



Whole-school approaches to sustainability:

An international review of whole- school sustainability programs

Acknowledgements

There have been many people who have provided invaluable input, information and validation in this review. In particular we would like to gratefully acknowledge the significant and generous contributions of;

Heidi Mardon (NZ EnviroSchools Foundation: *EnviroSchools*),
Zeng Hongying (SEPA: *Green Schools* China),
Kim Ward (WESSA: *Eco-schools* South Africa),
Kate Campbell (Keep Scotland Beautiful: *Eco-schools* Scotland),
Evalotta Nyander (National Agency for Education: *Green School Award*, Sweden)
Jane Helps (An-Taisce: *Green-schools*, Ireland)

Also a special thank you needs to be extended to the following people for their advice and direction: Johannes Tschapka (Ministry of Education and Training, Austria), Michela Mayer (*INVALSI* and *ENSI*, Italy), Anna Birney (WWF, UK), Franz Rauch (Klagenfurt University, Austria), Attila Varga (OKI, Hungary), Eren Svensson (City of Goteborg District Administration, Sweden), Yuntao Zhao (WWF, China), Amy Higgs and Micheala Zint (University of Michigan, USA), Chrysanthi Kadji-Beltran (Pedagogical Institute of Cyprus), Janet Dymont (University of Tasmania, Australia).

We are very grateful to others in the ENSI Steering Committee; including Finn Morgensen, Syd Smith, Reiner Mathar, Guenther Pfaffenwimmer, Lea Houtsonen, Astrid Sandas, Dirk Coolsaet, Mariona Espinet, Maria Daskolia and Sun-Kyung Lee.

A special thank you goes to Syd Smith and Phil Smith for their comments and contributions in reviewing earlier drafts and Amy Leighton for proofreading. For translations of Mandarin materials we would like to warmly thank Xiaojiang Yu (Macquarie University, Australia).

Front Cover

Photo: 'Gully stomping': in *Hukanui EnviroSchool* gully restoration project. With permission: Heidi Mardon (National Coordinator, *EnviroSchools* NZ)

Design: Scott Henderson

Citation

Henderson, K and Tilbury, D. (2004) *Whole-School Approaches to Sustainability: An International Review of Sustainable School Programs*. Report Prepared by the Australian Research Institute in Education for Sustainability (ARIES) for The Department of the Environment and Heritage, Australian Government.

ISBN 1 86408 979 2



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Abbreviations

ACF	Australian Conservation Foundation
CEEC	Centre for Environmental Education and Communications (China)
CERI	Centre for Educational Research and Innovation (Europe)
DESD	UN Decade in Education for Sustainable Development
DET	Department of Education and Training, NSW
EE	Environmental Education
EFS	Education for Sustainability
ESD	Education for Sustainable Development
ENCAMS	Environmental Campaigns (UK)
ENSI	Environment and Schools Initiative (Europe)
FEE	Foundation for Environmental Education
GBP	Great British Pounds
LtL	Learning for Landscapes (UK)
NEEN	National Environmental Education Network
NGOs	Non-governmental Organisation
NZ	New Zealand
NZAAE	New Zealand Association for Environmental Education
NSW DEC	New South Wales Department of Environment and Conservation
NSW DET	New South Wales Department of Education and Training
OECD CERI	Organisation for Economic Co-operation and Development: Centre for Educational Research and Innovation
SD	Sustainable Development
SDEP	Sustainable Development Education Panel (UK)
SEED	Scottish Executive Education Department
SEPA	State Environmental Protection Administration (China)
SSI	Sustainable Schools initiative (Australia)
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
WESSA	Wildlife and Environment Society of South Africa
WWF	World Wide Fund for Nature

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Executive summary

There are a number of nationwide, whole-school initiatives developing around the world that reflect a range of innovative approaches to sustainability. This study was commissioned to review some of these programs and document their experiences, achievements and lessons learnt. The research has been undertaken by Macquarie University and commissioned by the Department of the Environment and Heritage, Australian Government, over a 4 month period from March-June, 2004.

This research study documents several whole-school sustainability initiatives, such as *Enviroschools*, New Zealand; *Green School Award*, Sweden; *Green School Project*, China; FEE *Eco-schools* and ENSI. In addition, this study has been informed by other initiatives such as *Learning through Landscapes*, *Learnsapes* and *Evergreen*.

The review reflects upon the experiences and learning of these programs in an attempt to answer the questions: *What does a sustainable school look like? Is there a formula for 'how' to run an effective and wide-reaching whole-school sustainability program? Is there evidence of effective methods to engage the community in these endeavours? How can a program be effective?* The study attempts to address these questions as well as identify critical success factors for whole-school sustainability programs.

A Sustainable School is the focus of learning in the community. It involves all stakeholders in contributing to but also gaining from a partnership approach to Education *for* Sustainability. A number of key features which characterise a Sustainable School are identified.

This study found that there is a lack of evaluation and research findings to address questions regarding implementation and effectiveness conclusively. However, there is some evidence which points to a number of critical success factors for whole-school sustainability programs. These include: alignment with national government priorities; access to expertise in EE and/or EFS during program design and implementation; significant and continuous funding; alignment with EFS approaches; investment in professional development of program team as well as school partners; creating links with EE initiatives already in operation; establishment of multi-stakeholder partnerships.

This study has documented through research as well as anecdotal evidence that whole-school approaches to sustainability have an important contribution to make in shifting our communities towards sustainability. National policy and initiatives which support these approaches at the state and local level enhance involvement as well as quality of practice. A number of recommendations, relating to research, program frameworks and practice, are made in this report.

1. Introduction

Education *for* Sustainability (EFS) calls for a rethink and reform of current practice in all sectors of society, including formal education. The whole-school sustainability initiatives operating across the globe highlight the possibilities for schools to innovate and showcase changes in practice for a better future. Some programs are documenting deep levels of change resulting in cultural shifts within schools and the wider community. Active participation and partnerships for sustainability are not only occurring within the school (involving teachers, pupils and management/administration) but between the school and the community (organisations, business/industry and governments)¹.

This research study documents several national initiatives, such as *Enviroschools*, New Zealand; *Green School Award*, Sweden; *Green Schools*, China; and the international programs of FEE *Eco-schools* and ENSI *Eco schools*. It is our intention to review these experiences of whole-school approaches to sustainability in order to address the following questions: What does a sustainable school look like? Is there a formula for 'how' to run an effective and wide-reaching whole-school sustainability program? Is there evidence of effective methods to engage the community in these endeavours? What are the critical success components of whole-school sustainability programs?

This report will not only document the models, focus and stages associated with the major school-based sustainability programs around the world, but also summarises these findings into a number of key themes which can inform whole-school sustainability programs. An examination into experiences, achievements and lessons learnt provides opportunities for all whole-school sustainability stakeholders to build upon the successes and chart new ways forward. In particular, this wealth of experience can inform the strategic development of the Sustainable Schools initiative in Australia.

1.1 Education for Sustainability

Traditional approaches to environmental education (EE) saw students as needing to have positive experiences within the environment and learn values to appreciate and protect the environment². At the same time it has been increasingly recognised through research and educational literature that awareness raising and experiences in nature is not sufficient in itself to lead towards a more sustainable future³. An extension of this interpretation of EE was to view the school as not only as training grounds for environmental management, but to showcase it as a site of good practice in EE for the community⁴.

This movement, combined with the International conferences, documents and commitments, such as the Rio Earth Summit (1992) and Agenda 21⁵; and the World Summit on Sustainable Development

'Education for Sustainable Development is an emerging but dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future' (UNESCO, 2002).

Whole-school approaches to sustainability are a recent phenomenon, emerging predominantly during the last decade. These approaches to school development have been in response to global calls for the need to reorient the management and practice of formal education, in order to contribute to addressing inequalities and to building a better world. (UNCED 1992), (UNESCO 2002).

ACF: released a TELA Paper in 2001 on 'Education for Sustainability: reorientating Australian schools for a sustainable future'. This document promotes a shift in educational thinking and practice in Australia which reflects the sustainability agenda. This involves being based on inter-disciplinary curricula, outcomes oriented teaching strategies and improving student's problem-solving skills (Fien 2001).

This review aims to capture the wide ranging international experiences in whole-school programs to serve the following objectives:

- a) to inform the ongoing development of the Australian Sustainable Schools initiative through reflecting upon experience and lessons learnt;
- b) to provide information which may assist in positioning the Australian Sustainable Schools initiative within an international context; and
- c) to enable a more focused use of resources in the development of the Australian Sustainable Schools initiative.

Box 1: Understanding EFS

- Focus on the future and ability to create a sustainable future
- Building capacity for change and improved quality of life
- Less emphasis on awareness-raising and behaviour changes
- More emphasis on lifestyle choices
- Developing skills and knowledge for socially critical citizens to deal with complex issues
- More focus on social, structural and institutional change (more than personal change)
- More focus on changing mental models

(Tilbury 2004)

¹ Mardon, H (pers.comm 27 April 2004), Sweden National Agency for Education (2001), FEE International (2004)

² Tilbury, Coleman & Garlick (2004)

³ Fien & Tilbury (2002), Tilbury, Coleman & Garlick (2004)

⁴ Hart, 1997

⁵ Documents, such as Agenda 21 (the blueprint for sustainable development) arose from the Rio Earth Summit (1992)

WSSD: reflected on the key lessons that have been learnt about education for sustainable development (ESD) over the decade since Rio, this includes that: 'ESD is an emerging but dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future' (UNESCO, 2002:5).

Learning spaces: Sustainability approaches promote the shifting of learning away from the classroom, towards using the community as a learning site. This sees the 'use of the school as a learning resource for the community, and the community as a learning resource for the school' (Smith, 2004:2).

Pedagogy: 'The teaching and learning strategies promoted in EFS include student-centred approaches that link strongly to participation because they involve student choice, power sharing within the learning environment and exploration of relevant issues.' (Wilson-Hill 2003: 7).

Partnerships: 'Nurturing effective education for sustainable development will frequently require cross-departmental, cross-sectoral or cross-organisational engagement.' (SDEP 2003:4).

Participation: 'Education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making' (UNESCO 2002:4).

Sharing of learnings: The sharing of 'learning experiences can accelerate the process of change towards sustainable development'. (Tilbury 2004:4)

The **NSW Sustainable Schools** pilot program, which derives many of its ideas from Sweden's *Green School Award* and FEE *Eco-schools*, was first piloted in August 2002. It is a collaborative initiative involving NSW Department of Education and Training (DET) and NSW Department of Environment and Conservation (DEC). The program was established in response to 'Environmental Education Policy for Schools' (NSW DET, 2001) which commits schools to design and implement their own environmental management plan. (Smith, 2003)

The Sustainable Schools pilot program in **Victoria** also started in 2002. This program is run collaboratively between Gould League, CERES and two NGOs and builds upon previous experiences in programs such as 'WasteWise', 'Waterwise' and 'Energy Wise' (Armstrong & Grant 2004).

(WSSD) in Johannesburg (2002)⁶ began to promote the need to reorientate the role of education within the sustainability agenda. This shift called into question the dominant approach of educating 'about' the environment and instead reflected the need for educating 'for' sustainability. The latter, seeks to engage people in critical reflection of current lifestyles and actions and to be able to make informed decisions and changes towards a more sustainable world⁷.

The goal of sustainability has redefined the role of schools and their relationship with the community. The focus has shifted beyond 'what to teach students' and 'how they are behaving' to seeing schools as a focal point where children, adults and the community interact and learn together.

EFS differs from traditional approaches to EE in that it focuses sharply on more complex social issues, such as the links between environmental quality, human equality, human rights and peace and their underpinning politics. This requires citizens to have skills in critical enquiry and systemic thinking to explore the complexity and implications of sustainability⁸. This new educational approach also requires a new pedagogy which sees learners develop skills and competencies for partnerships, participation and action. This shift has had implications for how to conceptualise and approach issues such as: school governance, pedagogical approaches, curriculum, extra-curricula activities, resource management, school grounds and community partnerships.

This review of whole-school approaches to sustainability captures over 10 years of experience around the world of pushing the boundaries of how schools, education and learning are perceived. Some programs have reflected good practice in EE, whilst others are beginning to reflect innovation through content and process aligned with EFS. Insights into these approaches, experiences and learnings will therefore provide valuable lessons for the development of the State-led *Sustainable Schools Initiatives* in Australia.

1.2 The Australian Context

The Sustainable Schools initiative is in its early stages of development in Australia, with New South Wales and Victoria receiving initial funding for program trials in 2002. These pilot programs have run their first cycle and are currently being evaluated, with results expected by the end of 2004.

During this time interest in the program by the other States and Territories has grown substantially and now most States are involved in designing (i.e. Tasmania and Queensland) or planning stages (i.e. Western Australia and South Australia). All Australian States and Territories have also agreed to participate in the development of a national program facilitated through the National Environmental Education Network (NEEN)⁹.

Developments in the Australian Sustainable Schools network now see all stakeholders at a pivotal stage, in which communication and

⁶ UNESCO (2002)

⁷ Fien & Tilbury (2002), IUCN CEC (2003)

⁸ Huckle & Sterling (1996), Fien (2001), Sterling (2001) & Tilbury et al (2004)

⁹ Department of the Environment and Heritage (2004)

sharing of knowledge and experiences will play a critical role in informing their work. Sustainable School coordinators can benefit not only from the sharing of experiences of NSW and Victoria programs but also from reviewing the long-standing programs operating around the globe.

This review aims to identify the ‘what’, ‘how’ and ‘why’ of other programs’ development and implementation, through a specific line of inquiry seeking out program frameworks, management, achievements and learnings. The intention is that this review will inform the development of Sustainable Schools initiative in Australia.

1.3 This Report

This document is divided into the following sections: overview, findings, implications and recommendations:

The *overview* section will introduce the origins of thinking and practice to whole-school sustainability initiatives and also provide a brief introduction to each of the programs forming the part of the review.

The *research findings* aim to compare and contrast the components of the programs responding to the research framework of inquiry. This is further supported by the *Whole-school sustainability program table* (see Appendix 1) which highlights the program’s key features and provides readers with a quick reference guide for easy comparison.

The *implications* chapter illustrates the key themes and learnings which emerged as a result of the *findings* of this review. The *recommendations* section provides a summary of ways forward identified through the research for *Sustainable Schools Initiative* in Australia.

The text featured within the page margins, serves to either expand upon key points addressed in the main text or to provide details, evidence and quotes to support the findings.

1.3.1 What this research includes

This research is based upon international and national programs which adopt **whole-school approaches to sustainability** in schools.

It is not the intention of this research to review all programs that educate *for* sustainability or that have a sustainability component in schools. Instead the focus of the study is on major programs that promote whole-school approaches to sustainability at kindergarten, primary and/or secondary school levels.

1.3.2 What this research excludes

This inquiry is based on a review of documented evidence and an analysis of program documentation. It does not undertake an evaluation or assessment of these programs. Interviews and focus group workshops were also beyond the scope of this review.

In addition, the research has excluded any program which focuses solely on one sustainability issue, such as the greening of school grounds or the management of resources in the schools (i.e. litter campaigns). It is also beyond the scope of this research to review examples of whole-school initiatives generated by a single school, independent of a national or regional program.

Tasmania is currently considering how the Sustainable Schools initiative could assist with delivering the recent ‘Essential learnings Framework’ upon which State curricula is based.

Queensland held a stakeholder planning meeting in May 2004 to scope the potential of the program to meeting needs in the State.

Northern Territory, South Australia and Western Australia are also exploring the value and potential of this program and are currently in planning or grant writing stages.

The ‘*Whole-school Sustainability Program Table*’ (in Appendix 1) captures the key categories of the whole-school programs featured in this review. The categories are framed by the research inquiry (as described in the *Framework of Inquiry*) and include descriptions of *program focus, management and implementation*.

Whole-school approaches: to sustainability incorporate all elements of school life such as: school governance, pedagogical approaches, curriculum, resource management, school operations and grounds. Whole-school approaches can imply links and/or partnerships with the local community.

1.3.3 Framework of inquiry

The inquiry is guided by key categories which have framed the research process and assisted in identifying relevant research questions. These categories have also assisted with structuring presentation of findings.

The key categories are:

- **program funding and management;**
- **operational frameworks** (i.e. policies, national strategies, curriculum requirements); links between the programs and existing school **curriculum**;
- the role and nature of **partnerships** amongst supporting organisations; and **community-school** partnerships;
- **program focus and principles** including environmental, social and curriculum issues;
- use and nature of **incentives** and **accreditation/certification** systems;
- methods for program **implementation and support**;
- methods for school **monitoring and reporting** outcomes;
- results of program **evaluations** as well as short and long term **achievements**.

1.3.4 Research process and limitations

This review is not an exhaustive study of all programs that exist throughout the world, but instead captures a range of programs which reflect variations in focus and methodology. This review is not based on empirical research, but program documentation sourced through a variety of means. The aim is to provide a review of international programs according to the *framework of inquiry*; hence it has not evaluated the impact of the selected programs.

This research has been undertaken through a systematic review of literature, which includes data on official and related program websites, journals, theses, evaluation, promotional material, national policies, frameworks, guidelines and curriculum materials. Correspondence has also occurred with international program coordinators and related stakeholders in order to source further information, documentation and evaluations. In many cases these international contacts were able to validate data through responding to our specific program questions¹⁰.

The research has been limited by the degree to which programs have documented their experiences in print and what is available for public access. Most programs have extensive information available electronically and/or in hardcopy, but in most cases this is aimed for a school audience and is limited to program details such as registration, process and certification. Few programs have, for instance, conducted evaluations or research into the achievements

The study was commissioned by the Department of the Environment and Heritage, Australian Government and undertaken by the Australian Research Institute in Education for Sustainability (ARIES) in 2004. The key categories addressed by this study were defined by the terms of reference of the research.

Another limitation to what has been included in this study has been the researchers' inability to utilise documents presented in non-English languages.

Therefore the majority of materials sourced have been documented in English (which includes data from both English and non-English speaking countries).

However, a number of China Green School documents and electronic materials were translated into English.

¹⁰ See 'acknowledgments' section

and impacts of programs, however, Sweden¹¹, New Zealand¹², Ireland¹³ and Cyprus¹⁴ are exceptions to this rule.

2. Whole-school Approaches to Sustainability

2.1 Roots of whole-school approaches to sustainability

The formal education sector has been a focus for change towards sustainability since the 1970s and 1980s. As mentioned previously, this focus has been driven by authoritative international documents and commitments, such as the Tbilisi Declaration¹⁵, Agenda 21¹⁶, the Dakar Framework for Action¹⁷, and Local Agenda 21, which have advocated for educational reform or reorientation to reflect the new sustainability agenda.

Evidence of schools reflecting these new roles in society began to emerge in the United Kingdom, North America and Europe as examples. This saw programs such as the UK's 'Learning through Landscapes' (LtL), Canada's *Evergreen*, and ENSI's 'Learnsapes' focusing on 'greening' school grounds and maximising the potential of these spaces for quality educational and environmental experiences.

The LtL program was set up as a national school grounds charity in 1990¹⁸. In its infancy, LtL started as a Local Council 'parks and gardens' initiative and then extended its program focus to encompass schools and their grounds. As a result, LtL began a series of school ground improvement programs, now known as *Sustainable School Grounds*¹⁹, to enhance educational and environmental interactions. *Learnsapes*, an initiative originally started in NSW, and now also operating as part of ENSI, grew from the LtL model and uses a 'learning place' to incorporate the built environment, the physical landscape and the social environment as an 'educational environment' within schools and the local community.

At the same time, ENSI's work was increasingly informing and influencing approaches toward school development through the provision of research into 'quality criteria', professional development and international exchanges. *Eco-schools* under the auspices *Keep Britain Tidy* (later becoming FEEE²⁰) also made a presence in European schools in early 1990s and led the thrust towards whole-school approaches.

Over the next ten years whole-school programs extended across continents and evolved towards a more inclusive and holistic focus. Whole-school programs differed in their approaches as they moved from issues concerning school improvement to instead focus on school development. In this way, programs aimed to support schools

The UN report *Agenda 21* from the Rio Earth Summit in 1992, devoted Chapter 36 to the role of environmental education in working towards to sustainable development (UNCED 1992).

Learning through Landscapes. All programs 'seek to promote and enhance the development, use and value of school grounds in diverse and innovative ways'. (LtL 2004)

LtL's major contributions have been: (LtL, 2004)

- a) raising standards
- b) emphasising the importance of good design
- c) environmental awareness
- d) increase in community use and
- e) health and sport.

The Learning for Landscapes: interim evaluation report 2003, found that 'the process of participative school grounds development can support students' learning and skills development, build students' self-confidence, and contribute to wider changes in the school' (LtL 2003:2)

Evergreen, Canada: A 'Learning Grounds' program which brings school communities together to transform typically barren school grounds into healthy, natural and creative 'outdoor classrooms'. These outdoor classrooms provide students with a healthy and safe place to play, learn and develop a genuine respect for nature and each other (Evergreen, 2000).

Learnsapes: 'aims to promote redesigning of school grounds to permit school communities to interact with their environment and link their curriculum with their use of school grounds' (ENSI, 2003)

¹¹ National Agency for Education (2001)

¹² Mardon and Ritchie (2002)

¹³ O'Mahony and Fitzgerald (2001)

¹⁴ Kadji-Beltran (2000, 2001 & 2002)

¹⁵ A declaration promoting EE for environmental protection and the need for people's participation in the 'resolution of environmental problems'. UNESCO-UNEP, 1978:p3

¹⁶ UNCED1992

¹⁷ World Education Forum, Dakar, April 2000 also confirms that education is a fundamental human right and offers indispensable means for effective participation in the societies and economies of the 21st century affected by rapid globalization. (UNECE 2004:2)

¹⁸ LtL (2003)

¹⁹ LtL (2003)

²⁰ FEEE (Foundation for Environmental Education in Europe) has since become FEE (Foundation for Environmental Education) due to the inclusion of other continents in the program.

EFSS: has promoted a new role for schools which sees a reciprocal relationship developing, in which schools learn from the community and the community learns from schools (ENSI, 2004)

in tackling a range of complex and diverse sustainability issues in addition to school grounds, such as school governance, pedagogical approaches, resource consumption and curriculum issues. At the same time, it was evident that such complex issues needed the backing and support of the whole-school community, rather than being teacher-driven, in order to initiate and maintain the changes required.

The programs, such as the ones featured in this review, have achieved success in many areas, in particular, the resource management of schools (i.e. waste, water and energy reductions) and in raising environmental awareness of students and teachers. Other shifts have begun to emerge in the 'practice' and 'process' of taking action towards sustainability. For instance, changes to pedagogical approaches have begun to take place, in which the roles of teachers and students have been redefined towards more learner-centred approaches²¹. Changes are also evident in the ways schools conduct program related decision-making. Some examples have shown that schools have undertaken more participatory and democratic decision-making mechanisms which have engaged the whole-school community (i.e. from the governing board and school management/principals to include teachers, caretakers, parents and students).

2.2 Programs Featured

Refer to the 'Whole-school Sustainability Program Table' (appendix 1) for more information regarding each of these programs.

The programs featured in this review represent a range of programs operating around the world which adopt whole school approaches to sustainability, and include the OECD's *ENSI Eco schools*, the Foundation for Environmental Education's (FEE International) *Eco-schools* program, China's *Green School Project*, Sweden's *Green School Award* Program and New Zealand's *Enviroschools* program²².

ENSI *Eco schools* (1986-)

ENSI: is underpinned by a pedagogical approach of constructivism and the research approach of 'action research' and promotes a reorientation to student-centred learning and changes to student-community and school-community relationships (Mayer 2002, Smith 2004).

ENSI is an international government-based EE learning network under the umbrella of OECD's Centre for Educational Research and Innovation (CERI)²³. ENSI currently has 13 members, originating mainly from Europe, but includes Australia²⁴. Each country funds its own work, yet ENSI provides opportunities for member states to come together in formal settings and share practice and research in EE. One of ENSI's main projects relates to research and school development work in *Eco schools*²⁵.

ENSI supports educational developments that promote dynamic qualities, environmental understanding and active and participatory approaches to teaching and learning. (ENSI 2004)

The aim of the *Eco schools* project is to 'develop, test and publish methods of teaching and learning which define good practices of EE by setting up international school partnerships and conducting comparative studies in such areas as *Quality criteria for Eco School development*²⁶. The term 'quality criteria' is used to refer to the implicit and explicit criteria used to support *Eco Schools* in incorporating EE

²¹ Wilson-Hill (2003)

²² Other such as Learning for Landscapes, Evergreen and Learnscapes have been consulted and have to some extent informed some of the inquiry questions but do not form the focus of this study.

²³ This program is an initiative of the project 'Schooling for Tomorrow'

²⁴ 'Partner countries', such as Korea, NZ and the UK can also contribute to ENSI's work. ENSI (2004)

²⁵ Other ENSI projects relate to Learnscapes, Teacher Education, Mainstreaming EE in National Education Systems and Quality Criteria (OECD, 2002)

²⁶ ENSI (2004: unpublished)

and EFS as part of their school development²⁷. Through this work, ENSI aims to promote, share and build upon the experiences and practice of member countries and identify international standards or set of ‘quality criteria’²⁸.

At the same time, ENSI provides opportunities for reflection, communication and professional development through seminars, cultural exchanges, electronic forums and research publications for all stakeholders involved in whole-school approaches to sustainability²⁹.

FEE Eco-schools (1994-)

The FEE *Eco-school*³⁰ program currently represents the largest internationally coordinated whole-school EE program with 28 member nations and more than 10,000 schools participating³¹. Originally founded as a European program, it has since expanded to countries within Africa, Asia and South America³². FEE is a not-for-profit umbrella organisation which brings together national NGOs implementing programs for ‘environmental education, management and certification’³³. These NGOs work in close partnership with their national educational authorities and the FEE International Secretariat (currently based in Portugal).

Whilst the overall program is coordinated through a common framework at the international level, member nations have flexibility to tailor the programs to their needs. In general, participating schools undertake a seven step process to work towards Green Flag certification, although variations exist to the content and focus of these steps³⁴. Case examples of South Africa³⁵, UK³⁶ (England, Wales and Scotland) and Southern Ireland³⁷ will be explored in greater depth throughout this review, which will show that some are more aligned with sustainability than others.

Green Schools, China (1996-)

China’s *Green School Project* is an initiative of the Ministry of Education of China (MOE) and is funded by the State Environmental Protection Administration (SEPA). China’s *Green Schools Program*, which started in 1996, is based on the international concept of ISO 14000 and has been informed by the European ‘*Eco-schools*’. Since 2000, it has been run by the Centre for Environmental Education and Communications (CEECC) and their local networks³⁸.

The program’s key focus areas include whole-school environmental management and protection, EE curriculum and professional development, and greening of school grounds. Schools must

‘The Eco Schools programme is democratic and participatory and provides opportunities for young people to engage in school and community action to promote sustainability, to engage in and experience active citizenship’. (Scottish Executive 2004)

Underpinning the FEE international framework are the principles of Agenda 21, including the need for environmental awareness and improved students’ skills for active participation and decision-making. The three main themes for schools are ‘waste, water and energy’ (FEE International 2004a).

‘The program encourages schools to make use of its educational resources – both inside as well as outside schools – in favour of the environment, and to integrate environmental education into school curricula’ (Zeng, H pers.comm. 5 May, 2004).

The *Green School Project* focuses on the building of skills and knowledge for environmental management on school grounds and the wider environment.

²⁷ OECD (2004)

²⁸ Unpublished works of ENSI. OECD (2004)

²⁹ Mayer (2002), Smith (2004)

³⁰ The FEE national programs utilise a range of different names and do not necessarily use the term ‘eco-schools’

³¹ Figures are from the 2002/2003 academic year and are expected to increase to 12,000 (2003/2004)

³² FEE International (2004)

³³ FEE Eco-schools International Coordination (2004)

³⁴ Refer to appendix 1 *Whole-school Approaches to sustainability* for more details

³⁵ The Eco-Schools Programme was launched in South Africa in 2003 (WESSA 2004)

³⁶ The Eco-Schools Program was launched in the UK by ENCAMS in 1995. (FEE International Secretariat, 2004)

³⁷ Ireland’s Green-Schools is run by An Taisce - The National Trust for Ireland

³⁸ CEECC is an affiliated organisation operating for SEPA and has a network of 67 regional CEECCs across China.

undertake a series of steps before applying for Green School awards. Awards are categorised through a staged development process, starting at municipal, provincial and then national levels. To date, upwards of 15,000 schools have received one level of award as part of this program.

Green School Award, Sweden (1998-)

In 1998 the Swedish National Agency for Education, in collaboration with program partners, developed the *Green School Award* program under the ordinance of the Swedish Government³⁹. This program is underpinned by a range of 'award criteria' for schools to meet to work towards sustainable development⁴⁰. Participating schools must meet specified criteria conditions before applying for the *Green School Award* which is valid for three years. The Swedish National Agency for Education provides support to schools on a needs-basis⁴¹.

'A distinctive feature of a {Swedish} Green School is that children, pupils and staff are all involved as active participants in the development of a sustainable society.' (Nyander 2004)

'Students play an active clear and central part in the education. They are involved and have a genuine influence over their learning.' (Nyander, E. pers.comm.25 May 2004)

The *Green School Award* criteria aims to incorporate all aspects of school life, including; management, activities and teaching, occupational health and safety, physical welfare and the physical environment. The criteria was developed through a multi-disciplinary and participatory process and is based on the national curricula and syllabi⁴². The focus areas of the *Green School Award* can be summarised as: school life, consumption, democracy, ethical, aesthetic, cultural and health considerations⁴³.

However, as of May 2004, the 'award criteria' has been reviewed and an alternative set has recently received government approval⁴⁴. The new 'criteria' has been proposed, as a result of a change in focus from ecological sustainability towards a broader, process-orientated view encompassing ecological, economic and social dimensions. This shift aims to alleviate the obstacles experienced by schools and to increase the numbers of schools receiving the award⁴⁵. These changes (and the reasons behind them) will be explored in greater detail later in the review.

Enviroschools, New Zealand (2002-)

The *Enviroschools* concept was developed in Waikato in the 1990's (with three pilot schools) and it has since been extended into schools across New Zealand. The New Zealand Association for Environmental Education (NZAEE) managed the program from 2001-2003 until the establishment of the *Enviroschools Foundation*⁴⁶. Since then the role of the Foundation has been to provide support and oversee the strategic direction of the national program.

'Enviroschools: has been introduced as a programme that seeks to develop participatory practices in schools as a model for realising sustainability.' (Wilson-Hill 2003:8)

A review of the *Enviroschools* program document reveals a focus on creativity and critical thinking, futures thinking, worldviews and cultural perspectives and student decision-making.

³⁹ Sweden National Agency for Education (2001)

⁴⁰ Sweden National Agency for Education (2001)

⁴¹ Nyander (2004)

⁴² The criteria has been reviewed and amended in 2004 and the new model is expected to be launched this year. (Nyander, E pers. comm. 25 May 2004)

⁴³ Sweden National Agency for Education (2001a)

⁴⁴ Refer Environmental and educational outcomes section. Nyander, E. (pers.comm.25 May 2004)

⁴⁵ Nyander, E. (pers.comm.25 May 2004)

⁴⁶ Enviroschools Foundation (2003b)

Implementation is carried out on a regional basis, operating under the management of regional councils⁴⁷.

Under this leadership, *Enviroschools* Regional Coordinators support the program by offering two options for school involvement; 1) a three-year facilitated program, and/or 2) an award scheme for schools⁴⁸. Both options reflect whole-school approaches to sustainability built around the themes of; organisational principles, operational practices, physical surroundings and a living curriculum⁴⁹.

⁴⁷ Enviroschools Foundation (2003b)

⁴⁸ Enviroschools Foundation (2004)

⁴⁹ Enviroschools Foundation (2004)

3. Review of Findings

This section, which will document the findings of this study, is divided into three main parts: program framework, implementation and achievements.

3.1 Program Framework

Underpinning the programs reviewed are different program frameworks which inform and structure the experience of schools involved in these initiatives. The program frameworks capture the cultural context as well as national educational and environmental priorities. These frameworks provide insights into decisions relating to focus of the program, planning and implementation processes as well as possibilities for program development.

Box 2: Program Managers

China: environmental government authority (SEPA)

South Africa: environmental NGO (WESSA)

UK: National environmental charity (ENCAMS); and regional arms: *Keep Wales Tidy*, *Tidy Northern Ireland* and *Keep Scotland Beautiful*.

Ireland: Independent environmental NGO

New Zealand: Charitable trust. (*Enviroschools Foundation*)

Sweden: National Agency for Education

ENSI: International Secretariat (educational institution or authority from member states) ENSI manages the professional development and research component of *Eco schools*. The national education agencies manage the national eco school programs in their countries.

Box 3: Primary Program Funding Sources

China: a combination of government funds (environmental), corporate and overseas funds

South Africa: private corporation (*Nampak*)

UK: Environmental Trust fund (tax revenue) and national government funding.

Ireland: Environmental NGO (*An-Taise*)

Scotland: National Government Environment Department and Education Departments, private company and the Landfill Tax Credit Scheme

New Zealand: Private foundation (*Tindall Foundation*, community and environment focus) and grants from Ministry for the Environment

Sweden: National Agency for Education (Government)

ENSI: funded by national government agencies from member nations

3.1.1 Program funding and management

The programs featured in this review are based on differing management models and a variety of funding sources (refer Boxes 2 and 3), ranging from governments, private trusts, foundations to company sponsorships. A close look into these components of whole-school programs raises some issues relating to political support for the initiatives, program autonomy, budgets, timeframes and environmental or educational expertise. These issues will be explored in greater detail below.

Political support and program autonomy

A review of program documentation suggests that the success of school sustainability programs at a national level largely depends on the perceived relevance (to national priorities), applicability (opportunities for implementation) and flexibility (ability to adapt to changing circumstances) of the model.

In the case of Sweden, the national government gave priority to strengthening EE in the formal education sector as a major contribution to the country's goal of an ecological and sustainable society⁵⁰. The *Green School Award* was framed within this context and the National Agency for Education⁵¹ is assigned the task of managing, funding and evaluating the program. This agency is the central administrative authority for the Swedish public school system representing preschools through to adults⁵². As a result, the program has been closely aligned with the goals of the *Education Act*⁵³ and in particular to national EE curricula and syllabus⁵⁴.

The NZ *Enviroschools* program, on the other hand, operates under different circumstances. The program has moved from being owned by a regional council at its inception to now being run by an independent trust, the *Enviroschools Foundation*. *Enviroschools* receives funding for the national program coordination via private and

⁵⁰ Nyander (2004). Refer to *National links and indicators* section for further detail.

⁵¹ The role of the National Agency for Education in the Swedish education system is to 'define goals in order to administrate, to inform in order to influence and to review in order to improve'. (National Agency for Education, 2004)

⁵² Sweden National Agency for Education (2004)

⁵³ The *Swedish Education Act* stipulates that all school activity shall be carried out in accordance with fundamental democratic values and that everyone working in schools shall encourage respect for the intrinsic value of each person as well as for the environment we all share. (Nyander, 2004:1)

⁵⁴ Nyander (2004) Refer 'curriculum links' section for more detail

government grants, whilst regional councils provide funding for the program operation and support⁵⁵. This model of national management by a ‘charitable trust’ and government implementation at the regional level, assists in ensuring that *Enviroschools* remains locally appropriate and aligned with regional EE priorities and activities and yet remains independent of government agendas at the national level. As a result, the *Enviroschools Foundation* believes it is in a better position to develop equal partnerships as an independent body⁵⁶.

The South Africa *Eco-schools* is managed by WESSA (an environmental NGO) and receives program funding from the large packaging company, *Nampak*⁵⁷. WESSA is well placed to undertake the *Eco-school* program due to the amount of their resources and programs in EE already in operation in South Africa. The philanthropic relationship between WESSA and *Nampak* allows for a large degree of managerial autonomy and flexibility in all aspects of program development and implementation. However, in order to remain aligned and applicable to national EE goals, WESSA has partnered with the *South Africa Department of Education* to oversee its implementation⁵⁸.

A review of the management and funding structures of whole-school sustainability programs reveals the importance of political support and program autonomy. Political support, through partnerships⁵⁹ or links with national EE and sustainability priorities⁶⁰, can contribute to the relevance, effectiveness and longevity of whole-school programs. Programs which exercise a degree of autonomy and flexibility within their management model are in a good position to secure program partners outside the government system.

Budget and timeframes

Programs featured in this study are reliant on a number of variables and can be restricted by funding timeframes (i.e. NZ’s *Enviroschools*) or reliant on one main funding source (i.e. South Africa’s *Eco-schools*).

The NZ *Enviroschools Foundation* receives grants (of up to three-years duration) from the Tindall Foundation and the NZ Ministry for the Environment. After this time, the *Enviroschools Foundation* will need to reapply for grants or seek alternative funders. This situation of financial instability or lack of long-term investment, whilst not limited to the *Enviroschools* program, can potentially prove a significant obstacle to ongoing development and innovation of programs. The *Enviroschools* program has sought to alleviate this obstacle by attempting to embed the program’s implementation at the regional level. As a result, the *Enviroschools* program acts as a core part of the regional council EE officers’ workplan⁶¹ and sits within several of the regional policies and plans⁶².

On the other side of the globe, the UK *Eco-schools* program has seen significant financial support from a number of sources over the past

⁵⁵ *Enviroschools Foundation* (2004)

⁵⁶ Mardon, H (pers.comm. 27 April, 2004)

⁵⁷ WESSA (2004)

⁵⁸ WESSA (2004)

⁵⁹ See *Enviroschools, NZ & Eco-schools, South Africa*

⁶⁰ See *Green School Award, Sweden*.

⁶¹ In some instances, *Enviroschools* takes up to 30% of council officer’s workload

⁶² Mardon, H (pers. comm. 27 April 2004)

UK: The number of schools participating in the UK Eco-schools program dramatically increased in 2002-2003 school year from 2905 to 4977 school. (FEE International Secretariat, 2004)

Scotland: Since 2002, Keep Scotland Beautiful has employed three new staff members (a manager, information and administration officers), produced a video, launched a new Handbook and developed a school grants program (Keep Scotland Beautiful 2004:1).

few years to oversee the ongoing development of the programs. For instance, the UK *Eco-school* program receives £1 million (GBP) of funding from the SITA Environmental Trust⁶³. In 2002, Scotland's Eco-schools received an investment of funds from the Scottish Executives Education Department to facilitate continued programme development over a three year period⁶⁴. These funds resulted in a number of new initiatives, including new support staff, school implementation resources, professional development meetings and in-service training sessions for teachers⁶⁵. As a result, the UK Eco-school's profile has expanded and has recorded significant increases in the uptake of the program⁶⁶.

The amount, continuity and timeframes of a programs' funding can contribute to the role the program plays within its national context. Significant and continuous financial support can assist whole-school programs' strategic planning and focus on improving the support provided to schools (through resources, personnel and professional development) for more effective outcomes.

Environmental and educational expertise

A review of whole-school programs reveals that in most cases the managing organisation (and funders) rarely has a combination of both educational and environmental expertise. On paper most programs are underpinned by EE or EFS principles and processes, yet few are managed and/or funded by EE bodies. Instead they stem from either environmental (government authorities, NGOs and charities) or educational (government authorities and institutions) backgrounds. For example in broad terms, Sweden's *Green School Award* and ENSI's *Eco Schools* are managed by educational authorities, whilst China's *Green School Project*, Ireland's *Green Schools*, UK and South Africa's *Eco-schools* are managed by environmental bodies (governmental or NGOs) (refer Box 2 p).

An interesting exception is the NZ's *Enviroschools* program that brings together educational, environmental and indigenous expertise as part of the governing trust board and core management team that act in partnership to set the strategic direction of the program⁶⁷.

China's *Green School Project* does provide an interesting case example, which sees SEPA accessing funds from a wide variety of sources and being implemented at the ground level by an EE agency, the CEEC. The CEEC is the support organisation (situated under SEPA) and is responsible for environmental awareness, education and training⁶⁸. As a result, the program benefits from the input of both stakeholders. The CEEC has the local/provincial expertise in EE and experiences in the formal education sector and its links to SEPA, allows the program to act in accordance with the SEPA's national awareness and education plan. This relationship balances out the lack of educational expertise within SEPA.

⁶³ SITA redistributes taxes collected as part of the Landfill Tax Credit Scheme (LTCS) to environmental and community improvement projects.

⁶⁴ ENCAMS (2004)

⁶⁵ Campbell, K (pers.comm. 5 April, 2004)

⁶⁶ FEE International Secretariat (2004), Keep Scotland Beautiful (2004)

⁶⁷ EnviroSchools Foundation (2004),

⁶⁸ Zeng, H (pers.comm. 15 April, 2004)

Access to expertise in EE and EFS during program design, management and development, could be seen as critical to orientate whole-school programs towards integrative and transformative approaches to sustainability. However, most of the programs reviewed are managed by either educational authorities or environmental bodies. Some programs have attempted to address this limitation through developing partnerships with or links to EE/EFS authorities and organisations. To date, none of the evaluation reports have addressed this issue.

3.1.2 Program partnerships

Partnerships have increasingly being encouraged as a core channel to implement EFS effectively in schools⁶⁹. Partnerships can be on a number of levels, starting from ‘arm’s length, contract driven’ towards shared visions, innovation, knowledge and action for sustainability (refer Appendix 2).

A review of whole-school sustainability programs around the world reveals that partnerships are key components of program design and implementation and in many cases are seen as critical to the program’s success. Programs have formed partnerships with government authorities, specialised educational institutions (including higher education), NGOs, businesses, civil-society associations and individuals⁷⁰.

Variations exist in ‘what’ the partnership looks like, ‘why’ it was formed and ‘how’ it will play a role and is formalised within the program. There are a number of different types of partnerships featured within whole-school approaches to sustainability, for example, program-community-government partnerships (FEE *Eco-schools*) and school-community partnerships (see South Africa’s *Eco-schools* and NZ’s *Enviroschools*) and program-industry (see NZ’s *Enviroschools*).

A review of the documentation reveals that the motivation behind partnership building includes:

- increasing financial and technical support and expertise⁷¹;
- maintaining relevance and value adding to local needs and initiatives⁷²;
- assisting programs to align with government priorities and policies⁷³;
- avoiding duplication of resources, programs and personnel⁷⁴ and;
- sharing visions and decision-making within and outside schools;

Partnerships:

The international literature sees partnerships as vital to reorienting formal education towards sustainability (Hopkins and McKeown, 2002; UNESCO, 2002).

‘The sustainability agenda is influencing EE towards multi-stakeholder partnerships for change based on participation, ownership and commitment amongst stakeholders.’ (Tilbury, Coleman & Garlick 2004:26).

The recently adopted United Nations DESD locates partnerships at the core of its implementation plan. (UNESCO 2003).

⁶⁹ UNCED 1992, UNESCO 2002, Tilbury, Coleman & Garlick 2004

⁷⁰ *Enviroschools* Foundation (2004), FEE International Secretariat (2004b), ENCAMS (2004), China Green School Project (2004) and WESSA (2004)

⁷¹ FEE International (2004b)

⁷² WESSA (2004), *Enviroschools* (2004)

⁷³ WESSA (2004)

⁷⁴ *Enviroschools* Foundation (2004),

FEE Eco-Schools: counts on support from multi-sector partnerships to add value to the programme and enrich the resources available to schools. Public specialised institutions, non-governmental organisations, businesses, civil-society associations and individuals can all play important roles in providing technical, institutional and financial support to increase the programme's success, at school, regional, national or international level as appropriate'. (FEE International, 2004b).

Partnerships and added value: Under the terms of the partnership between the *Eco-Schools International Coordination* and *Climate Care*, a percentage of the payments will go to support the development of an international education and action programme on climate change for Eco-Schools. (FEE International Newsletter, May 2004:3)

FEE Eco-schools: links with public entities and authorities 'provides an excellent vehicle for dissemination of appropriate pedagogic resources, technologies or services which add value to the programme in supporting schools to achieve their objectives' (FEE International Secretariat, 2004a).

Scotland's Eco-schools: has also developed links with NGOs and other organisations to establish support networks for schools, particularly at the local level (Keep Scotland Beautiful, 2004).

Wales: 'This year will see an exciting new development for Eco-schools in Wales. We are forming 'consultancy' partnerships with expert groups who will be able to go to schools holding a Silver certificate, and work with the children to help them complete those final laps to the coveted European Green Flag' (Taylor, 2004).

China: the CEEC will host an 'International seminar on Green Schools in China and teenagers forum on environment' in Taizhou, July 29-31, 2004 for adults and children from FEE, ENSI, delegates from China and around the world to facilitate the exchange and multi-dimensional links between Green Schools (China) and similar programs worldwide. (Zeng, H. pers.comm. 15 April, 2004)

The FEE *Eco-schools* international coordination body seeks institutional partnerships which can value-add to the program and share a commitment to environmental responsibility and are able to support initiatives which foster environmental improvements, EFS and citizenship⁷⁵. At present, FEE *Eco-schools* operates via the support of the following institutional partners: United Nations Environment Programme (UNEP), Scottish Executive, North-south Centre of the Council of Europe and the European Commission⁷⁶.

The principles which underpin the implementation of FEE *Eco-schools* include a focus on participation, actions and links with local authorities, organisations, businesses, and pupils' families⁷⁷. In this regard, *Eco-schools* aim to provide a platform for school-based community development. In order to achieve these objectives FEE *Eco-schools* has placed a strong emphasis on the role of partnerships within member countries. The managing NGOs work in close collaboration with relevant public entities, such as Ministries of Education and Environment, as well as local/regional authorities⁷⁸. The partnership approach is aimed to increase the effectiveness and longevity of the program by ensuring the program is mainstreamed and compatible with national priorities and objectives in areas such as 'education, environment and citizenship'⁷⁹.

In 2002, FEE *Eco-schools* has been able to extend its reach worldwide by forming an international partnership with the UNEP⁸⁰. This partnership (bound by a Memorandum of Understanding) was formed in recognition of Eco-schools program being a preferred model of a global EE programme to help achieve sustainable development⁸¹. Using its regional reach, UNEP's role will be to identify partners for the implementation of the *Eco-schools* program across the world.

Assuring quality and learning for international best practice underpins the ENSI program. The ENSI partnership consists of university researchers (who specialise in EE), representatives from national agencies and coordinators of national programs. Their focus is on engaging in research inquiries to improve the quality of the *Eco School* experience and to provide professional development through the international exchange of teachers and head-teachers. Their recent OECD 'SEED' initiative, funded by the European Union, provides the platform for consolidating and reflecting on the importance of international partnerships to effectively deliver eco school outcomes.

China's *Green School Project* sees international links and partnerships as an opportunity to share experiences and to inform their program's development. They have maintained links with the similar programs of Taiwan and Hong Kong and participated in professional research exchanges with Sweden (Lund University)⁸². In July 2004, China's *Green School Project* stakeholders hosted an international forum on whole-school approaches to sustainability. The forum saw a number

⁷⁵ FEE International Secretariat (2004a)

⁷⁶ FEE International Secretariat (2004a)

⁷⁷ FEE International Secretariat (2004a)

⁷⁸ FEE International Secretariat (2004b)

⁷⁹ FEE International Secretariat (2004b)

⁸⁰ FEE International Secretariat (2004a)

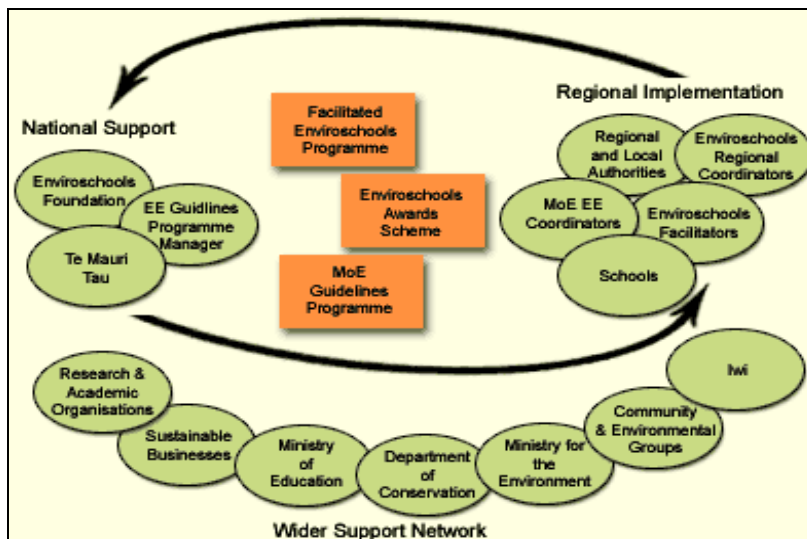
⁸¹ FEE International Secretariat (2004a)

⁸² CEEC (and *Green Schools*) and International Institute for Industrial Environmental Economics (IIIEE) at Lund University participate in a joint program; 'Young Masters Program in China'.

of key representatives from other programs across the world sharing their experiences and developing partnerships across the network.

From its inception *Enviroschools*, NZ has built up a strong network of partners and supporters ranging from regional/local councils, environmental NGO, EE centres and trusts, businesses and professional associations such as the NZAEE⁸³. Partnership approaches undertaken by *Enviroschools* indicates a complex yet strategic partnership framework, from school through to the national Foundation level (refer the partnership model below).

Enviroschools Partnership Model⁸⁴



As part of this partnership model, the NZ Ministry of Education's EE guidelines program (and associated professional development program) is an integral feature of the *Enviroschools* Program. The parallel development and collaboration between the two programs has strengthened the capacities of teachers and professionals to work effectively in EE in New Zealand⁸⁵. Teachers and school staff are supported to implement EE, through the combined assistance of government EE guidelines, professional development activities and the broad partnership network.

At the implementation level, all stakeholders (including the national coordinator, regional council, *Enviroschools* facilitator and school management) are required to consolidate this commitment by signing a Memorandum of Understanding (MoU) before commencing the program. The roles and responsibilities of all stakeholders are formalised in this document (refer Box 4). As a result, the MoU has identified the commitments required of partners to ensure an effective program, which sees them working together to achieve their goals and support the learning of every participant in the process.

Although the *Green School Award* model was initiated by the Sweden's National Agency for Education in cooperation with Swedish Environmental Protection Agency in 1998, external partnerships have been pivotal in the design of the program's criteria. This collaborative

NZ Partnerships:

Multi-stakeholder partnerships: 'Schools, Councils, Iwi and community groups working together to enrich EE work and supporting a school process that has wide community benefits' (Mardon and Ritchie 2002)

At the council level: notifies partner regional councils that 'the success of the *Enviroschools* Programme in your region and your schools relies on commitments, partnerships and making the Programme locally relevant.' (*Enviroschools* Foundation 2003).

With business: businesses which embrace SD have formed networks such as the NZ Business Council for SD. *Enviroschools* is developing links between businesses and the schools in the program. The aim is to develop mutually beneficial relationships where both partners share experiences, expertise, and ideas (*Enviroschools* Foundation, 2004).

Box 4. *Enviroschools* MoU Partnership Commitments include:

Schools: form an Envirogroup, maintain communication with facilitator, schedule professional development, develop long-term strategy for sustainable school, promote EE in curriculum, and collect evidence of change.

Facilitator: 3 year commitment to schools, support planning, implementation and evaluation of environmental learning and action, report to funding agencies.

Council: coordinate to ensure collaboration, networking and support between all stakeholders, employ facilitators, promote *Enviroschools* program

National Coordinator: provide facilitator training and support, communication with funding agencies, organise annual Hui, compile scrapbook, produce annual progress report.

(*Enviroschools* Foundation, 2004:8-10)

⁸³ Mardon and Ritchie (2002)

⁸⁴ *Enviroschools* (2004)

⁸⁵ Mardon, H (pers comm. 27 April, 2004)

Swedish Round Table participants:

Meeting 1: (Organisations)

KRAV-label for organic food, Swedish Standard Institute, Keep Sweden Tidy foundation, Swedish Society for Nature Conservation, youth organisations, WWF, The Natural Step, Agenda 21 coordinators, trade union for the students and different trade unions for teachers.

Meeting 2 (public authorities)

The Swedish Consumer Agency, The National Institute of Public Health, Swedish Work Environment Authority, Swedish Environmental Protection Agency, Swedish Energy Agency and the Swedish Association of Local Authorities (Nyander, E pers.comm 29 June, 2004).

Sweden Award Criteria Development: For example the Swedish Environmental Protection Agency developed the criteria area D, (physical environment), The Swedish Work Environment Authority developed the criteria area C1 (working environment), the National Institute of Public Health developed the criteria area C2 (health issues) and the University in Lund (Per Wickenberg) and Halmstad teacher training college (Harriet Axelsson) developed the criteria area B. (Nyander, E pers comm. 29 June, 2004).

Reform: In order to transform curriculum support systems, Fien (2001:2) suggests the need to give 'priority to teacher education reform...to infuse awareness and understanding of sustainability concepts and practices into initial pre-service and continuing in-service professional development' is essential (Fien, 2001: 2).

Research: The *Enviroschools* PhD research undertaken by Wilson-Hill revealed that teachers require skills in 'participatory teaching and learning approaches, such as action research, experiential and inquiry learning, the use of critical and reflective thinking and engagement in real issues and contexts related to children's lives' (Wilson-Hill 2003:ii).

approach involved a round table discussion with invited public authorities (i.e. Swedish Environmental Protection Agency) and education/environmental organisations (i.e. Halmstad and Lund University) to formulate criteria for program and surveying existing systems for environmental certification of schools in Sweden and overseas⁸⁶. Program partners, in this instance, were able to offer their expertise in developing specific sections of Award criteria. This approach in the development stage of the *Green School Award* has left a legacy of partnerships (formal and informal) between these stakeholders, most of whom continue work in some capacity with the program⁸⁷.

The recently proposed changes to the 'award criteria', has demonstrated the role and extension of these partnerships for shared decision-making. Program partners have had direct input into the 'criteria' revision process and participated in the design of the new criteria. For example, the criteria was evaluated by the Stockholm Teacher Training Institute through interviews with the National Agency for Education staff, teachers, principals, municipals bodies and three authorities (Swedish Environment Protection Agency, National Board of Health and Welfare and the Swedish Work Environment Authority)⁸⁸.

Anecdotal evidence from across the programs reviewed suggests that multi-stakeholder partnerships are key to effective implementation and sustainability to the initiative. Partnerships can assist in maintaining momentum, sharing responsibilities and spreading achievements and knowledge. They are also congruent with the concept of EFS. All programs reviewed saw the value of involving industry, community and government authorities in some capacity. Many consider partnership building as a critical success component of whole-school sustainability approaches.

3.1.3 Professional development

The professional development of teachers is a critical component to whole-school approaches to sustainability in order to develop and improve EE and EFS competencies⁸⁹. ENSI identifies teachers as core agents of change in the innovative and transformative educational processes promoted by EFS⁹⁰. However, some research indicates that there is still a bridge between theory and practice, and whilst teachers think that they undertaking EE or EFS, what they do in practice is not aligned with the participatory pedagogical approaches advocated by the literature⁹¹.

Professional development within the context of EFS can assist teachers by a) building upon EE knowledge, skills and competencies b) providing support and motivation to implement changes c) improving teaching and learning approaches and finally d) building capacities for institutional change.

Many of the programs featured in this review, carry out professional development initiatives as a component of their programs, but few

⁸⁶ Sweden Environmental Protection Agency (2001) Sweden National Agency for Education (2001)

⁸⁷ Sweden National Agency for Education (2001)

⁸⁸ Nyander, E (pers.comm. 25 May 2004)

⁸⁹ Fien (2001)

⁹⁰ OECD (1991)

⁹¹ Wilson-Hill (2003)

have documented these initiatives in any great detail (in reference to both content and process). The documentation available to this review, has found that the majority of professional development programs have focused on awareness-raising, skill and knowledge development and support of teachers.

For instance, teachers from China's *Green Schools* participate regularly in in-service EE training⁹². Since the inception of the FEE *Eco-schools*, it has seen over 20,000 teachers receive training in connection with the program⁹³. The German *Eco-schools* network ensures biannual teacher training seminars take place around the themes of 'Sustainable Development' and 'International Co-operation'⁹⁴.

During 1999-2001 the Swedish Government allocated 70 million SEK⁹⁵ to increase competencies in natural science, technology and environment among teachers, pre-school teachers and recreation instructors. As a result, the Swedish National Agency for Education has conducted professional development seminars for participating *Green School Award* schools with up to 300 pre-schools and schools attending during 1999 and 2003⁹⁶. Sweden's *Green School Award* program sees links to teacher training institutes as crucial to support program implementation⁹⁷. As a result of these seminars, a framework syllabus was developed for further teacher-training on the environment.

Professional development workshops are also an important feature of NZ's *Enviroschools* program. The program's facilitators attend two-day professional development workshops that explore the '*Enviroschools Kit*' through a range of participatory activities⁹⁸. Although *Enviroschools* conducts its own professional development program it also works closely with the Ministry of Education's *Environmental Education Professional Development Program*⁹⁹. In this regard, *Enviroschools* is able to support the implementation of the 'EE guidelines' by including it as a part of the '*Enviroschools Facilitator Training*' workshops. At the same time the Ministry's 'EE Guidelines Professional Development workshops' incorporates an *Enviroschools* component as part of its delivery¹⁰⁰.

Research into NZ's *Enviroschools* program recommended 'participatory teaching and learning strategies' be incorporated in on-going professional development programs for teachers and facilitators¹⁰¹. This area of need was identified in recognition of the *Enviroschools Kit* being insufficient to support the EE goal of power sharing for decision-making, without the support of skilled teachers and facilitators¹⁰².

Many teachers are keen to engage with EE and EFS and indeed already use the terminology. However, all of the programs reviewed explicitly recognised that few teachers have the knowledge and capacity to develop EE or EFS in schools. They

Sweden two-way dialogue: In 2000, the *Green School Award* program provided an opportunity for a two-way dialogue and skill development between stakeholders and the agency through hosting a series of seminars such as 'Environment in school, teacher training and further teacher training' (Nyander, 2004).

Specialist skills: *Enviroschools* Foundation now notes that the facilitators are now in a position where they are requiring specialist skills in how to facilitate the integration of Maori perspectives and how to deal with difficult circumstances in schools (Mardon, H pers.comm. 15 April, 2004)

NZ Research: *There is a need for professional development programmes to support teachers to overcome the limitation of current practices in schools' and to ensure 'that teachers and facilitators in Enviroschools are confident and capable of implementing the participatory strategies promoted in EE'* (Wilson-Hill, 2004:24).

Teacher Training recommendation for Cyprus:

'The Ministry of Education, (policy and decision makers) and the University of Cyprus, should provide ways of facilitating EE implementation, by preparing and motivating educators. Teacher competencies that support environmental education are necessary for successful implementation. (Kadji – Beltran 2002:8)

⁹² Zeng, H (pers.comm. 15 April, 2004)

⁹³ FEE International (2004b)

⁹⁴ FEE International (2004a)

⁹⁵ Swedish Kroner

⁹⁶ Based on 2003 figures. Nyander (pers. comm. 29 June, 2004)

⁹⁷ Sweden National Agency for Education (2001)

⁹⁸ *Enviroschools* Foundation (2004)

⁹⁹ *Enviroschools* Foundation (2004)

¹⁰⁰ Mardon, H (pers.comm. 27 April, 2004). *Enviroschools* Foundation (2004)

¹⁰¹ Wilson-Hill (2004)

¹⁰² Wilson-Hill (2004)

invest in professional development of teachers and see this as a critical component to whole-school approaches to sustainability. Anecdotal evidence suggests that professional development is mostly focussed on raising awareness and improving the EE knowledge of teachers. Increasingly programs are recognising the need to target the development of skills associated with participatory pedagogies - aligned with EFS.

3.1.4 International developments

Many of the programs featured in this review have evolved as a response to or have been informed by some of the international commitments and activities in sustainable development since the early 1990s.

FEE Eco-schools: claims that schools, governments and communities are able to ‘achieve and demonstrate pragmatic results relative to international commitments, such as on Education for Sustainable Development, Global Citizenship and Local Agenda 21’ (FEE International Coordination, 2004:3).

Agenda 21: Chapter 36 of Agenda 21, on Education, Awareness and Training states: ‘Education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making. Both formal and non-formal education are indispensable to sustainable development’ (UNCED, 1992).

For instance the FEE *Eco-schools* grew from some of the needs identified at the Rio Earth Summit in 1992, namely those promoted through the Agenda 21 document¹⁰³. This document promoted concerted local action aimed at solving global environmental problems, with education playing a significant role in achieving this goal. In response to this, FEE *Eco-schools* sees its role in contributing to Agenda 21 by offering opportunities for schools to link with their communities and work together to solve and prevent environmental problems at the local level¹⁰⁴.

Sweden’s *Green School Award* is based on *Local Agenda 21* goals and has more recently been informed by *Agenda 21 for Education sector in the Baltic Sea Region*, known as the ‘Haga Declaration’¹⁰⁵. This document outlines the role of EFS approaches to contribute to economic, social and environmental development¹⁰⁶ and has contributed to the changes reflected in Sweden’s new *Green School Award* ‘criteria’¹⁰⁷. This integrative framework aims at setting up an educational culture towards more ‘integrative, process-oriented and dynamic modes, emphasising the importance of critical thinking, social learning and the democratic process’¹⁰⁸.

The UN Economic Commission for Europe: (UNECE) Ministers for the Environment have recently mobilised to work with UNESCO and the Council of Europe and develop a regional strategy for education for sustainable development. This multi-stakeholder dialogue aims to serve as the foundation for the regional implementation of the UN DESD. (UNECE 2004:5)

The United Nations passed a resolution in December 2002 to adopt the *Decade of Education for Sustainable Development* (2005 – 2014) as endorsed by the Johannesburg, WSSD and was adopted at the UN General Assembly 57th Session in 2002.

Learning to change our world: was held in Goteborg, Sweden from 4-8 May, 2004. This saw the collaboration of 350 selected participants (incl. teachers, educators, and students, and scholars, researchers, and education officials) from 80 countries engage in a dialogue on how to shape learning and education for sustainable development in practice (Sweden NCESD, 2004).

Other recent developments such as the *Johannesburg Plan of Implementation* from the WSSD (2002), the Goteborg Declaration¹⁰⁹ and Draft UNECE Strategy for Education for Sustainable Development¹¹⁰ and the *UN Decade in Education for Sustainable Development* (DESD)¹¹¹ have continued to inform, reinforce and influence the EFS agenda. Evidence suggests that these developments have, in turn, begun to infiltrate into whole-school sustainability programs.

For instance, FEE *Eco-schools* utilises its monthly online newsletters to continually inform and update its members of FEE news as well as new or upcoming initiatives relating to EE. The most recent newsletter showed evidence of a shift towards more EFS orientated articles (i.e. reflected in the content and language used). In particular, articles were written regarding the ‘Goteborg Consultation’ in May

¹⁰³ FEE International Secretariat (2004b)

¹⁰⁴ FEE International Secretariat (2004b)

¹⁰⁵ This action plan was adopted by the Ministers of Education in the Baltic Sea region in January, 2002. Baltic 21 (2002) Nyander (2004)

¹⁰⁶ Baltic 21 (2002)

¹⁰⁷ Nyander, E (pers.comm.25 May, 2004)

¹⁰⁸ Nyander (2004: 1)

¹⁰⁹ Sweden National Committee on Education for Sustainable Development, 2004

¹¹⁰ UNECE (2004)

¹¹¹ UNESCO (2003)

2004: *Learning to Change Our World* and the *United Nations Decade in Education for Sustainable Development*¹¹².

There is evidence to suggest that international developments and trends in EE have influenced whole-school initiatives recently, aligning them more closely to EFS approaches. Some programs are in the process of reorienting their frameworks to address this sustainability focus more strongly.

3.1.5 National links and indicators

Several of the programs in this study demonstrate strong links to the environment, sustainability priorities and/or national government education policies. In some cases programs have aligned themselves with national initiatives¹¹³ and in others the program has been recognised as a tool for implementation of national environmental and sustainability goals¹¹⁴. These examples show that whole-school approaches to sustainability can support or complement existing work in this field. By linking programs to national initiatives, many have experienced a raised profile and significant increases in school registrations and participation¹¹⁵.

The Welsh *Eco-schools* (FEE) program saw significant increases in the uptake of the program nationwide over a period of four years (refer Appendix 5). One contributing factor was the Welsh School Curriculum Authority's (ACCAC) document on personal and social education in 2000, which presented *Eco-Schools* as an appropriate model to reflect 'citizenship in action'¹¹⁶. At the same time, the Welsh Assembly Government was promoting 'education' as one area which would contribute to their commitment to 'Sustainable Development'¹¹⁷.

Scotland's *Eco-schools* program for instance, has received significant recognition as a tool for EFS at the national level. The program has been made a performance indicator for the Scottish Executive Education Department's (SEED) *National Priorities in Education*¹¹⁸. In this regard, participating schools can document local actions undertaken as part of the *Eco-schools* program which contribute to the National Priority: Values and Citizenship¹¹⁹. Furthermore as part of the SEED 'School Improvement Framework' education authorities have been asked to report on 'the number/percentage of primary and secondary schools within their area that are participating in the *Eco-schools* Award or a similar accredited environmental award'¹²⁰. This support at the national and regional level has resulted in increased interest and involvement in the program since 2002, in recognition of how whole-school action can improve the environment¹²¹. Some

Influencing policy: *Eco-schools* can be seen as an effective, practical and participatory way of implementing policies towards environment, sustainable development, community development and global education, among others, at national and regional levels, and indeed, also at school level (FEE International, 2004a).

Wales: The Waste Awareness Wales Campaign adopted *Eco-Schools* in 2003, as the preferred education programme to highlight 'Waste Minimisation' (Taylor, 2004).

Eco-schools has a strong reciprocal partnership with the national 'Healthy Schools' scheme, launched in 2001. Students are able to work on the 'Healthy Living' aspects of *Ecoschools* (Taylor, 2004).

Scotland: "The Scottish Executive is committed to sustainable development and implementing action...Promoting sustainable development in schools is an important element of our approach, and we have identified it as a key area within our school improvement framework. The *Eco-Schools* programme provides an ideal means for us to encourage schools to take this forward, through practical local action as well as an understanding of the wider issues." Mr Jack McConnell, first Minister for Scotland. (FEE *Eco-Schools* International Coordination 2004)

Croatia: 'Values and citizenship are key aspects of our National Priorities in Education, which all local authorities are developing. Achieving *Eco School* status is one way of demonstrating practical involvement in promoting citizenship and environmental awareness.'

Croatian Assistant to the Minister for European Integration (FEE *Eco-Schools* International Coordination 2004:5)

¹¹² Refer *Eco-schools* International Newsletter, April Newsletter, 2004. FEE International Secretariat (2004e)

¹¹³ i.e. see Sweden's Green School Award

¹¹⁴ i.e. see Scotland's and Croatia's *Eco-schools* and China's Green School Project

¹¹⁵ Taylor (2004); Keep Scotland Beautiful (2004); FEE International (2004a)

¹¹⁶ Taylor (2004)

¹¹⁷ Taylor (2004)

¹¹⁸ The National Priorities are a key part of the new School Improvement Framework introduced through the Standards in Scotland's Schools Act 2000.

¹¹⁹ Values and Citizenship Priority 4: To work with parents to teach pupils respect for self and one another and their interdependence with other members of their neighbourhood and society and teach them the duties and responsibilities of citizenship in a democratic society

¹²⁰ Scottish Executive Education Department (2004)

¹²¹ Keep Scotland Beautiful (2003)

claims that this has also contributed in the program being more successful than in the rest of the UK¹²².

Croatia is a participant of the FEE *Eco-schools*, and the Ministry of Education and Sport recognises its potential to fulfil part of the Croatian Government policy, emphasising the gains from increased knowledge, action and responsibility towards the environment¹²³.

In China, the '*National Task Outline on Environmental Propaganda and Education*' (1995-2010) promotes school authorities to establish *Green Schools* in primary and secondary schools and kindergartens¹²⁴. This strategic document, supported by the Ministry of Education, has served to support and reinforce the value of the *Green School Project* in China.

The Swedish *Green School Award* sits within a national framework which promotes the goals of sustainable development¹²⁵, this focus has been strengthened by the development of 'National Strategy for Sustainable Development' in 2002¹²⁶. The Strategy targets lifelong learning skills and knowledge to contribute to sustainable development in Sweden. It sees the schools system as pivotal in 'disseminating new knowledge and new educational methods' to support the sustainable development agenda¹²⁷. Therefore, the goals are directly aligned with the goals established as part of the *Green School Award*.

The *Enviroschools* Program was developed in close collaboration with the development of the NZ 'Ministry of Education Guidelines for *Environmental Education*'¹²⁸. As a consequence both programs are closely aligned in their EE goals and have linked in with each others' professional development program¹²⁹. At present, no research has been undertaken to assess the impact of this professional link.

NZ's *Enviroschools* also aims to link with existing EE school programs, avoid duplicating work and resources and strengthening all efforts in EE in schools. Recent research confirms that 'the advantage of using this approach is that it offers a holistic framework on which schools can 'hang' their EE projects. This helps reinforce the knowledge, values and action objectives of EE being taught as part of the formal curriculum'¹³⁰.

The programs featured above, demonstrate the potential for whole-school programs to be recognised as models of good practice by the national authorities. Examples suggest that this has occurred when programs are directly aligned to national educational, environmental and sustainability policies, indicators and priorities. In many cases these links led to increases in the program's uptake by schools as well as serving to reinforce the need for whole-school sustainability approaches.

In addition, a few of the programs have seen that establishing links between EE initiatives and programs already in operation, are an important part of the

¹²² Campbell, K (pers. comm. 4 May 2004)

¹²³ FEE International Coordination (2004)

¹²⁴ China Environmental Education Network (2004)

¹²⁵ Nyander (2004)

¹²⁶ Nyander (2004)

¹²⁷ Nyander (2004)

¹²⁸ Mardon, H (pers.comm. 27 April, 2004). *Enviroschools* Foundation (2004)

¹²⁹ Refer 'professional development section'

¹³⁰ Wilson-Hill and van Rossem (2001)

planning process¹³¹. Evidence suggests that this action can add value to each program by enriching resources and support available and avoiding duplication of work. This realistic and practical action can focus teachers work in EE and assist teachers to see how the program is relevant to their work.

3.1.6 Curriculum links

Systematic attempts to construct a program that contributes to the national curriculum is a common characteristic of all the programs featured in this study. As a result curriculum is an important component of the implementation and accreditation process. However, the relationship between the national curricula and whole-school sustainability programs differs as some are a) based on and assist in implementing the national curriculum¹³², b) developed independently but complement to the national curriculum¹³³, and c) value add and extend the national curriculum¹³⁴.

The Swedish *Green School Award*, for instance, has based the program's 'award criteria' on the curricula for pre-school, compulsory school, and non-compulsory schools (upper secondary school, municipal adult education)¹³⁵. The three curricula are all bound by the central principle of the Schools Act: 'all those working in schools shall encourage respect for the intrinsic value of each person as well as for the environment we all share'. This Swedish National Agency for Education aims to ensure that this goal permeates the entire *Green School Award*¹³⁶.

The Scottish *Eco-schools* program clearly links to the school curriculum, especially in relation to nursery (kindergarten) and primary curricula. It is also seen to provide teachers with a potential framework to draw together with other subject areas such as health education, enterprise, international, personal and social education, citizenship and sustainable development¹³⁷.

The South African *Eco-schools* program is designed to encourage whole-school learning with a key focus on curriculum based action for a healthy environment. The managing environmental NGO (WESSA) works in close partnership with the Department of Education in order to ensure ongoing synergy between the curriculum and program. WESSA maintains that the program differs significantly from the European *Eco-school* model, by focusing on strengthening curriculum and its implementation rather than beginning with a concern for environmental projects and activities in schools¹³⁸. This program sees the curriculum and pedagogical processes as key starting points for work towards sustainability in schools.

South Africa's *Eco-schools* reflects a strong alignment to the Revised National Curriculum Statements (RNCS) of South Africa, which emphasises principles such as 'human rights and social justice'¹³⁹. When schools register with the program, both teachers and learners

Sweden: 'Democracy forms the basis for the national school system. Critical thinking is a task, which the school imparts. Pupils shall train themselves to think critically, to examine facts and their relationships and to see the consequences of different alternatives'. (Nyander, 2004: p2)

Sweden: the role of ESD and EE is defined for the syllabus in the following nine areas: home and consumer studies, physical education and health, biology, physics, chemistry, geography, social studies, crafts and technology (Nyander, 2004).

Curriculum priorities: "The Department of Education is happy to partner the Wildlife & Environment Society of South Africa to promote *Eco-schools* as the initiative is taking heed of the need to deliver on the new curriculum" Message from South African Education Minister Kader Asmal (Asmal 2003:3).

¹³¹ I.e. See NZ's Enviroschools and Wales Eco-schools

¹³² I.e. See NZ's Enviroschools and Sweden's Green School Award

¹³³ I.e. See China Green School Program (Zeng, H pers.comm. 15 April, 2004)

¹³⁴ I.e. See South Africa Eco-schools (Ward & Schnack, 2001)

¹³⁵ Sweden Environmental Protection Agency (2000)

¹³⁶ Sweden Environmental Protection Agency (2000)

¹³⁷ Campbell, K (pers.comm. 5 May 2004)

¹³⁸ Ward and Schnack (2003)

¹³⁹ Eco-School Flag Awards, Message of support from Minister Asmal. Gintsa, Eastern Cape, 18 November 2003

commit to an ongoing process of developing lesson plans and learner-centred activities in-line with RNCS.

The review suggests that a program funded and managed by a government agency is in a good position to align itself with the curriculum and yet remain flexible to curriculum changes¹⁴⁰. Whole-school sustainability approaches can assist in the implementation of new curriculum (i.e. South Africa's Eco-schools).

3.1.7 Key focus and principles

A review of the documentation for whole-school approaches to sustainability reveals variations to program focuses and principles (refer Box 5). The focus (including both content and process) is the basis by which a program is constructed. This defines the program's identity and guides the program's planning, decision-making and implementation. It is also clear that some differences arise between programs depending on local context: environmental, educational and social-political needs, cultural perspectives and interpretations of sustainability.

Environmental and educational outcomes

As discussed earlier, all programs featured in this review are underpinned by a whole-school approach. However, different interpretations of 'what' sustainability looks like, translates into different understandings of 'how' to proceed towards these goals¹⁴¹. Some programs place greater emphasis on environmental outcomes, whilst others emphasis educational processes and change or a combination of the two.

The FEE *Eco-schools* program is characterised by a strong emphasis on the environmental issues of water, energy and waste for key areas to action¹⁴². However, this focus can be adapted to the needs and priorities of member countries and in the UK; for instance, the *Eco-schools* program broadens this focus to litter, waste minimization, energy, water, transport, healthy living and school grounds¹⁴³. At the same time, potential African *Eco-school* partners¹⁴⁴ expressed the need to adapt the Eco-school themes to more pressing 'African' issues such as health and sanitation, as well as community-based natural resource management¹⁴⁵. FEE *Eco-schools* promotes the need for students to be involved in activities and decision-making in implementing projects relating to these themes¹⁴⁶.

The *Green School Award* in Sweden was developed to 'encourage and support the development of methods for teaching and learning about sustainable development'¹⁴⁷. The program's award criteria, reflects a view of sustainable development from three main perspectives: ecological, economic and social (including cultural). This program translates these principles into all areas of school management and development, including resource consumption, good working environments and health, environmental awareness and

Box 5. Focus: content

ENSI: quality criteria, dynamic qualities, teacher education, Eco-schools and Learnscapes.

China: environmental management

FEE: waste, water and energy

Sweden: consumption, democracy, SD, culture and health

NZ: school operations, organisation, physical surroundings and curriculum.

Focus: process

ENSI: action research, international exchanges, understanding and cooperation.

China: integrate EE across curriculum, form EE groups; awareness raising and education activities on environmental protection.

FEE: environmental policies, teaching and learning activities relating to EFS and SD, active participation of students, healthy and safe working environment.

Sweden: integrated EFS curriculum, critical thinking

NZ: follow 'action learning cycle': foundation, vision, learning and action and reflection.

FEE Eco-schools: There is room to adapt the FEE model in different countries. However all FEE *Eco-schools* programs are underpinned by the same key principles: *school-based community development based on an environmental management system as a framework for action* (FEE International 2004b).

Ireland's Green-Schools: offers a 'well-defined, controllable way to take environmental issues from the curriculum and apply them to the day to day running of a school. This process helps students to recognise the importance of environmental issues and take them more seriously in their personal and home lives'. (FEE International Secretariat 2004)

Scotland Eco-schools: 'Sustainable Development Education... does provide a starting point for schools and many will go on to look at other issues like fair trade, GM crops, poverty, consumerism, environmental justice.' (Campbell, K pers.comm. 4 May 2004).

¹⁴⁰ Nyander, E (pers.comm. 25 May, 2004)

¹⁴¹ The 'how' of program processes will be explored further in the 'implementation section' of this review.

¹⁴² FEE International (2004a)

¹⁴³ Keep Tidy Britain (2004)

¹⁴⁴ Comments made at the Eco-Schools Partnerships in Africa' Workshop held in South Africa in 2002

¹⁴⁵ FEE International Coordination (2004)

¹⁴⁶ FEE International (2004b)

¹⁴⁷ Sweden National Agency for Education (2001)

participation¹⁴⁸. However the adoption of the new criteria in 2004 has resulted in a dramatic shift away from a focus on environmental outcomes towards a school culture and pedagogical approach which is more aligned with EFS. The new syllabus implemented in 2000 has contributed to this change in focus as well as Sweden signing of *Baltic 21 Education* document¹⁴⁹.

The main changes to the criteria have narrowed the focus down to two themes: *school management* and *pedagogical work*. The first requires that the school organisation is based on staff and students actively working towards achieving the award. This includes the need for students and teachers to work together to plan, carry out, follow up and evaluate learning activities concerning sustainable development.¹⁵⁰ In effect, this new development now follows a similar approach to the South Africa's *Eco-school* model, which views curriculum and pedagogy as basis to conduct whole-school approaches to sustainability¹⁵¹.

ENSI advocates that, within *Eco schools*, EE should not be reduced to just a means to protect the natural environment, but rather as a tool in education for citizenship¹⁵². This implies the need for critical thinking and questioning skills, which sees the student's ability improved to uncover the root causes of problems and the values and assumptions prevalent in society. ENSI promotes the need for these skills in order for students to be empowered and informed to participate in decision-making¹⁵³.

As the programs develop they also grow in scope. The programs tend to broaden from a narrow environmental management or practical greening focus to a more holistic focus of sustainability and promoting the development of participatory learning and decision-making skills associated with EFS

Peace, equity and intercultural perspectives

The socio-cultural dimensions of EFS, such as respect for diversity, intercultural understanding, peace and equity¹⁵⁴, do not appear as prominent components in these whole-school programs.

However, Sweden's *Green School Award* and NZ's *Enviroschools* do link whole-school approaches to sustainability to issues such as equity, consumption and lifestyle choices as well as environmental concerns.

Enviroschools, NZ is the only program to have identified the objectives and documented the challenges of incorporating Maori perspectives within the program. The program is underpinned by five principles, two of which are 'Maori Perspectives' and 'Respect for Diversity of People and Cultures'. These themes are explored in the '*Enviroschools Kit*' with corresponding lesson plans and activity recommendations¹⁵⁵.

'Green School Award' criteria changes:

- Reduced to two 'criteria' themes: *school management* and *pedagogical work*
- Strengthened links to curriculum and syllabuses
- Emphasis on reporting and assessments of *pedagogical work* annually
- Renewed emphasis on meaningful interactions with the local community
- In-service training is provided and
- Links between schools is encouraged

(Nyander, E. pers.comm. 25 May 2004)

ENSI: research into quality criteria for eco schools, reiterates that school initiatives should foster both environmental awareness and students' development of '*dynamic qualities such as initiative, independence, commitment and readiness to accept responsibility*' (Mayer, 2002).

Sweden: '*Many of these activities/teachings aim to help the children/pupils to develop a lifestyle and patterns of consumption compatible with ecologically sustainable development*' (Sweden National Agency for Education, 2001).

Enviroschools evaluation report: revealed the need of further development and action in order to address the issues of cultural bias in the program, as well as assist teachers to incorporate intercultural and Maori perspectives in their practice (Mardon, H (pers.comm. 27 April, 2004).

¹⁴⁸ Sweden National Agency for Education (2001)

¹⁴⁹ Nyander, E (pers.comm. 25 May 2004)

¹⁵⁰ Nyander, E (pers.comm. 25 May 2004)

¹⁵¹ Refer 'curriculum links' section of this report

¹⁵² Mayer (2002)

¹⁵³ Mayer (2002)

¹⁵⁴ Fien (2001), UNESCO (2002) & Tilbury et al (2004)

¹⁵⁵ Mardon, H (pers.comm. 27 April, 2004)

Box 6: Types of Program Support:

South Africa: resource kits and materials

UK: resource kits and materials & web-based resources

Scotland: support staff, video, school grants program and handbook.

China: web-based and 'Green School Guidelines' resources

Sweden: Agency staff available for report writing support on a needs-basis and agency website

New Zealand: program facilitators assigned to a small number of schools, resource kit and professional development opportunities.

ENSI: research materials, international exchange and professional development opportunities

Multi-layered support: *'National Coordinating organisations delivering the Eco-schools programme work directly between national, regional and local institutions and the schools themselves. This provides an excellent vehicle for dissemination of appropriate pedagogical resources, technologies or services which add value to the programme in supporting schools to achieve their objectives'* (FEE International Secretariat 2004b).

South Africa's toolkit and local relevance: provides a toolkit for teachers, but promotes schools to actively build on this resource by adding newspapers, brochures and information which are directly relevant to their local contexts (WESSA 2004)

Sweden's expert support: *'The expert expresses views on the clarity of the documents submitted and suggested various areas for improvement. The expert answers questions and acts both as an advisor and a sounding board'* (Nyander 2004:8).

Sweden school case example: One pre-school in Sweden reported that on-ground support from the Child and Youth Welfare Services Committee facilitated their involvement and ongoing work in the program. Stensveden Pre-school. (Sweden National Agency for Education 2001:53)

Scotland's new award initiative: a grants program sees the Government providing a £250 grant to successful Bronze award schools. (Campbell, K pers.comm. 5 May 2004)

Local Authority Support: *'Three such authorities are Inverclyde, Stirling and Perth & Kinross, where this 'joined-up departmental approach' seems to be working well for the schools. North Lanarkshire Council has a dedicated post to support the Eco-schools programme in that authority.'* (Campbell, K. pers.comm. 5 April, 2004)

NZ's EnviroSchools Kit aims to support whole-school sustainability process includes: information about environmental issues, Maori perspectives, action learning, evaluation and assessments as well as lesson plans and class activities. (Hamilton City Council 2001; Wilson-Hill, 2003)

Contents and focus: information on how to get started and the five guiding principles, steps for planning a Sustainable School, learning guides for theme areas and action tools for decision-making. (Hamilton City Council, 2001)

3.2 Program Support

The support available for schools to participate varies considerably between programs around the world (refer Box 6). The amount and type of support available to schools can have a number of implications for a) incentives to participate, b) the outcomes of programs and c) the longevity of participation and the program itself. Program evaluations which address the questions of what type of support is most effective to facilitate a school's participation would be valuable to inform ongoing program developments. However, an analysis of this component is restricted by the lack of program evaluations by which to draw comparisons.

Support as provided in these whole-school sustainability programs, can be broadly grouped into: people (staff or facilitators), resources (curriculum kits) and information (i.e. environmental links on websites etc), international exchanges/networking (seminars and IT) and professional development. The type of support provided in the kits and program materials generally takes the form of lesson plans, stimulus material, action planners, and curriculum planning materials according to the programs focus and themes. In many cases, schools have been further supported through dedicated program staff or through staffing commitments initiated by local or regional authorities and organisations.

The *Green School Award*, Sweden provides reference material and websites to assist schools with the award process. The National Agency for Education also has dedicated staff to ensure that schools have access to ongoing support, particularly in regards to submitting the award application¹⁵⁶. In addition, schools participating in Sweden's program have benefited from local or regional support, for instance, through municipalities providing staff, part-time regional coordinators, teacher-relief or establishing cross-school committees/working groups. This type of external initiative can add significant weight behind and value to programs as well as providing financial support, personnel or expertise to facilitate program objectives. However, this assistance has been more reactionary and thus takes different forms in each participating region in Sweden.

Scotland's *Eco-schools* has received considerable funding and support from the SEED for the period 2002-2005 and as a result the program has expanded the support available to schools. Scotland's *Eco-schools*, for instance, have documented examples of some local authorities establishing *Eco-School Support Groups* with teachers to identify how they can best support schools during the program. In some cases, this group is made up of broad range of local authority staff and departments, in particular with Education Advisors, Local Biodiversity Action Plan Officers, Local Agenda 21 Officers and those involved in waste management, litter, energy and transport¹⁵⁷.

In the case of NZ's *EnviroSchools*, the '*EnviroSchools Kit*' serves as a classroom resource to assist teachers and students with the four action learning cycles. The action learning cycles incorporates four stages: a) identify the current situation, b) explore alternatives, c) take

¹⁵⁶ Sweden National Agency for Education (2001)

¹⁵⁷ Keep Scotland Tidy (2003)

action and d) reflect on change¹⁵⁸. Schools are also supported through the *Enviroschools Scrapbook*¹⁵⁹ resource, which highlights case studies of practical examples of progress achieved by participating schools.

In addition to the *Enviroschools Kit and Scrapbook*, the assistance of facilitators is considered an essential part of the program design¹⁶⁰. The managing regional councils fund *Enviroschools* facilitators to support schools throughout the three-year process. Facilitators in this program are external to the school system, but are able to provide support, motivation and skilled guidance for program implementation. Facilitators play a key role in assisting schools with the undertaking of the action learning cycles¹⁶¹.

International networking also features strongly with the FEE partnership program. Workshops, seminars and international conferences are an important part of the school year and ways to bring national program managers, teachers and teacher trainers together for professional development and to share experiences¹⁶². In addition, summer camps and *Eco-schools Award* ceremonies are ways to bring students together at the international level. These events are constantly updated and showcased on the *Eco-schools* website. Not only do these activities raise the profile of the program internationally, but they also serve to share experiences, motivate action and build the capacity of practitioners in the practice of school-based sustainability.

The type of support offered to schools participating in whole-school sustainability programs varies significantly. Facilitators and external coordinating/support staff have been identified by evaluations as critical to program effectiveness. Professional exchanges and networking opportunities are also seen as important to program success.

3.3 Program Evaluation

Establishing monitoring and evaluation mechanisms has not been a priority for many of these programs. Exceptions to this have been the evaluations of the *Green School Award*, Sweden and the NZ *Enviroschools* program (refer Box 7). The NZ *Enviroschools Program Evaluation Report 2002*¹⁶³ and the Swedish *Green School Award 'Developing an Overall Perspective 1999-2001'* evaluation report both help inform program development and cover areas such as achievements, obstacles and future opportunities. An examination into these evaluations reveal variations into the type of data collected, how data was collected and who provided the data.

The evaluation process undertaken by *Enviroschools* incorporated a questionnaire for schools (delivered via the facilitators) and a two and a half day reflection meeting (Hui¹⁶⁴) at the end of the school year. Both methods aimed to address and reflect upon the *Enviroschools* guiding principles and the four key areas of school life by examining the positive changes, obstacles and ideas for improving the program¹⁶⁵. The Hui saw wide participation from *Enviroschool*

The role of teachers and facilitators to support participation: a conclusion of the PhD research into NZ's *Enviroschools* program, found that the *Enviroschools Kit* provided opportunities for high levels of student participation and engagement. However it was noted that the extent of this outcome would be defined by the specialised skills displayed by the teacher and program facilitator (Wilson-Hill, 2003)

Critical success factors for program support: the *Enviroschools* evaluation emphasised the key role of **facilitators** in contributing to school sustainability outcomes (Mardon and Ritchie, 2002).

FEE Eco-schools: views international networking as a means to increase the skills and competencies of schools and partners to deliver more effective whole-school approaches to sustainability. (FEE International Secretariat, 2004a).

Eco-schools Online Networking: *In order to promote networking potential to reality between schools, online database programmes have been developed to facilitate linking between schools at local, national and international levels.* (FEE International Secretariat 2004b)

The need for evaluations:

'There is currently a lack of research to evaluate the actual characteristics of wholeschool approaches in schools... the effects or impacts they have on students, teachers, and communities... Focused research on the characteristics and effects of whole-school approaches to environmental education would be necessary to evaluate the uptake and impact and effect of these practices for teachers, students, communities, and the environment.' (Bolstad et al, 2004)

'If we want to convince the educational community that EE can improve the curriculum and make it more relevant to students, we must evaluate our programmes' (Bennett 1988/1989)

Box 7: Whole-school Program Evaluation

New Zealand: sourced from school questionnaire and 2.5 day meeting. Evidence sourced through workshops from all program stakeholders. The report presented qualitative findings relating to changes, obstacles and improvement ideas. (Mardon & Ritchie, 2002)

Sweden: the National Agency collected data and presented the qualitative findings via anecdotal evidence obtained from the school 'award criteria' reports in 2001. The evaluation report is unpublished. (Swedish National Agency for Education, 2001)

¹⁵⁸ Wilson-Hill (2003) Hamilton City Council (2001)

¹⁵⁹ *Enviroschools Scrapbook* is published by the *Enviroschools* Foundation annually to document the achievements of the program nationwide.

¹⁶⁰ Mardon, H (pers.comm. 27 April, 2004)

¹⁶¹ Wilson-Hill (2003)

¹⁶² FEE international (2004a)

¹⁶³ Mardon and Ritchie (2002)

¹⁶⁴ Hui: Meeting, gathering, for purposes of discussion and/or celebration (of NZ Maori origin)

¹⁶⁵ Mardon and Ritchie (2002)

Enviroschools Multi-stakeholder Hui and Evaluation: *'the valuable experience of those implementing Enviroschools needs to be shared and used in future planning so that the whole programme can move forward with ever-increasing confidence. Evaluation also allows progress to be tracked and successes to be documented and celebrated.'* (Mardon and Ritchie, 2002:2)

Green School Award: the evaluation captured anecdotal evidence relating to the following areas: forms of program support (national, regional and local), school management & leadership, achieving the green school award, participation & decision-making, divisions of responsibility, reporting (Sweden National Agency for Education, 2001 unpublished).

ENSI's new research priorities: in order to assist schools in engaging with sustainability more effectively, new research priorities will be 'community-school partnerships' (Tilbury, 2004c).

Box 8: Research undertaken by Kadji-Beltran

'Primary school pupils' awareness of environmental issues: The influences of teaching styles and activities.'

'The impact of an Environmental Education Programme, on children's environmental cognition and attitudes.'

'Considering the teachers' profile for effective implementation of Environmental Education.'

(Kadji-Beltran, C.2000); (Kadji-Beltran, C. et al. 2001); (Kadji-Beltran, C. 2002)

PhD research: *'Children's participation in environmental education – an analysis of Enviroschools as whole school approach to environmental education'* (Wilson-Hill, 2004).

stakeholders, and in 2002, included: teachers, facilitators, funding agents, *Enviroschools* management team and community groups¹⁶⁶. The process aimed to capture the range of stakeholder perspectives through a series of collaborative workshops and provided the qualitative data for the evaluation. Stakeholders reported the value of this evaluation process in order to facilitate schools to share experiences and learn from one another. Regional councils also identified the desire to begin coordinating and collaborating between NZ regions.

In Sweden, the *Green School Award* evaluation was undertaken by the managing authority, National Agency for Education. Data was drawn from the participating school's (including pre-schools, compulsory and non-compulsory schools) reports as part of the *Green School Award* process. The evaluation inquiry was framed to reflect upon local responsibility and support, program achievements, obstacles and problems. These reflections have resulted in identifying priority areas for development and actions for the National Agency for Education.

A review of programs around the world reveals a lack of research and evaluations reflecting upon the achievements, lessons learnt and critical success factors of whole-school sustainability programs. This process would enable programs to capture both quantitative and qualitative data in order to reflect upon progress, learn from experience and ways to improve. In programs where the partnership model is a core feature, evaluations can provide a platform for discussion and planning by program recipients and stakeholders.

3.4 Program Research

Overall, limited research has been conducted by or for whole-school sustainability programs.

ENSI's *Quality Criteria for Eco-school Development* is based on educational practices and initiatives carried out by schools as well as drawing upon expert reports¹⁶⁷. Action research projects as part of ENSI involve teachers in researching their own practice. In this regard teachers undertake a cyclical process of *'planning, action, evaluation and reflection that can apply both to environmental issues and also to problems arising in educational innovation'*¹⁶⁸.

Within the FEE *Eco-schools* network, research has been conducted into the impacts of *Eco-schools* by Ireland and Cyprus. An Taisce¹⁶⁹ in Ireland, conducted research that aimed to analyse the impact of the program by comparing it with non-green schools, in particular relating to the themes of waste and 'environmental awareness, behaviour, environmental leadership' (refer Appendix 6). The Cyprus *Eco-schools* program has been featured as part of a PhD study¹⁷⁰ examining the role of EE programs as a mechanism for policy making and implementation support¹⁷¹. A number of journal papers have also been generated as part of this PhD research (refer Box 8).

¹⁶⁶ In 2003 six students joined the other stakeholders in the annual Hui

¹⁶⁷ Mayer 2002)

¹⁶⁸ Mayer (2002)

¹⁶⁹ An Taisce is the managing NGO for the FEE *Green School* program in Ireland.

¹⁷⁰ Kadji-Beltran, C. PhD Candidature 2002, through the Institute of Education, University of Warwick, UK.

¹⁷¹ Kadji-Beltran (2002b)

In relation to the NZ *Enviroschools* program, Wilson-Hill¹⁷² has conducted PhD research which explored the range of participatory processes evident in the *Enviroschools* program, in particular the ‘Enviroschools Kit’¹⁷³. This research drew upon EE and EFS literature to develop a continuum of ‘participation’ characteristics starting from ‘manipulation’ through to ‘shared decision making’¹⁷⁴. The ‘participation continuum’ was used to analyse a section of text from the *Enviroschools* program.

The results of the program evaluations identified above have informed this report. They were commissioned or intended to inform program development and have clearly influenced future directions. However, this research is yet to influence teaching or school practice associated with the programs. Practitioner research (often referred to as action research) could play a significant role in informing whole-school sustainability approaches. This form of research can also build teachers’ capacity to deliver the programs.

3.5 Accreditation and Certification

Awards to recognise school progress and achievements are considered critical elements of all whole-school sustainability programs. School awards (in the form of plaques, logos, flags and diplomas) serve to motivate for participation and implementation and provide an opportunity to celebrate successes in working towards sustainability. The main differences occurring between programs are a) the level of detail required in award application b) who conducts the assessment and c) the length of award validity.

Many of the programs utilise a tiered award system, namely ‘flags’, which enables schools to be awarded ‘Bronze, Silver and Green’ level flags, in recognition of their work towards sustainability. Awards are generally tiered in order to break down the process into achievable steps over a specified time period (refer Box 9).

On the other hand, China’s *Green School Project* award scheme is based on the certification systems ISO14001 and EMAS. China awards ‘Green Flags’ to schools as they proceed from municipal, provincial and through to national levels of achievement. In China, SEPA and the Chinese Ministry of Education (and nominated EE experts) annually promote the *Green School Project* and associated outcomes nationwide by awarding ‘exceptional schools’ at the national level. This is undertaken by national nomination and ‘expert’ assessment process and receives extensive media coverage¹⁷⁵.

Up until 2002, the New Zealand *Enviroschools* program provided schools with only one participation option, which was the three-year facilitated program. As an alternative, the awards scheme was developed, in response to a need identified by Auckland Regional Council, who sought to extend the reach of the whole-school sustainability approach for schools. Schools participating in this arm work through the award levels (bronze, silver and green/gold)

A research need: ‘any further research should include the perspectives and participation of children involved in the *Enviroschools* programme’ (Wilson-Hill, 2004:49).

Box 9: Award requirements and types

China: Reports and awards granted at municipal, provincial and national ‘Green Flags’ levels.

New Zealand: Bronze, Silver and Green/Gold Flags as part of Award Stream.

FEE national programs: Follow 7 steps to Bronze, Silver and Green Flags (refer appendix 5). Awards are valid for 2 years.

Sweden: Fulfil ‘award criteria’ requirements and set out future actions to receive award diploma and logo. Award is valid for 3 years.

Environmental Management Systems:

ISO14001: International Voluntary Standard applicable to all organisations which provides criteria to address environmental management necessary for certification.

EMAS: (*European Commission Eco-Management and Audit Scheme*) requires the establishment of an environmental management system and completion of full preliminary review and environmental statement.

Best practice in China: The aim of this additional award is to not only recognise schools of good practice in EE in China, but also to promote teacher, students and the community’s awareness, knowledge and capacity for action in EE. (China Green School Project, 2004)

Enviroschools award stream: aims for it to be used as ‘a stepping stone for schools to achieve sustainability and a whole school approach to environmental education’ (Enviroschools Foundation 2004).

Enviroschools program choices:

Due to the flexibility of the *Enviroschools* regional approach, some regional councils prefer to use the award stream, whilst others chose to either outsource or in-source facilitators (Enviroschools Foundation 2004).

Awards and competition:

‘The Eco-School Award does not imply a competition between schools, but ‘competition’ of each school with itself.’ (Kadji-Beltran; Barker & Raper 2001:3)

¹⁷² Wilson-Hill (2004)

¹⁷³ Wilson-Hill (2004)

¹⁷⁴ Wilson-Hill (2004:18)

¹⁷⁵ China Green School Project (2004)

Ward (in Ward and Schnack 2003:5) sees the award scheme to be 'very meaningful to many teachers and learners especially those who struggle sometimes seemingly anonymously in isolated school situations. There is no winner in the Eco-Schools programme; rather Eco-Schools can be seen as an ongoing status for a school'.

assisted by an awards booklet. Facilitated schools also have a choice to apply for this award scheme¹⁷⁶.

Some educational researchers¹⁷⁷ have expressed concern about award schemes being perceived as a 'means to an end' to achieve whole-school sustainability. As a result schools are utilised to 'solve environmental problems rather than to educate people'. Research suggests that programs need to incorporate educational (and not only environmental and instrumental) aims and goals for sustainability¹⁷⁸. In response, South Africa *Eco-schools*¹⁷⁹ states that the flag and award dimension is not be the most important aspect of *Eco-schools*, but provides an opportunity to offer schools recognition and accolades for efforts¹⁷⁹.

All programs have a certification or accreditation framework which provides an opportunity for the national program to offer schools recognition and accolades for their efforts and achievements. Some programs have found it difficult to resolve the tensions between environmental and educational outcomes sought and ensure the award process does not make it seem like a competition between schools. Research into the Green School Award in Sweden however, also identified that the complexity and difficulties associated with their award application and renewal process had become too burdensome for many schools and limited the number of schools who could achieve the award.

Box 10: Number of Schools involved and awarded

China: 15,000 schools registered (284 have received national green flag)

Sweden: 218 registered (52 award recipients)

New Zealand: >65 schools (facilitated program) and >140 schools (award program)

South Africa: 200 schools registered (57 award recipients)

Wales: >520 schools participating (>60 Green Flag award recipients)

UK: 4977 schools participating (15% of schools and 559 Awarded)

Scotland: 1,300 schools participating. (representing 37% of all schools and 75 Awarded)

Ireland: 1,400 schools participating (representing 35% of all Irish schools and 268 awarded)

FEE International: 12,000 schools participating (3,500 Green Flag recipients)

3.6 Program Implementation and Process

The level of participation in whole-school sustainability programs within countries varies substantially from 160 schools in South Africa to 15,000 schools in China (refer box 10). These numbers reflect how many schools have signed up to participate in the program and, in many cases, how many schools have reached the programs goals or received sustainability awards.

This section will explore the commonalities and variations that exist in the implementation features of whole-school sustainability programs. Evidence suggests that whole-school approaches to sustainability share a number of common 'implementation' characteristics: such as school governance, policy development, whole-school committees, environmental audits, action plans, curriculum integration, professional development, partnerships and networking, monitoring and evaluation and accreditation/certification. These stages will be explored in greater detail below.

3.6.1 Age-specific trends

One feature common to almost all programs is that participation is sought from all school categories: including kindergarten, primary, secondary and special schools. Although, in all cases, the uptake from primary schools far surpasses the involvement from other school sectors¹⁸⁰. *This trend suggests that programs are promoted and seen as more relevant to primary schools.*

Ireland Green Schools: 224 primary schools, 42 secondary schools, 1 special school and 1 Montessori school (O'Mahony and Fitzgerald, 2001).

¹⁷⁶ EnviroSchools Foundation (2004)

¹⁷⁷ Schnack in (Ward and Schnack, 2004)

¹⁷⁸ Schnack in (Ward and Schnack, 2004)

¹⁷⁹ Ward and Schnack (2004)

¹⁸⁰ FEE *Eco-schools* (Scotland, Ireland, England, Wales, South Africa) *Green School Award*, Sweden, *EnviroSchools*, New Zealand.

This may be explained by the students in the primary years of schooling having one main teacher across the core learning areas. Teachers are therefore more easily able to coordinate, collaborate and oversee the EE and EFS effort and integrate into all teaching and learning areas. On the other hand, secondary schools divide the teaching and learning content into different disciplines and departments. In general, this results in a highly structured curriculum and teachers with specialist skills within a departmentalised school structure. Within this system, whole-school initiatives and cross-curriculum approaches associated with sustainability may be perceived as more challenging to implement. Similarly, pre-schools in Sweden working towards the *Green School Award* noted difficulties in dealing with the complexity and reporting requirements of the program and its criteria.

This evidence implies that whilst the relevance of whole-school approaches to sustainability is relevant to all school sectors, there has been limited uptake of the program in the pre-school/kindergarten sector¹⁸¹.

3.6.2 School governance

The key first stage, common to all whole-school programs, is to tackle the issue of school governance. School governance in this context implies that the school's management and governing body is actively involved in all aspects of the program planning and operations, whilst also ensuring that decision-making is distributed more equitably across the school body, including the students. The programs featured in this review, request the formation of a committee/working group (with management, staff, student and stakeholder participation) to decide upon actions and to review progress. The governing body of the school is responsible for this undertaking as well as ensuring a school policy is developed.

The NZ *Enviroschools* evaluation report concluded that *schools required commitment and structural support from their principals as well as communication and involvement from all school levels*¹⁸².

A conclusion of the Swedish *Green School Award* evaluation report noted that the school management body must demonstrate educational leadership and ongoing commitment to the *Green School Award* process. For example, the process of undertaking the *Green School Award*, requires the full support and commitment of the school governing body and school management by signing a 'letter of intent' and the report for the 'award application'¹⁸³.

Democratic decision-making and meaningful participation of all stakeholders are at the heart of whole-school sustainability programs. School governance is an essential component of this process. *Without the commitment and support of school governing and management bodies, these initiatives will lose momentum and fail to be embedded in the school culture.*

Eco-schools, youth and environment: *Through the Eco-Schools programme, we can get children involved in the environment at a very young age and that makes a real difference in the long-term.*" Sadhbh O'Neill, Kilkenny County Council (FEE International Coordination, 2004).

The need for whole-school governance: Sweden's evaluation noted that 'efforts to achieve the award at some schools waned following the departure of the school managers who provided the original impetus' (Nyander, 2004:10).

Eco-Committee: Wales *Eco-schools* notes that their Eco-Committee is the driving force of the project and consists of pupils, staff, governors and parents (FEE International Secretariat, 2004).

Enviroschool-School Management Commitment: An outline of the school's commitment, as part of the MoU, includes forming an 'Envirogroup', ensuring professional development for staff, promoting EE integration into the curriculum, and developing a long-term strategy (policy and school vision) (Enviroschools Foundation, 2003:5).

School Management and Educational Leadership: *'The Green School Award is not merely a means for pre-schools and schools to use management by objectives to achieve improvements in the field of environment and the working environment; it may also serve as a tool in relation to numerous matters concerning the school management's responsibility for educational leadership.'* (Sweden Environmental Protection Agency, 2000).

¹⁸¹ Nyander, E (pers. comm. 25 May 2004)

¹⁸² Mardon & Ritchie (2002)

¹⁸³ Nyander (2004)

3.6.3 School policy

The development of school policy relating to whole-school sustainability programs serves to outline the school's commitment to sustainability goals and direct areas for action. This feature is common to the EnviroSchools and FEE Eco-school programs (refer Box 11 and Appendix 5).

NZ's *EnviroSchools* incorporates this process as part of the initial 'Foundation' stage of the start of program. This action coincides with the formation of an 'Envirogroup' and development of links to the community¹⁸⁴ and serves to consolidate the focus of the program. All school stakeholders are asked to participate in developing a school EE policy.

3.6.4 Visioning/Mission Statements

The process of visioning ways forward for sustainability is aligned with one of the core principles of EFS: futures thinking.

The process of envisioning (i.e. what schools' would like their 'sustainable school' to look like?) is a key stage of the implementation process in the NZ *EnviroSchools* program. This 'sustainable school vision' is undertaken by the whole-school as a practical task to be mapped visually. This 'sustainable school vision' can enable schools to take ownership of the process and chart ways forward. The FEE *Eco-schools* program requires schools to develop an 'Eco-code' or mission statement at the final stage of implementation in the seven step program. The 'Eco-code' is drafted once the six actions have been undertaken and evaluated, but it allows schools to set targets and goals for future action stages (refer Appendix 4).

3.6.5 Environmental audits

Environmental audits are a key component of all the international programs featured in this review, and most utilise this as one of the first action steps to fulfil as part of the program¹⁸⁵. *Undertaking an audit or review provides school with a snapshot of their current situation and assists in identifying action areas.* All programs encourage whole-school participation in this activity. As a result a framework is developed which provides a checklist for monitoring and review of achievements. Audits are generally designed to complement the programs key focus and principles.¹⁸⁶

FEE *Eco-schools* program has extended the sharing of school monitoring to an international level, through the online *Environmental Performance Indicator* project (EPI). This encourages *Eco-schools* from around the world to enter data about their environmental performance and monitor their progress, as well as compare it to schools from other countries. The focus on EPI at this pilot stage is on schools' energy and water consumption¹⁸⁷.

For the most part, environmental audits have been primarily focused on environmental issues, such as resource consumption and school grounds. There is little evidence in the documentation, that these

Action plans and participation: *'Drafting the school vision and policies should involve all stakeholders and should be followed by action plans that will support the school's vision. All stakeholders in the school and community should share their desires and dreams for the school coming together in a renewed energy or spirit of commitment that will assist them in moving into planning for the development of the school, whatever its circumstances: (DoE, 2002:11).*

Visioning in EnviroSchools: aims to support a process in which 'students develop skills, understanding, knowledge and confidence through planning, designing and creating a sustainable school'.

Better futures: *'Imagine...a generation of innovative and motivated young people, who instinctively think and act sustainably. EnviroSchools is working towards this vision through a whole school approach to environmental education'* (EnviroSchools, 2004).

Audits and consumption: Some Swedish schools have extended the skills gained through the school audits to conduct environmental certification of their own homes to tackle consumption/consumerism issues and resource efficiency (Sweden National Agency for Education, 2001: unpublished).

Audit Focus: Sweden's *Green School Award* has framed the 'school survey' to directly report against the award criteria. This process assists all staff and students to view the strong and weak points of the schools activities and performance and provides a basis for the development of objectives in their action program (Nyander 2004).

FEE Eco-schools EPI: 'In addition to providing schools with a useful tool to register and monitor their consumptions and analyse results as part of their environmental management plans, it also provides some indications as to the cumulative effect of all schools' efforts in being more conscientious about their consumption of energy and water' (FEE International 2004d).

¹⁸⁴ EnviroSchools (2004)

¹⁸⁵ Refer FEE *Eco-schools* and Sweden's *Green School Award*

¹⁸⁶ Nyander (2004)

¹⁸⁷ FEE International (2004)

audits consider other aspects of sustainability such as intercultural issues and evidence of citizenship, participation in decision-making and links to community. As a consequence, this process can potentially reinforce a narrow interpretation of sustainability (i.e. being solely an environmental concern). This is problematic if this remains the only process by which schools identify areas for whole-school action.

3.6.6 Developing action plans

Whole-school sustainability programs are action-orientated. Many of the programs facilitate this process through the development of action plans¹⁸⁸. *'Action plans' can assist schools with assigning roles and responsibilities and identify the process by which schools aim to achieve the school and environmental improvements'* (Refer Appendix 7 for an example of a Scottish *Eco-school's* action plan). The Swedish *Green School Award* for instance, frames its survey around the award criteria in order to identify stages of the action program.

In order to facilitate this process, all programs require schools to establish a 'working or environmental committee' to oversee the school's plans of action¹⁸⁹. Generally, a requirement of these committees is to have broad representation of all school stakeholders and can provide an avenue, for students in particular, to learn skills in participatory decision-making.

3.6.7 Pedagogy and professional development

Pedagogical approaches, such as student-centred learning, action learning, and co-operative learning are required to reflect the content and process of EFS. *Most programs recognise that skilled educators are essential in whole-school approaches to sustainability as they require new modes of teaching and learning. Opportunities for educators to share and exchange experiences is also seen as critical to promote these objectives.*

Some of these pedagogical changes are reflected in the programs featured in this review. For instance, in the Swedish *Green School Award* the focus on the promotion of democratic principles of student's participation, decision-making and influence in their learning, has seen a direct influence on how teaching and learning has been conceptualised. The original criteria¹⁹⁰ involved four sub-areas under the 'Activities' category which relate to: teaching, competence and training of staff, cooperation and integration of activities and interaction with the local community¹⁹¹.

As discussed earlier, many of these whole-school sustainability programs provide ongoing opportunities for teacher's professional development.¹⁹² *The professional development of teachers is recognised as an essential component of the whole-school sustainability approach by all programs.*

However, China's *Green School Project* and Sweden's *Green School Award* are the only programs to have featured the need for EE in-service training as part of the school's commitment to the program (refer

Box 11: Sweden's *Green School Award* process for monitoring and evaluating program achievements:

1. Support gained from School Governing body and its management
 2. Survey of school activities and their impact on the environment
 3. An action programme for promotion of sustainable development is drafted jointly by the school management, teachers, other staff and children/pupils.
 4. The school gives notification that it wishes to qualify for the Green School Award.
 5. an appraisal of the school's environmental performance is made each year.
- (Nyander, 2004: 6)

The teaching and learning of whole-school approaches:

'Teacher competencies that support EE are necessary for successful implementation' of EE into the curriculum. (Kadji-Beltran, 2002).

'Important aspects of pedagogy in education for sustainability includes encouraging students to explore questions, issues and problems of sustainability, especially in contexts relevant to them and their communities; this involves student-centred and interactive enquiry-based approaches to teaching and learning' (Fien 2001:24).

'In a Green School the children/pupils acquire sufficient knowledge to become aware of the importance of the environment and to adopt a critical and thoughtful attitude to environmental issues' (Nyander, 2004:5).

As part of the *Green School Award Ordinance*, instructions to include student participation in teaching and learning activities are made to prevent the reliance of one 'enthusiast' teacher from within the school (Nyander, 2004).

¹⁸⁸ Refer NZ's Enviro-schools, FEE Eco-schools, Sweden's Green School Award, China's Green School Project.

¹⁸⁹ Refer NZ's Enviro-schools, FEE Eco-schools, Sweden's Green School Award, China's Green School Project.

¹⁹⁰ The new criteria (as of June, 2004) has not been announced officially at this time

¹⁹¹ National Agency for Education (2001) Nyander (2004)

¹⁹² Refer to 'Review of findings: professional development'

Appendix 1). The others have operated professional development initiatives at the program management level.

3.6.8 The role of the curriculum

Participation and the curriculum: *The curricula provide that teachers and children must jointly plan, implement and evaluate the learning process on the basis of the ability of the children/students.* (Sweden National Agency 2002).

A whole-school approach to sustainability requires, as part of the implementation process, that EE and/or sustainability content be integrated across the curriculum. All the programs reviewed include the 'curriculum' theme of as part of the school's action areas to achieve an award. Some programs require schools to link their activities and sustainability goals to the curriculum and others require efforts to integrate EE across the curriculum (see Appendix1).

Curriculum and sustainability: *'Eco-schools South Africa requires schools to develop and implement lesson plans, with learning activities that link with the school policy and sustainability'* (FEE International, 2004).

In an earlier discussion, it was noted that both South Africa's *Eco-schools* and Sweden's *Green School Award* have strengthened the emphasis on curriculum (i.e. integrating EE/EFS across and into the curriculum) as a core action focus for schools from which social and environmental improvements can be made¹⁹³.

3.6.9 School reporting

Formal reporting by schools on progress is a common feature of whole-school approaches to sustainability. This process enables schools to reflect upon their actions (identified in the environmental audits and actions plans) and to review progress. Awards are assigned as a result of these reports in most cases¹⁹⁴. These reports can also provide the program coordinators with valuable data to track progress within schools and overall, be aware of implementation obstacles and identify critical success factors. For example, the award applications received for the Swedish *Green School Award* provided the primary qualitative anecdotal evidence for the 2002 evaluation report.

Scrapbook reporting

The compilation of the scrapbook has also proved an invaluable tool by

- a) allowing program funders and stakeholders see the outcomes and impacts of their support
- b) enabling schools to share stories, be inspired and learn from each other and
- c) providing a tool to promote the program to wider audiences.

(Mardon, H pers.comm. 27 April, 2004)

In addition to the audit approach, the *Enviroschools* program takes an interesting approach to how it asks schools to report on their progress and input at a national level. Schools are required (informally) to evaluate their progress towards the vision annually and agree to priorities for the following year. In addition to this, schools are also asked to submit materials (photos and stories) annually to the *Enviroschools Foundation* for the national scrapbook. The scrapbook not only acts as the program's annual report, it also captures the processes involved (the how) and achievements (the what) of the school action and achievements¹⁹⁵. This compilation provides a mechanism to chart progress and visually display evidence of 'before and after' changes within schools across the nation.

Municipal school links: Schools in Sweden have formed links with other schools and organisations within their municipality and in some cases a support person has been employed to further support these schools. (Sweden National Agency for Education 2001).

UK/Africa school links: For example, schools in Scotland and Africa have formed alliances to share experiences in the Eco-schools program. (FEE International Secretariat 2004c).

3.6.10 School networks

School networking provides added incentives and motivation for schools to continue their participation in the program. Networking also provides opportunities for teachers to share experiences and ideas, as well as connect students with work being undertaken in other areas.

This feature is an important component of Sweden's *Green School Award* and Scotland's *Eco-schools* for instance. The global reach of FEE Eco-schools has enabled partnerships and networks to form between schools around the world whilst they are participating in the

¹⁹³ Refer to 'Review of Findings: curriculum links'

¹⁹⁴ excluding the NZ's *Enviroschools* Facilitated stream

¹⁹⁵ *Enviroschools* Foundation (2004) Mardon, H (pers.comm. 27 April, 2004)

program. The *Eco-schools* website is a portal designed to facilitate this link and exchange at local, national and international levels. These links have served not only to strengthen the changes taking place within the school, but provide teaching and learning ‘content’ opportunities relating to language, global awareness and intercultural understanding.

3.6.11 Community links and partnerships

Whole-school approaches to sustainability extend the focus of schools to connect with and actively participate in their local community. Schools (from NZ’s *Enviroschools* and FEE *Eco-schools: Wales, England, Scotland and South Africa*) are required to create and strengthen links and partnerships with the community as part of the whole-school process.

A review of program documents reveals the range of ways programs’ promote schools to link with the community, starting from a) students participating in field visits to the community b) community/industry visiting the school, c) actively participating in projects outside the school boundaries and d) equal and reciprocal partnerships.

3.6.12 Accreditation and certification

As discussed earlier all programs have established some form of accreditation or certification system for schools, excluding the NZ *Enviroschools Facilitation* model.

FEE *Eco-schools* is both a program and an award scheme. The award is given to schools that successfully complete the ‘seven steps’ of the program (refer Appendix 5) and needs to be renewed every two years. The award is in the form of a Green Flag that can be flown outside the school or displayed in a foyer. Award winners will also receive a certificate, a logo to display on headed notepaper, and other publicity material¹⁹⁶.

Bronze and silver flag categories are based on school self-assessments, but the green flag award is only granted once two assessors visit and review the schools achievement. The FEE Green Flag award is valid for two years, after which time, schools re-apply for the award providing evidence of ongoing actions and improvements. *Eco-Schools* should achieve at least 2/3 of the objectives in their Action Plan, in order to qualify for an award. The school should demonstrate an active communication strategy to inform the whole school and the community of its activities. In addition, the local authority should be involved in some capacity - this is a required element of Local Agenda 21, which characterises *Eco-Schools*’.

The Swedish *Green School Award* requires schools to document their achievements annually but apply for the award formally every three years. Schools apply for the award through the National Agency for Education and provide evidence that they have met the specified award criteria requirements including new plans for action. Schools in Sweden wishing to be involved in the *Green School Award* Program must submit a ‘letter of intent’ signed by the school management and governing board and detailing an ‘action programme’ of planned

A Model for school & community transformation:

‘School reform must be connected to overall development of the communities within which the schools exist. Similarly, schools should play an integral role in the process of broader community development. There could exist, therefore, an ideally symbiotic relationship which, when linked with similar initiatives in many other areas of need, can produce a model for successful school and community transformation’ (South Africa DoE, 2004).

Cyprus Eco-schools: noted that some schools involved an external specialist as part of their eco-committee who could assist with that theme of that year (i.e. an energy specialist).

FEE International school links: has also developed ‘*Eco-Schools Itinerary and Linking System*’ to provide an ‘itinerary’ for schools to visit each other virtually, and share stories with schools from different countries. The project can assist schools link with other working on similar projects or interests (FEE International 2004).

FEE Eco Schools: is about schools engaging in a process of continuous improvement (FEE International, 2004).

Recognition of past achievements: Schools proceed through achievement levels however; they are able to apply for higher awards at any stage provided appropriate targets have been reached (FEE International Secretariat, 2004a).

England’s Eco-schools: Green Flag Assessors are recruited from a volunteer base and preference is given to those with educational experience. These volunteers work within their local areas (ENCAMS, 2004).

South Africa Eco-schools: requires that schools submit a portfolio as evidence of changes taking place and an outline of plans for the future. This document provides a record of both school improvements and teacher’s professional development and EE curriculum integration. Once approved schools gain ‘Eco-school’ status and the right to fly the green school flag (Conde-Aller 2004).

Sweden Award documentation: to accompany the application includes; ‘teaching plan for ESD, long-term plan for staff skills development, a working environment management plan and a jointly drafted local working environment policy’. In addition, when schools receive an award, it receives a summary of the agency’s appraisal and proposed areas for development to help with drawing up the next action programme’ (Nyander 2004:8; Sweden National Agency for Education, 2001:unpublished).

¹⁹⁶ FEE International Secretariat (2004c)

improvements in accordance with the program's criteria. Once schools provide evidence that they have achieved the outcomes identified in the 'action programme' and have developed an 'action programme 2' (incorporating original and new criteria), they are able to apply for the *Green School Award*.

Awards are valid for three years, after which date, schools must reapply, responding to achievements made in 'action programme two' and outlining planned outcomes for 'action programme three' and so on¹⁹⁷. The National Agency for Education is in charge of the award assessment and successful schools receive a diploma as well as the right to use the program's logo¹⁹⁸.

China's *Green School Project* requires schools to document their *Green School* progress according to concrete criteria¹⁹⁹. The first step is to check their supporting documents and evidence. Experts and project managers will assess the validity of the application and if it passes, approximately 1/6 of total application schools will be checked on the school's premises. If the school passes this stage, the school will be awarded the *National Green School* by MoE and SEPA. Schools awarded at the provincial level, must wait one year before they can apply for the higher 'national' level *Green School* award²⁰⁰.

The accreditation and certification process is an important aspect of all the whole-school sustainability programs. It provides an opportunity for the national program to offer schools recognition and accolades for their efforts and achievements. Research however suggests that a complex and difficult award application process can become burdensome for schools. Further research is needed to identify which model of certification and accreditation is most applicable.

3.7 Program Achievements

As mentioned earlier, the limited number of evaluations and research conducted worldwide in this area has made it difficult to capture the full extent of program achievements. For many programs, it is too early to capture the impact of the whole-school approach, particularly in relation to longer-term educational changes (i.e. teaching and learning practice and school governance).

However, a review of the data available has revealed a number of achievement themes; reflecting a range of educational and environmental outputs, outcomes and impacts (refer Box 12).

3.7.1 Leadership

Evidence suggests that schools participating in these programs are more likely to demonstrate environmental leadership and models of good practice than non-participating schools. Sweden's *Green School Award* evaluation revealed that the program has been effective in working to achieve related objectives set in national and local governing documents, by assisting the school management to provide educational leadership and developing the ability to document activities governed by objectives²⁰¹.

Box 12: Program Achievements:

Outputs: material products of a project

Outcomes: achievements or changes brought about program

Impacts: long-term cumulative effects of a program

(Fien, Scott and Tilbury, 1999)

Environmental Leadership: *Furthermore, Green-Schools students generally encourage others to be environmentally friendly more than their Non-Green School counterparts. In essence the Green-Schools students are better environmental opinion leaders' (O'Mahony & Fitzgerald, 2001).*

¹⁹⁷ Sweden National Agency for Education (2001)

¹⁹⁸ Sweden National Agency for Education (2001)

¹⁹⁹ Zeng, H (pers.comm. 15 April 2004)

²⁰⁰ Zeng, H (pers.comm. 15 April 2004)

²⁰¹ Sweden National Agency for Education (2001:unpublished), Nyander (2004)

3.7.2 Awareness versus student participation

An important feature of whole-school approaches to sustainability is seeking meaningful participation of all students, teachers and staff towards program goals. However, *the level of whole-school participation evident in the programs varies, ranging from participation in awareness-raising activities through to joint decision-making towards shared visions and innovation. Overall, most programs have documented examples of awareness raising activities rather than whole-school participation in decision-making.*

Awareness: Evaluation research undertaken by the Irish *Green School* Program found that awareness levels about environmental issues among green school and non-green school student groups were very similar.²⁰² One region of China noted an increase in environmental knowledge and consciousness amongst students and teachers as a result of the *Green School* project²⁰³.

Increased participation: The Irish study highlighted that ‘when it comes to positive behaviour towards the environment, students within the awarded *Green Schools* are less likely to drop less litter while being more likely to participate in local environment projects, conserve water, energy and think about the environment when making a purchase’²⁰⁴.

Participating in a number of ways: The most common examples of participation of students and teachers in whole-school approaches to sustainability demonstrated through the literature was in the following activities: a) undertaking an environmental audit, b) being represented on school and environmental committees, c) involved in school ground ‘greening’ activities, d) environmental monitoring and e) reducing consumption and resource usage.

Students driving force for change: The Wales *Eco-schools* notes that their Eco-Committee is the driving force of the project and consists of pupils, staff, governors and parents²⁰⁵. *Enviroschools* students have initiated and driven action via the Enviro-council and through their participation in school planning, visions, problem-solving and assessment and evaluation²⁰⁶. As a result, student’s skills in practical projects increased and positive changes were noted in their attitude, knowledge and level of involvement²⁰⁷.

Participation in decision-making: Sweden’s *Green School Award* evaluation found that pupils were actively involved in the audit phases, rather than actively contributing to development and implementation of the action programme²⁰⁸. However, some schools reported participation of students in choosing the weekly teaching and learning content (based on a pre-determined framework) in some schools²⁰⁹. There was also evidence of active student participation in environmental parliaments, environmental groups, Agenda 21 groups and environmental councils²¹⁰.

Environmental attitude: ‘The environmental management of the school and the EE offered by the Eco-school programme, have {resulted} in the cultivation of positive attitudes towards the environment by the students’ (Kadji-Beltran, 2000:5).

Environmental Awareness: Ireland’s Green School research found that ‘green-schools students discuss the environment and associated issues in more settings, more often and discussion within the classroom setting is particularly high among Green-Schools students’ (O’Mahony & Fitzgerald, 2001).

Irish Research: conducted by the *Green School* program found that ‘green-schools students discuss the environment and associated issues in more settings, more often and discussion within the classroom setting is particularly high among Green-Schools students’ (O’Mahony & Fitzgerald, 2001).

²⁰² O’Mahony & Fitzgerald (2001)

²⁰³ CEEC (2004)

²⁰⁴ O’Mahony & Fitzgerald (2001)

²⁰⁵ Keep Wales Tidy (2004)

²⁰⁶ Mardon and Ritchie (2002)

²⁰⁷ Mardon and Ritchie (2002)

²⁰⁸ Sweden National Agency for Education (2001 unpublished)

²⁰⁹ Sweden National Agency for Education (2001 unpublished)

²¹⁰ Sweden National Agency for Education (2001 unpublished)

Scotland: 'Schools involved in programmes such as these report greater levels of involvement in the life of the school on the part of parents and the community as a whole, better relationships between the school and parents' groups and between pupils and teachers' (Scottish Executive, 2004).

Waste: 'The Eco-Schools programme is the most exciting thing happening in waste management in Ireland'. Sadhbh O'Neill, Kilkenny County Council (FEE International Coordination, 2004).

Embedding the Eco-schools program: Inspectors are instructed to find out "...if a school is taking part in an award scheme, such as the Eco-Schools Programme" (Taylor 2004).

Eco-school gains: 'measurable reductions in levels of energy and water use and litter in school grounds and neighbouring properties. There is also evidence that improvements in school grounds can lead to improved behaviour in the playground, reductions in bullying and improvements in pupils' attitudes to learning' (Scottish Executive, 2004).

School grounds: a school in South Africa has received national recognition for its permaculture initiatives and has continued to upgrade the resource materials. Students are beginning to transfer this knowledge in other areas and start food gardens at home. (Conde-Aller, 2004).

Size matters: Sweden's National Agency for Education's evaluation found that smaller schools have been more successful in obtaining 'support and broad involvement of staff and students'²¹¹. Due in part to large schools often needing to set up working groups to take care of the program, which may contribute to less people taking active involvement in the project, including students²¹².

3.7.3 Resource management and school grounds

Reducing ecological footprint of schools: *One of the greatest strengths evident in almost all programs is improvements and achievements made in the environmental performance of the school.* This has generally taken the form of actions in: a) reducing resource consumption (i.e. recycling initiatives; waste and water) and b) improving environmental efficiency (i.e. energy saving). Ireland's *Green School* research found that 'when it comes to diversion of waste from landfill *Green Schools* are showing an average reduction of 45% waste'. An initiative arising from the Welsh *Eco-schools* sees a new role for School Inspectors to also examine the 'sustainability' of the school. For example, School Inspectors look to see if pupils are acting sustainably through recycling, saving energy initiatives or developing their school grounds²¹³.

Linking the environment to socio-cultural issues: South Africa's school case study²¹⁴ revealed that through the *Eco-schools* program, students gained life skills, raised awareness of local and indigenous knowledge, gained group work skills and responded to social issues such as poverty²¹⁵.

Improvement of School Grounds: *Achievements in greening the school grounds (i.e. tree planting, vegetable gardens and litter campaigns) have been recorded extensively in programs' documentation*²¹⁶ (refer Appendix 8 for case study example). For a great majority of schools the greening of school grounds has been used as a focal point for environmental action and learning, curriculum links and lesson plans and ways to involve the parents and community²¹⁷. As a result, school grounds have been transformed through the planting of indigenous trees, organic waste composting, vegetable patches, water tanks and reductions in soil erosion²¹⁸. The NZ evaluation report found that the two most common topic areas for schools were school landscapes and waste/recycling/worm projects.²¹⁹

The success in these areas may be due to a number of factors, one, perhaps, being the emphasis on conducting environmental audits at stage one or two of the program. This process documents in raw figures the school's current situation, clearly highlighting areas for immediate action and improvements. These areas might also be easier to quantify for reporting and evaluation means, particularly for new schools joining the program. *Educational outcomes such as changes in school culture, pedagogical change and increased student ownership of learning are actions*

²¹¹ Sweden National Agency for Education (2001 unpublished)

²¹² Sweden National Agency for Education (2001 unpublished)

²¹³ Taylor (2004)

²¹⁴ Featured in Conde-Aller (2004)

²¹⁵ Conde-Aller (2004)

²¹⁶ Refer NZ's Enviroschools, FEE Eco-schools, Sweden's Green School Award, China's Green School Project.

²¹⁷ Mardon and Ritchie (2002), Conde-Aller (2004), Sweden National Agency for Education (2001:unpublished)

²¹⁸ Mardon and Ritchie (2002), FEE International (2004), Conde-Aller (2004)

²¹⁹ Mardon and Ritchie (2002)

where specific skills may need to be determined for reporting. These actions may also need to be monitored over a longer period of time for results to be evident.

3.7.4 The school, family and community

Partnerships: *Whole-school approaches to sustainability require that schools connect with and actively participate in their local community. A review of the program's documents reveals a limited range of achievements in this area.* For the most part, the evidence suggests that community partnerships have been limited in scope and generally involve school visits to external sites or inviting experts to the school.

At another level, school and student activities and values have shown potential in affecting the attitudes and actions of surrounding communities. The Cypriot *Eco-schools* research found that the program facilitated the 'transmission of environmental messages from the school to the family. As a result the school achieves an opening for reciprocal communication with society'²²⁰.

3.7.5 Teaching and Learning Strategies

Teacher clusters and exchanges: In the case of one *Eco-school* in South Africa, teachers reflected that they not only benefited from reflecting upon their work in a portfolio, but also through developing a cluster of teachers. These *clusters enabled them to further develop socially through professional interactions, also support each other and gain practical skills*²²¹.

Questioning of current practice: Teachers, from a South African *Eco-school*²²² commented that their schools' involvement has assisted them in *examining and questioning their practice, which has stimulated a process of change*. This questioning has provided a platform for dialogue and integration of ideas as well as resulting in concrete actions. This approach is also strongly advocated through ENSI and its practitioner research methodology.

3.7.6 Curriculum integration

Programs have begun to demonstrate the shift from participating schools seeing EE/EFS as a single discipline or related to the humanities/science, to viewing it as a cross-sectoral issue. However, limited evidence exists in the programs' documentation of how cross-curriculum integration has been achieved.

However, NZ's *Enviroschools* is starting to receive feedback and case studies show schools developing policies, vision plans and environmental projects as part of the curriculum²²³. The *Enviroschools* evaluation identified achievements made by teachers in integrating EE across the curriculum, for instance in science, language and social studies, technology, physical education and wellbeing subjects.

Improved relationships: *'Schools involved in programmes such as these report greater levels of involvement in the life of the school on the part of parents and the community as a whole, better relationships between the school and parents' groups and between pupils and teachers'* (Scottish Executive, 2004).

School-community participation:

Sweden: The Hökensås School published an environment calendar for 2001, created in collaboration with the municipal environment and building department, public works department, a photography club, the public health unit and an ecology consultant (Sweden National Agency for Education, 2001).

Cyprus: The Cypriot *Eco-school* research noted that most of the evidence suggests communication between schools and the community was either through community's participation on the school committees or through newsletters (Kadji-Beltran, Barker & Raper, 2001).

The Green School Award evaluation: indicated that the program was successful in fulfilling democratic principles and enabling students and staff to gradually acquire and develop knowledge and experience of the environment, working environment and health'. (Sweden National Agency for Education 2001:91)

A South African teachers' experience: *'the portfolio has helped me to reflect on my teaching and learning experiences by having better understanding of my strengths and weaknesses. I have improved my teaching and learning experience and; I have been able to record evidence of learning and professional development'*. (Conde-Aller, 2004:11)

EE Curriculum Integration:

Holma School, Malmö: school objective was to increase the number of teachers who integrate environmental education with all subjects. Their 'award report' notes that staff had become more aware about the environmental dimension and were mostly all engaged in environmental work.

Rättvik Agricultural College: Sweden has achieved results in integrating "green" elements in most subject areas and has seen students involved in deciding the green elements at the beginning of courses.

(National Agency for Education, 2001)

²²⁰ Kadji-Beltran (2000)

²²¹ Conde Aller (2004 unpublished).

²²² Kings School, South Africa. (WESSA 2004)

²²³ Enviroschools Foundation (2004)

4. Program implications and recommendations

4.1 Summary of findings and implications

This section will explore the key themes and learnings which have emerged as a result of the *findings* of this review. The *recommendations* section provides ways forward identified through the research for whole-school sustainability programs such as the *Sustainable Schools Initiative* in Australia.

A number of key questions will be addressed to guide this inquiry and analysis, these include: *‘What does a sustainable school look like?’ ‘Is there a formula for ‘how’ to run an effective and wide-reaching whole-school sustainability program?’ ‘Is there evidence of effective methods to engage the community in these endeavours?’ ‘What are the critical success components of whole-school sustainability programs?’*

What does a Sustainable School look like?

Outlining a specific vision for a sustainable school is a process which needs to be mapped out by schools and local stakeholders.

However, the review identifies a number of key features which characterise visions of a ‘sustainable school’:

Learning organisations: ‘Learning organisations are those that have in place systems, mechanisms and processes, that are used to continually enhance their capabilities and those who work with (them) or for (them), to achieve sustainable objectives – for themselves and the communities in which they participate. The important points to note about this definition are that learning organisations:

- are adaptive to their external environment
- continually enhance their capability to change
- develop collective as well as individual learning
- use the results of learning to achieve better results’

David Skyrme (2004 p.1)

- **School leadership** which places sustainability at the heart of school planning and practice. It engenders democratic and participatory whole-school decision-making processes;
- **Whole-school participation** in undertaking school action and improvement plans;
- Reciprocal community, family and stakeholder **partnerships**;
- **Participatory learning approaches** which engender students skills and competencies for critical thinking, intercultural perspectives, participation and citizenship;
- **Integration of EE and EFS across** all key learning areas in the **curriculum**;
- **Hidden curriculum** which reflects key messages and ideas supported by the taught curriculum;
- Regular **professional development** for teachers, school management and program partners and facilitators;
- **‘Greening’** of the school and physical surroundings;
- Classrooms within and **outside school boundaries**;
- Reductions in a **school’s ecological footprint** (through resource consumption and environmental improvements);
- Regular **monitoring, reflection and evaluation** procedures which inform future actions. The school is not just the centre of learning but is also a **‘learning organisation’** itself;
- **Practitioner research** which encourages reflective practice of teachers and promotes improved performance.

Is there a formula for 'how' to run an effective and wide-reaching whole-school sustainability program?

An examination into the whole-school approaches to sustainability initiatives featured in this review have revealed a number of key considerations necessary for program managers and partners to operate and manage an effective program. These include the need for programs to be:

- **relevant** - to school, community and stakeholder needs as well as national curriculum and environmental priorities;
- **resourced** - with EE/EFS expertise, supporting materials /facilitators and long-term financing;
- **reflective** - skilled in critical reflection and evaluation at all levels – striving to become a 'learning organisation';
- **responsive** - flexible structure in order to receive and respond to current models of theory and examples of best practice – responsive to local and cultural settings; and
- **reformative** - have capacity to change according to new ways of thinking and practice.

Is there evidence of effective methods to engage the community in these endeavours?

The review identified a range of partnership roles and suggests that some arrangements can make a stronger contribution to helping schools and their communities make changes towards sustainability.

Communities can be involved as partners through more than just contributing funding but also in developing joint initiatives and, at times, in program decision-making. The literature suggests that working towards a shared vision and common goals enhances the value of partnerships. However, no empirical research has been undertaken in this area making it difficult to answer the question 'what constitutes an effective partnership?' or 'how can effective partnerships' be developed'. However, anecdotal evidence suggests that community partnerships need to grow with the program and that expanding partnership capacity should be a planned component of whole-school sustainability approaches.

What are the critical success components?

A number of critical success factors for whole-school sustainability programs have been identified, which include:

- **Partnerships:**

All programs consider partnership building as a critical success component of whole-school sustainability approaches. Multi-stakeholder partnerships are seen as a key to effective implementation and sustainability of the initiative. Partnerships are also congruent with the concept of EFS

- **EE and EFS Expertise:**

The literature suggests that access to expertise from EE and sustainability backgrounds, as part of program management, is critical to orientate whole-school programs towards integrative and transformative approaches to sustainability. Programs have been able to source EE/EFS expertise through developing partnerships with relevant organisations and authorities.

- **Education for Sustainability (EFS):**

The need to be responsive to international and national environmental and sustainability agendas is seen as important to program success. This has meant that many programs are striving to broaden their initial environmental management or practical greening focus to embrace sustainability more holistically as well as promote the development of participatory learning and decision-making skills associated with EFS.

Although recognised by the literature as critical and by program documentation as important, the socio-cultural dimensions of EFS, such as *consumerism, globalisation, respect for diversity, promotion of indigenous knowledge and intercultural understanding, peace and equity*, do not appear as prominent components in these whole-school programs. Some programs are in the process of reorienting their frameworks to integrate this sustainability focus more strongly within their 'green' frameworks.

- **Political Support:**

A review of the management and funding structures of whole-school sustainability programs reveals the importance of political support and program autonomy. Political support, through partnerships or links with national EE and sustainability priorities, can contribute to the relevance, effectiveness and longevity of whole-school programs. Programs which exercise a degree of autonomy and flexibility within their management model are in a good position to secure program partners outside the government system.

- **Budget and timeframes:**

The amount and timeframes of a programs' funding can contribute to the role the program plays within its national context. Significant and continuous financial support can assist whole-school programs' with long-term and strategic planning and being able to focus on improving the support provided to schools (through resources, personnel and professional development) for more effective outcomes.

- **Program Support**

Providing school support for participating in whole-school sustainability programs is seen as critical by all programs. However, the type of program support varies significantly. Facilitators and external coordinating or support staff have been identified by evaluations as a contributor to program effectiveness. Professional exchanges and opportunities networking are also seen as important to program success.

- **Professional Development:**

Professional development of teachers is also seen as a critical component to whole-school approaches to sustainability. Programs recognise that few teachers have the knowledge and capacity to develop EE or EFS pedagogies in schools effectively.

- **National Links**

Aligning programs with national educational, environmental and sustainability policies, indicators and priorities has served to increase the program's uptake by schools. The programs featured demonstrate the potential for whole-school programs to be recognised as models of good education practice by the national authorities.

- **Links to other EE and EFS initiatives**

Evidence suggests that linking whole-school sustainability approaches to other existing EE or EFS initiatives can add value to the program by enriching resources and support available and avoiding duplication of work.

- **Curriculum**

The review suggests that a program funded and managed by a government agency is in a good position to align itself with the curriculum and yet remain flexible to curriculum changes. Whole-school sustainability approaches can assist in the implementation of new curriculum. This is a critical factor in that by aligning programs to national or state curriculum, schools and teachers can see the relevance of their work to core commitments and professional priorities.

- **Accreditation and Certification**

The accreditation and certification process is an important aspect of all the whole-school sustainability programs. It provides an opportunity for the national program to offer schools recognition and accolades for their efforts and achievements. It is a critical success factor in terms of attracting and committing schools to the program. Research suggests that the complexity and difficulties associated with the award application and renewal process has become burdensome for many schools.

- **Investing in monitoring and evaluation**

All programs see monitoring and evaluation as critical to inform development and critical to program effectiveness. Many provide tools or incentives for teachers and schools to review and reflect upon their progress. However, few programs actually mirror this approach at the program management level. The review of programs around the world reveals a lack of research and evaluations reflecting upon the achievements, lessons learnt and critical success factors of whole-school sustainability programs.

4.2 Recommendations

This study has documented through research and anecdotal evidence that whole-school approaches to sustainability have an important contribution to make in shifting our communities towards sustainability. National policy and initiatives which support these approaches at the state and local level enhance involvement as well as the quality of practice. For these reasons it is recommended that:

Research:

The funding of further research into whole-school sustainability programs is recommended. Research into the following areas is needed:

- *Program Support*: which will identify the minimum requirements and the relative effectiveness of support mechanisms (e.g. facilitation, mentoring, resource development) to assist in program implementation.
- *Partnerships*: what constitutes effective partnerships and how they can be developed within the whole-school context? This research could include questions such as: what skills are required in order to build partnerships? What are the ingredients for a successful and effective partnership?
- *Accreditation vs. Certification*: what is the most effective model? Should Sustainable Schools be aiming for accreditation and certification of schools?
- *Practitioner Research*: there is a need to provide opportunities for training in action research for teachers so that they are able to develop their competencies in EE and EFS.
- *Long-term evaluations*: there is a need to assess the long-term impacts of the program on not just on students, teachers and schools but also communities.

Program frameworks:

It is recommended that incentives and opportunities are provided to:

- *Assure long-term* support for a national whole-school sustainability program.

Based on the review of overseas models it is recommended that mechanisms be implemented to assure long-term support for a national whole-school sustainability program building on the role that DEH and the National Environmental Education Network (NEEN) have undertaken to date. This will enable a more strategic and cost-effective design reflecting national priorities and contribute to the success of the program at the school and community level. Issues which need to be addressed include program coordination at the national level; support/incentives to schools to participate in the program; information exchange to help schools/practitioners reflect and learn from each other's experiences and international best practice; professional

development and evaluation research as well as other practical considerations outlined below.

Practice:

It is recommended that a number of incentives and opportunities are provided to support program development as well as school practice:

Program development

- *Strategic partnerships* are critical elements to program design and programs need to develop strategies for expanding capacity and relationships of the partners involved.
- Designing the program so that it is linked to the *national curriculum and policies as well as international priorities* to ensure that the program is relevant and does not add work to an already overcrowded education system.
- Programs should develop an *accreditation or certification* process with clear objectives, manageable steps and award application process to reduce the complexity and difficulties associated with this process.

Implementation

- *Professional development*, in-service and pre-service initiatives for teachers, staff and stakeholders to assist with program implementation and objectives.
- *Program support* needs to be varied and responsive to the local context needs. The products need to be aligned with the program goals and objectives as well as the professional development components. Support should be multi-layered and not just confined to resource kits and lesson materials. Evidence suggests that dedicated staff assigned to schools can oversee, facilitate and motivate staff to work towards deeper levels of change. And also act to bridge program managers to the work done in schools.

Evaluation:

- *At the program level:* This process would enable programs to capture both quantitative and qualitative data in order to reflect upon progress, learn from experience and identify ways to improve. In programs where the partnership model is a core feature, evaluations can provide a platform for discussion and planning by program recipients and stakeholders. Program managers need to be skilled (or trained) to effectively facilitate and participate in this critical reflection process.
- *At the school level:* Evaluation also needs to become an integral part of the school implementation process. Schools will not only benefit from the insights and reflections of an evaluation, but will also provide valuable data to the program stakeholders.

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Appendix 1

Whole-school approaches to sustainability

	Enviroschools, New Zealand	Green School Project, China	Green School Award, Sweden	Foundation for Environmental Education Eco-schools (FEE)			ENSI Eco-schools
				FEE Eco-schools (England, Wales and Scotland)	FEE Eco-schools, South Africa	FEE Eco-schools Europe	
Year Established	2002 (nationwide)	1996	1998	1995	2003	1994	1986
Education Focus	Kindergarten, Primary and Secondary	Middle schools, primary schools, kindergartens vocational schools and special need schools	Pre-school, Compulsory school and non-compulsory schools	Infants, Primary, Secondary and Special Needs schools	Kindergarten, Primary and Secondary schools	Kindergarten, Primary and Secondary schools	Schools, students, teachers, teacher trainers and administrators.
Funding and Management	Enviroschools Foundation (funded by charitable and government grants) manages the national program. Regional partners fund the implementation of Enviroschools in their area.	State Environmental Protection Administration of China (SEPA) manages the program and external funding stems from SEPA, companies and foreign funds. Run by Centre for Environmental Education and Communications (CEEC) (since 2000) and the local CEEC networks.	Funded and managed by the Sweden National Agency for Education (developed in consultation with Swedish Environmental Protection Agency).	UK Eco Schools is run by ENCAMS (Environmental Campaigns), a national charity committed to creating and maintaining high quality local environments. Regional branches across the UK: <i>Keep Britain Tidy, Keep Wales Tidy Campaign, Tidy Northern Ireland and Keep Scotland Beautiful</i> . The Eco-Schools Program receives sponsorship from SITA UK Environmental Trust.	Managed by Wildlife and Environment Society of South Africa (WESSA) and in partnership with South Africa Department of Education. Funding has been sourced from a large packaging company Nampak	Managed by FEE International Coordination and by member organisations (NGOs) in each country.	ENSI is an international government-based EE network under the umbrella of OECD's: CERI. Self-funded by member countries 25 Members states (represented by senior educationists appointed by their government.
Framework of Operation (International influences; national policies, strategies; and curriculum links)	Works within New Zealand Curriculum Framework (1993) and is closely linked to content and professional development activities of the 1999 <i>Ministry of Education's EE Guidelines</i> which includes key themes of 1. awareness and sensitivity , 2. knowledge and understanding , 3. attitudes and values towards the environment 4. skills and participation in environmental issues	China's Green Schools Program is a Government Framework, which started in 1996 as part of international efforts based on the concept of ISO 14000 and the European "Eco-Schools". In line with The <i>National Action Programme for Environmental Publicity and Education</i> (1996-2010). Guidelines ask schools to implement the teaching in curriculum by three normal approaches: 1) infusing in subjects (i.e geography) 2) Comprehensive Learning (a new subject) and 3) school based subjects (decided by school)	National Agency for Education has set the criteria for schools to meet to receive the award under the ordinance of the Swedish Government. Works towards the central principles of the School Act and links directly with the plan of action outlined in the Millennium Declaration, signed at the 2002 WSSD, Johannesburg. The award criterion is based on Swedish curriculum and national syllabus. Strong links to curriculum from pre-school to non-compulsory schools are evident.	Based on the ISO 14001 process and encourages pupils to engage with environmental and sustainable development issues. It provides a structured system for the environmental management of schools.	This links directly with the plan of action outlined in the Millennium Declaration, signed at the 2002 World Summit on Sustainable Development (WSSD). The program is designed to encourage whole-school learning and action for a healthy environment. Very strong links to curriculum, in line with Revised National Curriculum Statements (RNCS).	Based on an Environmental Management System such as ISO 14001 or the EC's Eco-Management and Audit System (EMAS), The Program methodology has been designed to be the core of the Eco-Schools process, yet the structure is flexible enough to be adopted in any country, and at any level of schools' previous environmental achievement. Links to curriculum work is one of the seven steps as part of process. Schools are encouraged to integrate EE in all subject areas.	Key areas for development and research in order to connect activities and promote dialogue in: teacher education eco school development quality criteria dynamic qualities (i.e. autonomy and individual responsibility)
Partnerships and Stakeholders	New Zealand Association for Environmental Education (NZAEE), The Sustainable Management Fund - Ministry for the Environment, district and city Councils, EE Centres and NGOs.	CEEC (incl. locals offices), China Environmental Education Network (CEEN)	Teacher Training Institutes, Higher Education, Swedish Environment Protection Agency, National Board of Health and Welfare and the Swedish Work Environment Authority	Support from almost all Welsh Local Authorities together with ACCAC, ESTYN and environmental organisations including the Environment Education Council for Wales, RSPB, Prince's Trust Cymru, and The Healthy Schools Network. These bodies also help to provide a network of assessors throughout Wales.	Department of Education, the National Environmental Education Program of the Department, Wildlife and Environment Society of South Africa, Nampak and the WWF-SA, South Africa Department of Education, Share-Net, the Southern African Development Community (SADC)	Multi-sector partnerships core feature. Internationally UNEP and EU and sponsors. Nationally : public entities such as Ministries of Education and Environment, as well as Regional Administrations and Local Authorities. Public specialised institutions, NGOs, businesses, civil-society associations and individuals.	School communities: management, teachers and pupils. Educational authorities, teacher trainers, educational research institutes and governments across the OECD area.

Appendix 1

	Foundation for Environmental Education Eco-schools (FEE)						
	Enviroschools, New Zealand	Green School Project, China	Green School Award, Sweden	FEE Eco-schools (England, Wales and Scotland)	FEE Eco-schools, South Africa	FEE Europe	ENSI Eco-schools
Whole-school approach	<p>Participants: teaching, administration, management staff, students, Board of Trustees, parent representatives and community partnerships.</p> <p>Organisational Principles: Participatory and democratic school management.</p> <p>Operational Practices: Sustainable conservation practices</p> <p>Physical Surroundings: Ecological and participatory design of school surroundings, A Living Curriculum: A living curriculum is dynamic, integrating the informal curriculum of all areas of school life with the formal curriculum.</p>	<p>Strong links to the curriculum. Green School Schools are required to adopt effective, environmentally friendly management practices, improve the environment on campuses, cultivate a culture that encourages environmental protection among teachers, students, parents, and specialists, strengthen cooperation between schools and communities, and increase overall environmental consciousness.</p>	<p>Criteria for Green School Award</p> <ol style="list-style-type: none"> General Aims (school management, activity and impact audit, Action programme development, yearly appraisals) support. Activities (focuses on teaching, staff competence and training, cooperation and integration of activities, interaction with the local community) Occupational health and Safety and physical welfare (whole school approach and responsibility) Physical environment (materials and products; food, waste, water, energy, air, local environment, transport and buildings). 	<p>Whole-school initiative which encourages environmental awareness and action to address the management of the school. Must involve pupils in decision-making and taking action.</p>	<p>The Eco-Schools programme is being developed in South Africa as a schools improvement programme that aims at achieving sustainable environmental management. Key focus areas are Curriculum, Action and Community.</p>	<p>Underpinning the FEE international framework is the principles of Agenda 21, including the need for environmental awareness and improved students' skills for active participation and decision-making.</p>	<p>Involves all school stakeholder and educational experts in research (action research) and school development. Promote international exchanges, understanding and cooperation.</p>
Key Focus and Principles	<p>Strong partnership approach through building relationships to support and enhance existing environmental education initiatives. 5 Principles;</p> <ol style="list-style-type: none"> Sustainability; EE, Respect for Diversity of People and Cultures, Student Participation at all Levels and Maori Perspectives and Knowledge Enriching the Learning Process 	<p>Based on Chinese social and political facts and encourages schools to make use of its educational resources – both inside as well as outside schools – in favor of the environment, and to integrate EE into school curricula.</p>	<p>The purpose is to encourage and support the development of methods for teaching and learning about sustainable development. Strong emphasis on democratic principles of students being able to influence, take responsibility and participate. Award criteria looks at school life - (teaching and the school as a workplace), ethical, aesthetic, cultural and health considerations.</p>	<p>Based on the ISO 14001 process, with emphasis on litter and waste minimisation, although schools can also focus on Transport, Healthy Living, Energy and Water Saving or School Environment/Biodiversity. Up to 8 programs of continuing professional development.</p>	<p>The program is designed to encourage whole-school learning with a key focus on curriculum based action for a healthy environment. Three focus areas can be chosen from following themes: school calendar, environmental information and community knowledge, school grounds and fieldwork, resource management, health and safety, action projects and competitions, clubs, adventures and cultural activities.</p>	<p>Based on the principles of Agenda 21. Three main themes; Waste, Water and Energy but schools can go onto to participate in locally specific issues relating to LA21. Later, schools can go on to focus on other aspects of environmental and sustainable development issues, from transport and biodiversity to health and citizenship.</p>	<p>Aims to develop, test and publish methods of teaching and learning which define good practices of EE by setting up international school partnerships and aims to conduct comparative studies in such areas as 'Quality criteria for Eco School development'</p>
Stages and Content	<p>4 Stages of Action-learning cycles;</p> <ol style="list-style-type: none"> foundation (envirogroup, school policy and community partnerships) vision (whole-school vision map) class learning and action (focus 5 themes in action cycles) reflection (document and share stories, evaluate progress annually and set new targets) 	<ol style="list-style-type: none"> Set up Green School Committee (responsible for Action plans and evaluations), environmental management of resources, integrate EE into curriculum, teachers participate in in-service EE training, whole-school participation in env. protection activities, consider lifestyle choices, greening of campus, est. eco-club to ensure student participation in env. management. 	<p>Program steps to achieve award.</p> <ol style="list-style-type: none"> Whole school support (governing body through to teachers and students). A review (using criteria) of current situation and activities (audit). Development of Action programme. implementation of actions Report documentation to apply for award and development of new action areas. Receive diploma and use of logo. 	<p>The seven elements of the Eco-Schools Programme</p> <ol style="list-style-type: none"> establish Eco-Committee made up of pupils, staff, governors and parents undertake Environmental Review, implement Action Plan, link to curriculum, monitor and evaluate Involve wider community. produce 'Eco-Code' or mission statement 	<ol style="list-style-type: none"> Establish a working group, Audit aspects of the school environment and identify learning opportunities, Choose at least 3 focus areas, Draft an environmental policy, Develop and implement lesson plans, with learning activities that link with school policy and sustainable management in the learning areas Take action involving the whole school and wider community Develop portfolio, review progress and set future goals 	<p>Seven stage process</p> <ol style="list-style-type: none"> Eco-committee, environmental review, action plan, monitoring & evaluation, curriculum links, links to wider community eco code 	<p>Create learning networks Action Research Studies, Publications Conferences Thematic Seminars</p>
Methods for monitoring and reporting	<p>Documenting progress and sharing stories is central to the Enviroschools program. Schools annually evaluate progress towards the vision and agree priorities for the next year.</p>	<p>Schools evaluate their own work and report to Green School experts. Green school committee and eco-club can monitor progress throughout the project.</p>	<p>Schools must report to the National Agency by addressing actions and undertaken achievements to meet award criteria. This report must also include actions planned for future years.</p>	<p>Part of schools work to monitor and evaluate their Action Plans. Progress in chosen focus areas, lesson plans and school improvement plans are recorded in a portfolio. This portfolio must be completed annually to show evidence of ongoing work and to keep Eco-school status and flag.</p>	<p>Eco-school portfolio is submitted in order to gain Eco-school status. This outlines future actions and thus ensures schools reflect and evaluate their own practice.</p>	<p>Monitoring and evaluation is a required element as part of the seven steps to ensure targets of action plans are being worked towards.</p>	<p>Research and international opportunities are provided to exchange data and experiences from member countries and have access to research in EE and EFS.</p>

Appendix 1

Foundation for Environmental Education Eco-schools (FEE)							
	Enviroschools, New Zealand	Green School Project, China	Green School Award, Sweden	FEE Eco-schools (England, Wales and Scotland)	FEE Eco-schools, South Africa	FEE Europe	ENSI Eco-schools
Accreditation/ Certification	Two types of ways to participate depending on level of support required. Facilitated program or award program. Both streams can apply for bronze, silver or green/gold awards.	Different levels of Awards – municipal, provincial and national which can be applied for by schools. Reports/application and awards are granted by SEPA and MoE. Certificates and Bronze plates for the schools are awarded.	Green School Award is granted in the form of a diploma and logo and is valid for three years.	Schools can apply for three award levels – bronze, silver and Green Flag. Schools self-assess bronze and silver, trained volunteers visit schools to assess the Green Flag award. The award is re-assessed and renewed every two years . Incentives –money and savings, recognition and publicity, links to curriculum, and links to community.	Eco-Schools choose at least three projects and record their progress in a portfolio each year. Portfolios are assessed and successful schools will be awarded with an Eco-School flag. Schools may keep their flag and status for a year , after which another portfolio is submitted and assessed.	Each School program is assessed. Successful schools are awarded the Eco-Schools Green Flag.	N/A
Program Implementation and Support	Yes, Clear framework and facilitation process, and an extensive kit of support materials. Professional development activities are for enviroschool teachers and facilitators	Website provides program supporting materials and resources and ‘Green School Guidelines’ resources.	Agency staff available for report writing support on a needs-basis and agency website	The Eco-Schools Officer has networks of contacts for most local authorities, and will try to match existing resources for specific projects. Occasionally, visits to school and/or small grants can be made when available. Website also has supplementary information, links to curriculum subjects and an interactive chatroom.	Resource kits and materials and FEE website.	FEE Eco-schools website; Eco-news (newsletter with issues and case studies in different languages), activities and materials for schools, regional seminars and international conferences	International conferences, thematic workshops, teacher exchanges and professional
Program Evaluation	Yes (published 2002) via questionnaires and a residential reflection workshops (Hui)	No	Yes (1999-2001) (unpublished.) National Agency conducted via anecdotal evidence obtained from the school ‘award criteria’ reports.	No	No	Limited Evidence (Ireland – research report)	Research such as ‘ <i>Quality criteria for Eco School Development</i> ’ enables countries to review its practice.
Achievements	Recorded environmental achievements in green school grounds, waste minimisation, energy and water reductions. Educational outcomes include grounds used for and as education. Integration of EE into science, language and social studies, technology, PE and wellbeing subjects. Students are also becoming involved in planning, criteria setting, assessment and evaluation.	The number of awarded different level green schools is more than 15,000 by the end of 2003. To some extent, China Green Schools Program are popularized and become effective strategy to build up the thought of sustainability among young generation and to develop environmental management in campus and in China	52 schools have received the award out of 218 registered. The evaluation noted achievements in changes towards more participatory teaching and learning approaches, curriculum integration	At the end of July 2002, 268 schools were registered on the program in Scotland. At the end of July this year, the figure stands at 909. This represents 28% of all schools in Scotland.	First round of Green flag award schools focused on special environmental days, an indigenous garden at the Centre and a recycling program.	There were in 2003 more than 11,000 schools taking part, from 27 countries. Environmental Awareness, an improved school environment, involvement of local community, pupil empowerment, financial saving and international contacts.	N/A

Appendix 2

Partnerships Continuum for Improved EE in Schools

Prerequisites for partnerships	Sharing and creating new knowledge				Shared vision, innovation
	Sharing knowledge (tacit and explicit)			Shared responsibilities & cooperative decision making	
	Sharing information (data)		Collaboration with education agencies, schools, students & community		
	Arm's length relationship	Top-down provision of a service			
		Outcome-based, contract driven	Improve school processes	Joint program development; joint resources	Shared goals, resources and improved change
					Partnership Intensity



Adapted from Prahalad and Ramaswamy (2001, p. 4)

Appendix 3. Wales Eco-schools Case Study

Following the 1992 Rio Earth Summit, and the early development of the programme, *Eco-schools* finally arrived in Wales in 1995, and began to take hold in the North East and South Eastern Valleys. By 1999, there were 71 schools with just 6 Green Flags awarded.

A series of events took place, which have caused the programme to grow at a terrific pace over the last four years:

- The Welsh Assembly Government decided upon a unique commitment to promote Sustainable Development in all areas, including Education.
- EnCAMS (The Tidy Britain Group) employed an *Eco-schools* officer for Wales in 1999.
- In 2000 The School Curriculum authority (ACCAC) developed a personal and social education document which embraced Citizenship in action. *Eco-schools* was noted as a good example of this.
- The 'Healthy Schools' scheme was launched in 2001. In Wales we have a strong partnership with this national programme, which also helps pupils to work on the 'Healthy Living' aspects of *Eco-schools*.
- In April 2001, Welsh Language materials were launched by the Minister for Education, Jane Davidson A.M. This was an important step, as more than one in ten schools are taught in Welsh.
- 2003. School Councils have become mandatory. Of course, our *Eco-schools* can provide a ready-made council with quite a lot of experience.
- 2003. The Waste Awareness Wales Campaign adopted *Eco-schools* as the preferred education programme to highlight Waste Minimisation.
- 2004. School Inspectors are now looking to see if pupils are acting sustainably, e.g. by recycling, saving energy or developing their school grounds. Inspectors are instructed to find out "...if a school is taking part in an award scheme, such as the *Eco-schools* Programme".

All these developments have led to no less than 750 schools now registered for the programme in Wales. This means one school in three is working towards an award, with 69 Green Flags already flying. For over a year, Bronze and Silver certificates have been included in the process to help schools on their way. Pupils assess themselves on-line to see how well they are doing within the seven stages. This year will see an exciting new development for *Eco-schools* in Wales, 'consultancy' partnerships forming with expert groups who will be able to go to schools holding a Silver certificate, and work with the children to help them complete those final laps to the coveted European Green Flag.

Source: Taylor (2004)

Appendix 4. FEE Eco-schools Program Implementation

The Programme incorporates seven elements for schools to adopt as a methodology. These elements have been designed to be the core of the *Eco-schools* process, yet the structure is flexible enough to be adopted in any country, and at any level of schools' previous environmental achievement. Pupil involvement throughout the process is an integral factor.

- **Establishment of the Eco-School Committee:** The core of the *Eco-schools* process, the Committee organises and directs *Eco-schools* activities and consists of the stakeholders from the school environment, namely pupils, teachers, cleaners, caretakers, parents and governors. The sense of democracy involved, and the motivation in resolving initiatives brought forth by the students themselves are products of this process.
- **Environmental review:** Work commences with a review or assessment of the environmental impact of the school. Pupils are involved in this work, ranging from assessing the level of litter on school grounds to checking infrastructure for inefficiencies.
- **Action Plan:** The information from the review is used to identify priority areas and create an action plan, setting achievable and realistic targets and deadlines to improve environmental performance on specific issues.
- **Monitoring and evaluation:** Ensures that progress towards targets is followed, that any necessary changes are made to the action plan and that achievement is celebrated. It further ensures that environmental education and care is an on-going process in the school.
- **Curriculum work:** Classroom study of themes such as energy, water and waste are undertaken by most students. The whole school should be involved in practical initiatives, for example, saving water, recycling materials and preventing litter. Where environment and sustainable education is not part of the national/regional curriculum, recommendations are made as to how this can be incorporated.
- **Informing and involving:** This directly brings Local Agenda 21 into schools, as local authorities, businesses and the wider community are involved in the *Eco-schools* process. *Eco-schools* are encouraged to make ties with external organisations in order to benefit from their experience and expertise. *Eco-schools* are also encouraged to consider the wider community when preparing action plans. Schools can keep the wider community informed of actions taken through classroom displays, school assemblies and press coverage.
- **Eco-code:** Each school produces its own 'Eco-code' or statement of intent, outlining what the students are striving to achieve.

Source: FEE International Secretariat (2004a)

Appendix 5. Enviroschools, NZ's program implementation

Schools in the *Facilitated Programme of Enviroschools, NZ* are encouraged to use the process outlined below. Awards Scheme schools often start with a particular action project and may come back the foundation and vision steps at a later date.

Foundation	<ul style="list-style-type: none"> • Set up an Envirogroup (made up of teachers, Board of Trustee Members, caretaker/groundstaff, students, parents/whanau) • Develop an Environmental Education Policy and Curriculum • Teachers use the Me in My Environment section of the Kit to assist students to consider the world they are part of and how they can improve the quality of their school's physical and social environment • Strengthen community partnerships
Vision	<ul style="list-style-type: none"> • Create a Whole School Vision Map. Schools often use an aerial map of their grounds to document their vision for a more sustainable school. • Using their vision map the school decides on projects they will undertake each term (or each year) to move closer to their vision
Class Learning and Action	<div data-bbox="378 993 735 1182" data-label="Diagram"> </div> <ul style="list-style-type: none"> • Learning and action is organised around 5 themes: <ul style="list-style-type: none"> ○ Living Landscapes ○ Ecological Buildings ○ Healthy Water ○ Precious Energy ○ Zero Waste • Each of the themes involves students in sensory experiences, investigation, making decisions about change and then planning designing and implementing those changes. This action-learning process is depicted in the diagramme (above).
Reflection	<ul style="list-style-type: none"> • Documenting progress and sharing stories is central to the Enviroschools programme. In this way all participants add to the Pool of Knowledge/<i>Puna Matauranga</i>. • Schools annually evaluate progress towards the vision and agree priorities for the next year

Appendix 6. Ireland Green School Research

FEE Newsletter: May, 2001.

'An Taisce Studies show Positive Action on the Environment by Irish Eco-schools' (from An Taisce, FEE Member for Ireland, 31 May, 2001)

A 50% reduction in waste was achieved by schools in An Taisces' Green-Schools project, has been announced. Students involved in the programme are also more likely to translate their concern for the environment into positive behaviour. *Green-Schools* students drop less litter, are more involved in local environmental projects, conserve water and energy more and are more likely to think about the environment when making a purchase. These are the results coming from the two research projects undertaken by An Taisce into the effects of their *Green-Schools* programme. Students cited litter as their top concern with lack of an environmentally friendly culture within Ireland' as their second highest concern.

Green-Schools Waste Monitoring Survey

Over 11,000 pupils, teachers and caretakers nation-wide participated in *An Taisce Green-Schools Waste Monitoring Project*. Run over a five week period between February and March, all schools at various stages of the programme weighed their waste destined for landfill.

Preliminary results from the study show that schools can significantly reduce their waste through participation in this European-wide programme. Almost a 50% reduction in waste from the schools was noted. A very big thank you to all the schools involved who so enthusiastically responded to the challenge.

Green Schools Social Survey

Over 600 students took part in the survey designed to measure the social impact of the *Green-Schools* programme. Primary school students from 5th and 6th classes in both *Green-Schools* and non-*Green-Schools* responded to questions designed to assess their knowledge and awareness of environmental issues and their leadership traits and behaviour with respect to the environment.

Source: FEE International Newsletter (May, 2001)

Appendix 7. FEE Eco-schools, Scottish School Case Study 1.

St. Mark's Primary School, East Renfrewshire,

St. Mark's Primary was the first school in East Renfrewshire to achieve the Green Flag Award. Work on Eco commenced in January 2003 and the green flag was awarded in May 2003. East Renfrewshire has two Green Flag schools (the other being St John's - see the next issue for a report from them), seven with bronze awards and 75.7% of their schools are registered with *Eco Schools*.

Highlights from the Action Plan (2003)

- A new garden was created at the front of the school. A plaque was placed in memory of a former pupil who had died.
- New litterbins were placed in prominent places in the yard.
- The children sold recycled bins, link with enterprise.
- An Eco action day for the whole school. This included recycling competitions, planting and a show based on the seven ECO elements.
- The school entered an ECO float during Barrhead Gala Day (see picture below).
- Recycling bins introduced into all classrooms and office areas.
- Light monitors in every class.
- Eco code displayed in every classroom.

Action Plan 2004

- Complete front garden area by installing picnic benches.
- Design a nature garden at the back of the school and begin work on it.
- P1 & P2 to feed the birds during the cold spell. Make bird cakes to take home.
- ECO committee and Pupil Council to raise money for Unicef's water project.
- Litter pickers for the yard.
- Encourage older children to cycle to school during good weather.
- Encourage them to participate in cycling proficiency.
- Continue with Light Monitors.
- Record readings from electricity meters.
- Create an awareness of reduce and re-use-
- Carrier bags to be used as bin liners
- Collection of old uniforms at the end of school year
- Encourage less paper to be used
- Link School Health Week with Eco Day of Action

Source: Keep Scotland Beautiful, (2004b)

Appendix 8. FEE Eco-schools, Scottish School Case Study 2.

St Leonard's Nursery School, Edinburgh

St Leonard's Nursery School in the centre of Edinburgh recently became the first nursery in the city to gain a bronze award through *Eco-Schools*. The nursery has been working on Eco activities since June 2003. 35% of schools in Edinburgh are registered with *Eco-Schools*, 7 schools have bronze awards and one school, Portobello High School has a Green Flag award.

The nursery has reduced water consumption in their building by putting two litre cartons in the cisterns. This has led to discussion about how the school uses water and energy and how important it is not to waste either. At the end of lunchtime, the pupils put the remains of their snacks in a large compost container in their garden.

The children have been observing how food decomposes and gradually turns to soil with the aid of worms. In January, they also collected Christmas cards for the Woodland Trust.

The opportunities for learning about the environment have been planned under the five key areas of the nursery curriculum as outlined in 'A Curriculum Framework for Children 3 to 5'. The long and short term planning ensures the children's progress in environmental learning and is now embedded in all areas of the Nursery curriculum at St. Leonard's Nursery School.

In March the children, staff and parents will take part in a sponsored tidy-up of their wildlife garden. Further plans include other enterprise projects, which will involve selling recycled gift tags and potted seedlings taken from the flowers in the garden.

Source: Keep Scotland Tidy (2004)