so no need to change (2)
- had just bought a new wok (2)
- will consider joining in the future
- the lease contract with the landlord is not secure
- they were busy moving to a new premises
- We don't have time for installation
- Economy is not good
- It's new I'm not sure it would be good or not good.
- Already saving water

The bilingual educators suggested that financial insecurity was the major reason that people were not installing waterless wok stoves.

- Some businesses were finalising rental agreements or lease agreements and are not sure of arrangements for next year. They asked if the project could wait a little longer.
- Stove is too expensive and their existing stove is working fine.
- Extra costs involved make it too expensive - One person (after signing agreement) found out that they needed to pay extra to change gas problem and it worked out cheaper not to change.

- Some of them still don't have to pay water bill, don't care about environment but don't pay bill so just leave it. If centre management willing to pay, don't mind changing.
- Current financial crisis is impacting on restaurant businesses and they are not willing to take financial risks or make investments at the moment. Restaurants want the ECC to wait a year or so until business is stronger. One restaurant signed an agreement to change stoves but then was not able to participate as their business is not as good as before. This external financial constraint is different to the first stage of the project.

## **Product use, enhancement and feedback to suppliers**

Feedback from the project evaluation suggests that restaurateurs identify both positive and negative features of the new waterless wok stoves.

Evaluation respondents (Chinese, Thai and Vietnamese chefs/owners who installed waterless woks) were asked to list good features of the waterless wok stove. The most commonly mentioned positive feature of the stoves was 'save water', followed by 'save money'.

Other notable positive features include:

- improved efficiency of stove (eg powerful burner is good (3), level of heat is good, more efficient heat due to conduction of ceramic inset)
- safety and convenience (eg easier to operate than traditional stove, easy to use, safer than traditional stove, safe, more convenient and more hygienic, low maintenance so far, no gas leaks)
- good design (eg design of water tap is good, timed water valve, looks modern and cleaner)
- staff encouraged to save water.

Evaluation respondents were also asked to identify some of the limitations of the waterless wok stoves. The most commonly mentioned limitations were that the stoves were hotter than traditional stoves and there were difficulties with dispersing heat evenly. Other issues mentioned included:

- difficult to clean stoves
- the poor quality of some of the parts (eg thermostat, swing arm/lever) which have had to be replaced or repaired within 12 months.
- Inconvenient design eg gap between burner and stove mouth, tray is too narrow to place food on, flipping tap too short, knee water tap too long, power switch inconveniently located.

Almost all problems identified were considered to be related to the design of the waterless wok itself. Although there were a number of features chefs were unhappy with, the majority seemed to consider these were things they could deal with. Only one Vietnamese owner/chef was very dissatisfied with the waterless wok and said:

*"I think saving water is important but I think the government could do more to ensure other industries like builders save water. We don't waste a lot of water, others waste more. I put a waterless work stove in 18 months ago but it hasn't saved me much money. Only about \$40 per month less. I wouldn't recommend it to other chefs.*

*The stove is not all the wonderful. If the chef is sensible they can save water just by turning off taps. I was trained here and I have learnt it is important not to waste water. But other chefs like Chinese they let the water run. Its important to train apprentices when they are at college the importance of not wasting water and how to do it in a restaurant.”*

The majority of respondents had purchased B&S stoves (10), followed by Goldstein (6) and Waterless Wok 888 (4). 1 was not reported. (Chat Thai)

The bilingual educators identified that the design and quality of the waterless wok stove is a major limitation for this program. Bilingual educators are regularly contacted by restaurants when they have had problems with their stoves. Educators are often called on to mediate between restaurants and suppliers even though this is not their job. On occasions, suppliers have not responded to requests for repairs from restaurateurs. The educators or project officer has then contacted the supplier on their behalf, on one serious occasion they had to bypass the supplier and deal directly with the head office to get a response. Restaurant owners can get annoyed with bilingual educators as they feel they are being sold a poor quality product, for example ‘why government pass this if it is not good’. This has real potential to impact on project uptake.

It is noted that at the 12 month review when educators revisited restaurants there were also complaints made about the wok stoves, usually in relation to the taps. The manufacturers were sent a copy of the complaints and were quick to visit the restaurants and fix the problems.

Bilingual educators did note that they felt their relationship with suppliers had improved since stage 1 and over the life of this project. There is better communication and it is easier to work with them. The project officer reported that she had a friendly relationship with suppliers though she would always report any negative feedback straight away. In some instances, where individual suppliers were not forthcoming with assistance, she has contacted the head office directly to solve problems. Though this liaison with suppliers is not officially part of her role, it has become important and necessarily to ensure the integrity of the program.

The project officer believed that suppliers are aware of these design issues and are trying to improve the product. For example, users of B&S wok stoves have had ongoing issues with the tap washers wearing out and leaking taps, so B&S redesigned their stove and replaced the swivel tap. All waterless wok stoves now have a laundry lever that runs for 15 seconds. Another supplier, Wok 888, have designed their own tap so they are not buying the one that comes from overseas. As the waterless wok is still in the early stages of its development there may be more improvements made to the product.

## **Market transformation**

The waterless wok stove is a new and innovative technology. Prior to commencing Stage 1 SWARP there was informal feedback from government departments indicating the Chinese restaurant community was not interested in the new technology, based on the limited uptake of the stove from Sydney Waters original project. The project’s positive water saving and environmental education outcomes, and uptake of technology disprove this notion. As demonstrated through project evaluation, effective education and communication strategies effectively inform and influence community attitudes in relation to environmentally sustainable technology.



During the life of this project, informal feedback suggests that the market for waterless woks is increasing and expanding:

- Suppliers continue to enhance existing products based on consumer feedback.
- Due to an expansion in the market, the price of stoves has dropped which is increasing uptake of the technology.
- New suppliers have entered the market and one supplier has closed the business, supplier list is provided at Appendix C.
- One new wok supplier, Wok 888, supplies only waterless wok technology. The company owner is committed to water conservation and providing his customers with the best product available.

During this project (Stage 3) suppliers independently took an active role in promoting SWARP and waterless wok technologies to Asian restaurants. A number of referrals to bilingual educators came from suppliers, who were either assisting restaurants to redo their kitchens or were actively promoting the waterless wok. Some suppliers produced their own promotional material on the waterless wok that included information on the SWARP rebate. One supplier from Melbourne organised a showcase event for the Vietnamese community to promote the waterless wok technology.

Project outcomes suggest that ensuring the availability of environmentally sustainable technology alone will not encourage product uptake and market transformation. New technologies should be supported by culturally and linguistically appropriate education and communication strategies. In programs where the government is supporting the uptake of new technology it is also important to have an open and ongoing dialogue between suppliers, consumers and funding bodies.

### **3.4 Reflections on project design**

Evaluation participants identified the most important or best part of the project as:

- They know they are saving water and it encourages staff to think about water saving (flow on effect) (4)
- saving water (3)
- saving money (2)
- The rebate came through easily (2)
- The educator and service from the ECC was helpful (2)
- Benefit to environment and society

Comments included:

*"I can visually see we are saving water. It makes you feel good. We can regulate how much we are saving. The stove absorbs the heat and we have a nice dry wok. We are fantastically happy with it. We won't be going back to the old stove any time soon."*

*"The program is good, the incentive is useful. It makes us think about water use in the kitchen. The educator talks to staff about water saving to drive home the point."*

*"It was good that they took away the old wok and that it had to be scrapped so it couldn't be used by anyone else."*

*"The whole program is good, every part is good."*

*“This program makes people think about their responsibility to save water for the world.”*

Feedback from the bilingual educators and the project officer identified a number of positive aspects of this program

- The project works well! - it is saving water and making lots of people aware about the importance and their ability to save water.
- Broader education components of the program raise peoples awareness and concern about the environment – owners, chefs and restaurant staff and more aware of water conservation and aware that their boss cares about it.
- There are many unmeasurable components of this project that have positive environmental impacts – for example people install the waterless wok stove and then when they open a new restaurant they put a waterless wok in (without rebate).
- Installing a waterless wok can encourage positive environmental change in other areas of the restaurant business. For example, workers do other things to save water, some restaurant owners make efforts to do other things about saving energy and leaves reminders for staff.
- Qualified skilled bilingual educators are an essential asset to this program.
- Bilingual educators are working in a team with the restaurants to care the environment. The restaurant staff and owners are generally friendly, and will give time to listen even if they are not participating in the project.

Evaluation participants were asked for any suggestions for how the program could be improved. There were three comments relating to improving the stove design but some were more specific to program design.

*“Yes, I think there should be opportunities for chefs to be trained /educated about water and energy saving. It wouldn’t be hard to get a group of chefs together every six months to share ideas and hear about new products. I think all new restaurants should have to install waterless woks. There should be regulations like there are for new building.”*

*“A lot of Thai people don’t understand what a subsidy is. Also if you can create a DVD that shows the wok in action that is the best way to get the message across. It works better than a brochure to show the features and how it works.”*

*“There needs to be more awareness and promotion of the stove. I was wary at first but now I’m happy we changed.”*

Only a few comments were recorded from Chinese or Vietnamese respondents, One respondent noted that the program is still expensive, another recommended that there should be “more education to restaurant worker.” One said: *“I think if the government provided more subsidy for the restaurants to install the waterless wok stove, it would have more Vietnamese restaurants take part in the project.”*

The project officer suggested amendments could be made to the program design for future stages

- the program should be linked to other related business water conservation programs. For example the new Sydney Water ‘spray rinse valve program’. Linking such programs would make sense for the Asian restaurants as well as improve the knowledge about efforts of this industry to conserve water.

- The water monitoring component of this project is expensive and time consuming. There were benefits to water monitoring in the initial phases of the project, however the need for continued monitoring needs to be seriously considered given the associated costs and benefits. For example, meters cost \$100 to buy and an average of \$260 to install and these are only used once. The logger of the data is worth at least \$250 each and the time for the technical expert to install the logger and collect and download the data is expensive. When revisited 12 months after installation the metres were jammed and impossible to read. Restaurants cannot use the meters themselves so it is a waste of resources.
- Attempts should be made to enlist those restaurants where there is the most potential for water conservation.

#### **4. Next steps**

The NSW ECC has approach Sydney Water to continue to fund this outstanding project. Included in the submission for continued funding was a provision that only those stoves that used large amounts of water be provided with a rebate. The suggested criteria for selecting the high water using restaurants included:

- The restaurant is open for lunch and dinner 6-7 days per week.
- The existing stove(s) must be water cooled and the water cooling mechanism must be operational and utilised by chefs when operating the stove(s).
- The existing stove(s) must have uncontrolled tap(s) installed on the rear splashback for cleaning and/or cooking use.
- The restaurant menu offers dishes that are predominantly prepared using the wok stove. This means menu items that are not prepared using a wok stove (curries, pho, etc) are kept to a minimum to ensure maximum wok stove utilisation.
- The old stove is sent to a metal recycler and the ECC receive a receipt proving that it has been recycled.