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9 A comparison of environmental visions of university
students in Israel and Palestine

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21
23 **Abstract**

23 Young people's complex and contradictory understandings of the future are inevitably influenced
25 by their past experiences and the environment in which they currently live. Where this environment is
27 itself particularly complex or contradictory then the understandings young people hold of the future
29 will be affected. This paper, based on foresighting workshops held at three Israeli/Palestinian
31 universities, examines the differing environmental attitudes and understandings of the future that
33 young people hold in Israel and Palestine, before analysing the implications of these for achieving
35 more sustainable development in the region. Despite the very real challenges the region is facing,
these foresighting workshops showed that young people think systematically and rationally about the
future. They are not filled with pessimism but recognise the challenges they face and can identify
realistic solutions to those problems which they see as being of the greatest importance. The
foresighting workshops showed that there was some common understanding of the participants
about the key future environmental challenges that they face together with possible means for
tackling these challenges.

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1 1. Introduction

3 Successful development of more sustainable lifestyles is critically dependant on the type
of future people envision individually which in turn society as a whole collectively tries to
5 promote. However, many such visions remain poorly articulated or elaborated as
stakeholders find it socially, culturally or politically difficult to articulate and discuss these,
7 because these visions often reflect deeply held personal views about the future and because
people may find it difficult to envision radically different alternatives given their current
9 circumstances and predicaments. While humans are capable of determining and
influencing their future, the future cannot be seen as an objective fact but is better seen
11 as set of partially viewable alternatives [1].

Few studies have specifically targeted university students and their understandings and
13 perceptions of the future despite the fact that graduates frequently go on to have a
disproportionate impact on how their society develops. Hicks [2] for example, who
15 conducted three workshops with university students in the south-west of England, notes
that many students share a pessimistic understanding of the probable future, and in some
17 cases this pessimistic view encourages despair rather than more positive reactions. Hicks [3]
notes that young people's concerns change according to the current global situation, with
19 young people seeing all levels of society as problematic for their future. This has obvious
implications for sustainable development as a positive, desirable future state of society.

21 Eckersley [4] argues that the way in which young people perceive the future is both
complex and contradictory, with some surveys suggesting that young people tend to be
23 optimistic, while other surveys suggest that they are pessimistic. While this contradiction
may spring from a tension that exists between realism and idealism in the hearts of young
25 people, a better understanding of young people's perception of the future is required [4].
Pessimism on the part of young people may also be due, in part, to neo-Malthusian long-
27 term visions of the environment and the world that are put forward by various prominent
international environmental and social organisations to which young people are exposed.
29 However, it is university students who will likely be the decision-makers in the future and
be the generation that has to carry the burdens associated with the unsustainable lifestyles
31 of the present.

One methodology that is used to assess and plan for the future is foresighting.
33 Foresighting was developed partly in reaction to the failure of many conventional
approaches to forecasting [5]. It is a process that involves not only identification of the
35 most likely scenario but the evaluation of many possible, (un)desirable or feasible
scenarios. Indeed, developing accurate predictions or scenarios is not the primary aim of
37 foresighting, but rather, to challenge and redefine knowledge and assumptions about the
future [1].

39 Foresighting is defined by the UK Foresight Programme as a process which "produces
challenging visions of the future to ensure effective strategies now" [6]. It is seen as a way
41 of fostering better linkages between different sectors of society and of bringing together the
knowledge and expertise from a range of perspectives in order to increase national wealth
43 and quality of life. Foresighting is being used by many corporations and regional as well as
national governments, to model, understand and shape the future to their advantage [7].
45 While many foresighting programmes have focused upon the role of technology in driving
change, foresighting has been developed and used for a wide range of purposes. For
47 example, Royal Dutch/Shell developed a scenario planning methodology of foresighting,

1 and the European Union supported national foresighting exercises in EU accession
countries as a means of evaluating the possible effects of membership [5].

3 Foresighting is a process that by definition looks to the future. As such it makes sense to
involve young people: For example, *Agenda 21* developed at the Earth Summit in Rio in
5 1992 specifically emphasised the importance of involving young people in the development
and implementation of sustainable development because of the unique perspective that
7 young people can bring to debates about the future [8]. They ultimately have the greatest
interest in setting and bringing about the kind of future that they see as desirable. After all,
9 it is “their” future. The involvement of students in the development of future scenarios as
part of the foresighting process is also beneficial to the foresighting process itself since
11 young people are able to bring “fresher perspectives” that are less limited to existing
conventional views of the future [9].

13 Young people’s complex and contradictory understandings of the future will inevitably
be influenced by their past and current experiences and the environment (the physical,
15 social and political aspects) in which they currently live. Where this environment is itself
particularly complex or contradictory, such as during times of significant economic or
17 social upheaval, then the understandings young people hold of the future will be affected.

Israel and the territories controlled by the Palestinian Authority (here after referred to as
19 Palestine) have long been a region of conflict. The Palestinian—Israeli conflict began
approximately 100 years ago and has evolved through various phases of intensity. During
21 the 1990s a peace process was begun between the Israeli government and the Palestine
Liberation Organisation. This led to the establishment of the Palestinian Authority and the
23 ceding of some powers and territory by Israel to that Authority under the Oslo accords
which were signed in Washington in September 1993. In September 2000, however, the
25 peace process was effectively suspended and what became known as the second Palestinian
uprising or the Al Aqsa Intifada began. This brought a renewed intensity to the
27 Palestinian—Israeli conflict and the impact it had on daily life. In both Israel and Palestine
there was a severe economic downturn and many fatalities resulted from the hostilities
29 which ensued.

While the violence of the Palestinian Intifada has waned, a final end to the conflict and
31 the uncertainty that it brings remains elusive. No final agreement is yet in sight nor is there
clear agreement on the principles upon which a final agreement will be based. Thus even
33 the final territorial extent of Israel or Palestine in a generation’s time remains highly
uncertain, as do many other aspects relating to the future character of a Palestinian state,
35 and to a lesser extent, the Israeli state. As a result many aspects of the region’s natural
environment are also uncertain.

37 This paper, using a basic foresighting methodology, examines the differing environ-
mental attitudes and understandings of the future that university students hold in Israel
39 and Palestine, before analysing the implications of these for achieving more sustainable
development in the region.

41

43 2. Methodology

45 A series of mini foresighting workshops were held at three Israeli/Palestinian higher
education institutions. At the workshops held in Israel students were given the task: *To*
47 *develop a desirable vision of how Israel’s environment could look in 2025.*

1 At the workshop held in Palestine, students were given the same task but were asked to
2 consider the future of Palestine's environment instead of that of Israel. No further
3 instructions or information was given about what was meant by the terms "Israel",
4 "Palestine" or "environment", thus students were collectively free to define the parameters
5 of the task however they wished. Thus, they were free to take a maximalist or minimalist
6 stance in terms of the territory they considered. With some of the groups, particularly
7 those at the Arab-American University, Jenin, reaching agreement on the extent of the
8 territory they were considering was a challenging issue as some students at this university
9 wished to consider the entire area of historical Palestine (i.e. the territories of what is now
10 Israel, the West Bank and Gaza Strip) while other students wished to consider only the
11 territories of the West Bank and Gaza Strip. Similarly, students were free to consider the
12 term "environment" in purely natural-physical terms, or alternatively, consider issues
13 relating to the future of the social, economic and political environment in addition to those
14 of the natural environment.

15 The task of developing a desirable vision of how the environment could look in 2025 was
16 achieved by breaking the participating students in small groups of five or six students, and
17 then running a series of breakout sessions. In the first breakout session, students were given
18 20 min to outline a basic vision of the nation's environment for 2025. In the second
19 breakout session, students were asked to discuss the implications of their vision for local
20 people, land and resources, while in the third breakout session, students were asked to
21 consider the practical steps that needed to be taken to achieve their desired vision. A
22 plenary session followed each breakout session, during which representatives from some of
23 the small groups summarised their group's ideas for the rest of the workshop participants.
24 This permitted the pooling of ideas between groups and also helped maintain interest in the
25 overall workshop.

26 Prior to each workshop, all participants were required to fill out a short environmental
27 attitudes questionnaire. This contained 33 statements to which participants were asked to
28 respond using the five point Likert scale (Strongly disagree; Disagree; Neutral; Agree;
29 Strongly agree). Space for open comments was also provided. At the conclusion of the
30 workshop all participants were asked to complete a feedback questionnaire which also
31 consisted of a series of statements to which participants responded using the Likert scale,
32 followed by an open question where participants could comment generally. These
33 questionnaires provided directly comparable data on attitudes about the environment for
34 the different workshop groups.

35 The first workshop was held at the Arab American University, Jenin (AAUJ) in the
36 northern West Bank, Palestine, in June 2004. This university was founded as a private
37 Palestinian university which teaches courses in English based upon the American academic
38 system, and began teaching its first students in 2000. It has faculties of Administrative and
39 Financial Sciences, Allied Health Services, Arts and Sciences, Dentistry, Information
40 Technology, and Law.

41 Fourteen students (79% aged 18–20 and 21% aged 21–23; 64% male) participated in the
42 workshop as a voluntary extra-curricular activity. All of these students were from the West
43 Bank, from both urban and rural-village backgrounds. While none of the students were
44 majoring in environmental studies, all had previously taken the compulsory university
45 course "Humans and the Environment" and so had at least a basic familiarity with
46 environmental issues. A significant proportion of the participants were majoring in biology
47 or biotechnology, which had a noticeable effect on some of the scenarios they developed.

1 The second workshop was held at the Hebrew University of Jerusalem (HUJI) in July
2 2004. The Hebrew University is Israel's oldest university with approximately 24,000
3 students located on four campuses, three of which are in Jerusalem. It teaches a full range
4 of academic disciplines at the undergraduate and postgraduate levels, and in many fields is
5 considered to be the leading academic institution in Israel.

6 One-hundred and thirty-two students (21% aged 23 or below, 55% aged 24–26, 24%
7 aged 27 or above; 39% male) participated in a workshop as a compulsory part of a general
8 undergraduate course on environmental issues in Israel that was offered by HUJI's
9 Department of Geography. Thus all students had at least some familiarity with basic
10 environmental issues and the Israeli environment. The students, however, were not
11 majoring in geography or environmental studies but were majoring in a wide range of
12 disciplines across the university and were from a variety of year levels. This workshop was
13 conducted in Hebrew, thus virtually all the participants were Israeli citizens. However,
14 there was some diversity still in the audience as a number of participants were of immigrant
15 backgrounds and some participants were part of Israel's ethnic Palestinian minority.

16 The third workshop was held in March 2005 following the election of Palestinian leader
17 Mahmoud Abbas and the cease fire that occurred after the death of Yassar Arafat. It was
18 thus held at a time when the general atmosphere in the region was more positive than it
19 had been for some time.

20 The third workshop was held at the Arava Institute for Environmental Studies (AIES).
21 It offers a mixture of short courses, semester and year long programmes, as well as a
22 Masters programme in Desert Studies/Environmental Studies. The student population of
23 the Institute is drawn primarily from Israel, the Palestinian Territories, Jordan, Europe
24 and North America, with all courses being taught in English. All students live together in
25 Institute provided accommodation and thus experience co-existence between different
26 cultures and religions in a very practical way; there is a deliberate policy of mixing different
27 nationalities when it comes to room allocations.

28 Thirty students (43% aged 23 or below, 30% aged 24–26, 27% aged 27 or above; 47%
29 male), virtually the entire student body, took part in the workshop held at AIES as part of
30 the Peace Building and Environmental Leadership Seminar series. While the academic
31 background of the students was mixed, all students were enrolled in courses in
32 environmental studies in the Institute. Due to the diverse student body of the Institute,
33 a question was specifically added to the environmental attitudes questionnaire about the
34 national identity of participants. Of the 30 participants when asked which country they
35 considered to be their home, 30% responded with US/Canada, 27% with Jordan, 13%
36 with Israel, 7% with Palestine, 7% Germany, and 17% either did not answer the question,
37 were unsure, or said they had no country.

39 3. Differing environmental attitudes

40 Statistical analysis of the results of the questionnaires from the three workshops is
41 hindered by the very unequal distribution of the students who participated in these
42 workshops: 76% of the 180 students were from one university, hence the sample of Israeli
43 students is approximately 10-times the size of the Palestinian sample. The ability to identify
44 statistically significant differences between the three Universities was further hampered in
45 that only AIES had postgraduate students, and the AAUJ age distribution was
46 significantly younger, with no student over 23 years. For HUJI students participation in
47

1 the study was a compulsory component of a course they were taking whereas for the
 2 AAUJ and AIES students participation was voluntary. The gender distribution was,
 3 however, broadly similar across the three groups.

4 Overall, environmental opinions and attitudes across the board were quite strong, and
 5 broadly in line with similar surveys conducted elsewhere. Fifty-six percent of all students
 6 strongly agreed that they *personally care about the environment* and 58% strongly agreed
 7 that *nature has a right to be protected*, with a further $\frac{1}{3}$ of responses agreeing to the
 8 statement. (See Table 1 for a summary of responses to all attitudinal statements.)

9 On the translation of unspecified environmental views into activities, whilst over 80% of
 10 students said they personally cared about the environment, only 55% agreed that they *try*
 11 *to do their bit for the environment*, and 61% agree that they *encourage others to protect*
 12 *nature*, with the average responses from the HUJI workshop significantly lower than the
 13 others on both questions.

14 These general environmental opinions should also be seen in the light of whether
 15 personal actions are perceived to make a difference locally, regionally or globally. As said,
 16 over 80% of students *care personally about nature*, and while 55% state that they *do their*
 17 *bit to protect the environment*, only 37% of students agreed that personal actions *make a*
 18 *difference to the global environment* whilst 57% agreed that their personal actions would
 19 *make a difference to the local environment*. Students from HUJI showed significantly less
 20 optimism about the potential for their own actions to make a difference in either case
 21 compared to the AAUJ or AIES students. It is interesting to note that the differences in
 22 average response between these two questions was far less than the differences in response
 23 to questions about their perceived ability to make changes environmentally, indicating that
 24 environmental problems have probably a somewhat different dynamic and complexity
 25 than problems of a more societal nature.

26 In addition, it appears contradictory that students from the HUJI workshop felt
 27 significantly less that *Environmental problems will probably destroy human civilisation within*
 28 *my lifetime*, and showed significantly less agreement to the statement *I believe that*
 29 *environmental conditions locally will improve over the next 20 years*, although the fact that
 30 significantly less also agreed to the view that *we need not sacrifice parts of our lifestyle in*
 31 *order to protect the environment* is consistent with the former statement.

32 Generally for all the survey questions, using chi-square tests to check for statistically
 33 significant differences found that these mostly lay between the HUJI group and the other
 34 two. This may in part be due to the smaller sample sizes of the other workshops, but it is
 35 curious that HUJI students overall had a less optimistic view of their own future, saw
 36 themselves as less environmentally active, and had a less favourable view of the role of
 37 international organisations and their government when compared to either the AAUJ or
 38 AIES students.

39 To gain a deeper understanding of different groupings of environmental opinions, three
 40 separate factor analyses were performed, firstly on general perceptions of the future and
 41 students' ability to shape it, secondly on environmental attitudes generally and thirdly on
 42 attitudes specifically related to environmental activism. The resulting factors were then
 43 evaluated for their reliability, using alpha (Cronbach) reliability tests.

44 The first of these factor analyses produced three clusters, explaining 72% of the variance
 45 in the variables, thus a reasonably good fit. The clusters were:

47 1. *F1a: Environmental conditions will improve* ($\alpha = 0.815$): This factor consists of the three

1 Table 1
 Summary of frequency distribution for all attitudinal statements from the workshop questionnaire

3	Frequencies (%), all attitude statements, all places	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5	I personally care about nature		3.9	11.1	28.9	56.1
7	Nature poses limits upon us, which are absolute.	5.1	19.9	32.4	29.0	13.6
	Nature has a right to be protected	0.6	1.1	6.7	33.3	58.3
9	I try to do my bit to protect the environment.	3.3	13.3	28.3	33.3	21.7
	I encourage others to protect nature	5.0	15.0	19.4	29.4	31.1
11	I would not want to work for an organisation with a bad environmental reputation.	5.6	2.8	15.7	24.2	51.7
13	My personal actions make a difference to the global env	16.1	20.6	26.1	30.0	7.2
	My personal actions make a difference to the local env	11.1	13.9	17.8	36.1	21.1
15	Young people have the ability to shape their own future	4.5	7.8	19.0	41.9	26.8
17	Young people have the ability to shape the future of their country	1.1	9.4	22.2	43.9	23.3
19	Young people can influence environmental policy	1.7	8.9	21.7	39.4	28.3
21	There is no environmental problem that technology cannot solve	22.8	35.0	27.8	9.4	5.0
23	Harmony with nature is more important than technical progress.	3.9	18.4	27.4	30.7	19.6
	We have disrupted the harmony of nature.	3.4	6.7	19.0	41.9	29.1
25	It is better to minimise resources use rather than maximise output	2.8	6.1	30.6	34.4	26.1
27	There is no problem that cannot be solved with human ingenuity.	7.8	28.3	25.0	26.7	12.2
29	To solve environmental problems, we need more rationality	3.4	10.1	24.0	44.1	18.4
31	If we have to, we will adapt to nature any time	4.5	16.3	30.3	25.3	23.6
33	The best way to protect the environment is to have the right technology.	2.8	15.6	34.6	35.2	11.7
	In order to protect the environment we need to be more self-sufficient.	3.9	3.3	16.1	35.0	41.7
35	We need not sacrifice parts of our lifestyle in order to protect the environment.	25.1	37.4	17.9	16.8	2.8
37	Protecting the environment is more important than making financial profit.	2.8	12.8	25.7	33.0	25.7
39	Environmental problems will probably destroy human civilisation within my lifetime	50.3	17.9	11.7	13.4	6.7
	Most environmental problems are unsolvable	26.6	44.1	18.1	9.0	2.3
41	I am optimistic about my own future	6.2	11.8	33.1	32.0	16.9
	I am optimistic about the future generally	4.0	16.4	27.1	31.6	20.9
43	Int. bodies such as the United Nations are effective in dealing with global env. problems	16.7	25.0	28.3	27.8	2.2
45	Developed countries should do more to solve global environmental problems	1.7	10.1	21.9	30.3	36.0
47	Developing countries need to take greater initiative in managing their own env. problems	1.7	5.6	16.2	35.8	40.8

	Frequencies (%), all attitude statements, all places	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3	The government cares about the environment	25.7	36.9	19.0	14.5	3.9
5	I believe that environmental conditions locally will improve over the next 20 years	16.9	27.5	27.5	21.3	6.7
7	I believe that environmental conditions nationally will improve over the next 20 years	16.2	30.2	30.7	18.4	4.5
9	I believe that environmental conditions globally will improve over the next 20 years	13.9	27.8	32.8	18.9	6.7

■ Indicates that responses from the Israel Group were significantly higher ($p = 0.000$).

■ Indicates that responses from the Israel Group were significantly lower ($p = 0.000$).

■ Indicates that responses from the Palestine Group were significantly lower ($p = 0.000$).

statements relating to the perception of the relative improvement of the local, regional and global environment over the next 20 years as well as the statement *I am optimistic about my own future*.

2. *F1b: Young people shape futures* ($\alpha = 0.725$): This factor consisted of the statements relating to the ability of young people to shape their own as well as their country's future.

3. *F1c: Pessimism about future and Environment* ($\alpha = 0.235$): Whilst having a very low reliability coefficient, this factor consisted of the statements *Environmental problems will probably destroy human civilisation within my lifetime* and *I am generally optimistic about the future*.

These factors showed only one significant ($F = 5.344$, $p = 0.000$) difference for F1b between the youngest group (below 20 years) and the other age groups in that younger students adhere to that factor more, indicating greater optimism on their ability to shape futures. With regard to the workshops groups, students from the HUJI workshop scored significantly lower values on F1a and F1b compared to the other workshops, indicating a lower level of optimism amongst HUJI students compared to the other students. Gender did not appear to be a very strong predictor for the distribution of students for these factors.

The second factor analysis covered all variables directly related to environmental attitudes generally. Notably, this analysis does not include specific environment-related activities, but focuses on 14 normative, attitudinal, statements. Four factors could be identified:

1. *F2a: Ecocentrism* ($\alpha = 0.724$): This factor represents eco-centric views in that *Nature has a right to be protected*, and that the protection of natural systems are more important than both *making financial profit* and *technical progress*.

2. *F2b: Cornucopians* ($\alpha = 0.405$): This factor has a low reliability, but it resembles strongly the cornucopian belief in the ability of humans to develop appropriate solutions, and in technical progress generally. The relevant variable statements suggest that *there is no problem technology cannot solve*, and that *there is no problem that human ingenuity cannot solve*, so that, as a result, *we have not disrupted the harmony with nature*.

3. *F2c: Technical rationality* ($\alpha = 0.375$): Where F2b focussed on the ability of technology and human ingenuity to solve (non-existing) problems, this factor focussed on

1 technology as a specific way to address specific solutions. It is equally cornucopian as
 2 F2b, but offers less practical (technological) solution to the environmental problems,
 3 which are, as another difference, not denied.
 4. F2d: *Do nothing* ($\alpha = 0.408$): This factor is probably best describes by what it ~~not~~
 5 promotes: specific activities to promote or avert a set of desirable or undesirable
 6 possibilities. Recognising that *most problems are unsolvable*, and that *nature poses limits*
 7 *upon us which are absolute*, it also suggests that *we need not sacrifice parts of our lifestyles*
 8 *in order to protect the environment* and that *the government cares about the environment*.
 9

11 As Tables 2–4 show, no statistically significant difference in these four factors could be
 12 found at 99% and 95% levels for age groups and gender. However, such differences could
 13 be found between workshop places (Table 4), indicating, again, that the place of study is
 14 the most significant predictor for the distribution of factors.

15 The scores for F2a ecocentrism for the HUJI students were significantly lower than the
 16 AIES students, and showed no significant difference to AAUJ students, although the latter
 17 is due to the low number of participants in the latter workshop. In contrast, even though
 18 the AIES students had the lowest overall score for Cornucopia (F2b), an important
 19 difference could be found between HUJI students (second lowest score) and AAUJ

21 Table 2
 22 ANOVA of factors by age group

		Sum of squares	df	Mean square	F	Sig.
25	F1a: Env conditions will improve	Between groups 8.171	4	2.043	2.117	0.081
		Within groups 160.162	166	0.965		
		Total 168.333	170			
27	F1b: Young people shape futures	Between groups 19.408	4	4.852	5.344	0.000
		Within groups 150.723	166	0.908		
		Total 170.131	170			
29	F1c: Pessimistic about future and Env	Between groups 2.148	4	0.537	0.538	0.708
31		Within groups 165.736	166	0.998		
		Total 167.884	170			
33	F2a: Ecocentrism	Between groups 5.211	4	1.303	1.323	0.264
		Within groups 163.481	166	0.985		
		Total 168.692	170			
35	F2b: Cornucopians	Between groups 6.012	4	1.503	1.517	0.199
		Within groups 164.476	166	0.991		
		Total 170.488	170			
37	F2c: Technical rationality	Between groups 1.637	4	0.409	0.402	0.807
		Within groups 168.967	166	1.018		
		Total 170.604	170			
39	F2d: Env is out of our hands	Between groups 9.205	4	2.301	2.390	0.053
41		Within groups 159.810	166	0.963		
		Total 169.015	170			
43	F3a: Personal activism	Between groups 7.515	4	1.879	1.909	0.111
		Within groups 169.268	172	0.984		
		Total 176.783	176			
45	F3b: Effectiveness	Between groups 16.648	4	4.162	4.472	0.002
		Within groups 160.068	172	0.931		
47		Total 176.716	176			

1 Table 3
ANOVA of factors by gender

3			Sum of squares	df	Mean square	F	Sig.
5	F1a: Env conditions will improve	Between groups	1.497	1	1.497	1.516	0.120
		Within groups	166.836	169	0.987		
		Total	168.333	170			
7	F1b: Young people shape futures	Between groups	2.423	1	2.423	2.441	0.120
		Within groups	167.708	169	0.992		
		Total	170.131	170			
9	F1c: Pessimistic about future and Env	Between groups	2.582	1	2.582	2.639	0.106
11		Within groups	165.302	169	0.978		
		Total	167.884	170			
13	F2a: Ecocentrism	Between groups	0.258	1	0.258	0.258	0.612
		Within groups	168.435	169	0.997		
		Total	168.692	170			
15	F2b: Cornucopians	Between groups	0.070	1	0.070	0.069	0.792
		Within groups	170.418	169	1.008		
		Total	170.488	170			
17	F2c: Technical rationality	Between groups	3.476	1	3.476	3.515	0.063
		Within groups	167.128	169	0.989		
19		Total	170.604	170			
21	F2d: Env is out of our hands	Between groups	0.063	1	0.063	0.063	0.802
		Within groups	168.952	169	1.000		
		Total	169.015	170			
23	F3a: Personal activism	Between groups	0.282	1	0.282	0.279	0.598
		Within groups	176.501	175	1.009		
		Total	176.783	176			
25	F3b: Effectiveness	Between groups	0.557	1	0.557	0.553	0.458
		Within groups	176.160	175	1.007		
27		Total	176.716	176			

29 students. The same pattern was identified with regard to F2c (technical rationality), which
 31 in this case was statistically significant between HUJI and AAUJ, but not between HUJI
 and AIES. This is somewhat distinct to the results of the last factor in this set, where F2d
 (do nothing) had the lowest score for the HUJI group, significantly lower than both AAUJ
 33 and AIES.

With regard to the overall distribution of factors by place, HUJI students scored low
 35 consistently on all four factors, while AAUJ students scored relatively consistently high.
 AIES students scored low on the cornucopian perspectives (F2b and F2c), but scored
 37 higher on the ecocentrist (F2a) and the somewhat fatalist (F2d) perspectives.

The third factor analysis covered all six variables directly linking environmental
 39 attitudes with personal attitudes or actions. Two factors, explaining 62% of the variance
 could be identified:

- 41
- 43 1. *F3a: Personal activism* ($\alpha = 0.682$): Here, *encouraging others to protect nature* was linked
 45 with *I personally care about nature* and *I try to do my bit to protect the environment*.
 Linked to this, albeit less important in the calculation of the factor scores was also the
 statement *I would not want to work for a company with a bad environmental reputation*,
 47 all suggesting strong environmental activism and personal concern.

1 Table 4
 ANOVAs of factors by institution

3			Sum of squares	df	Mean square	F	Sig.
5	F1a: Env conditions will improve	Between groups	12.931	2	6.466	6.913	0.001
		Within groups	158.069	169	0.935		
		Total	171.000	171			
7	F1b: Young people shape futures	Between groups	20.764	2	10.382	11.679	0.000
		Within groups	150.236	169	0.889		
		Total	171.000	171			
9	F1c: Pessimistic about future and Env	Between groups	1.407	2	0.704	0.701	0.497
11		Within groups	169.593	169	1.004		
		Total	171.000	171			
13	F2a: Ecocentrism	Between groups	11.780	2	5.890	6.252	0.002
		Within groups	159.220	169	0.942		
		Total	171.000	171			
15	F2b: Cornucopians	Between groups	8.415	2	4.208	4.374	0.014
		Within groups	162.585	169	0.962		
		Total	171.000	171			
17	F2c: Technical rationality	Between groups	8.569	2	4.284	4.485	0.013
		Within groups	162.431	169	0.961		
		Total	171.000	171			
19	F2d: Env is out of our hands	Between groups	17.956	2	8.978	9.914	0.000
21		Within groups	153.044	169	0.906		
		Total	171.000	171			
23	F3a: Personal activism	Between groups	14.227	2	7.113	7.648	0.001
		Within groups	162.773	175	0.930		
		Total	177.000	177			
25	F3b: Effectiveness	Between groups	28.172	2	14.086	16.563	0.000
		Within groups	148.828	175	0.850		
27		Total	177.000	177			

29 2. *F3b: Effectiveness* ($\alpha = 0.698$): This factor comprised two statements, whether *my*
 31 *personal actions make a difference to the global and the local environment.*

33 Like the second factor analysis, no difference in these scores was found between gender
 35 groups, but F3b: effectiveness was found to be different between the youngest age group
 37 (<20 years) and the two cohorts covering 21–26 years. With regard to workshop group, no
 differences were found between AIES and AAUJ, but between HUJI and the other two
 groups, with the HUJI students scoring significantly lower.

39 4. A range of possible futures

41 Table 5 presents a summary of the key issues covered in the scenarios developed by each
 43 of the different groups at the three workshops. A couple of issues were of overwhelming
 45 importance to virtually all the groups at all three institutions. Every group in all the
 workshops, except one group at AIES, discussed the issue of water resources in their
 47 scenarios, and all but three groups (except one at HUJI and two at AIES) mentioned the
 issue of environmental pollution. Other issues varied in their relative importance between
 the different student bodies.

Table 5
Summary of the key issues covered in the scenarios developed by each of the different groups at the three workshops

Group ^a	Environmental issues										Social/Political Issues				
	Water	Pollution	Land use planning	Transport	Agriculture/ food supply	Energy	Sensitive environmental sites	Biodiversity	Population growth	Recycling	Palestinian-Israeli conflict	Regional environmental issues	Incomes/ employment/ social inequality	Education and research	
Optimist/ pessimistic vision for 2025															
AAUJ 1															
AAUJ 2															
AAUJ 3															
HUJI 1															
HUJI 2															
HUJI 3															
HUJI 5															
HUJI 6															
HUJI 8															
HUJI 9															
HUJI 10															
HUJI 17															
HUJI 18															
HUJI 33															
AEIS 1															
AEIS 2															
AEIS 3															
AEIS 4															
AEIS 5															

^aSome of the HUJI groups did not submit written descriptions of their scenarios to the workshop organisers. These group's scenarios are not included in this table.

1 The issues of land use planning, loss of open space, and transport were mentioned by all
 2 HUJI groups in one form or another. This is perhaps a reflection of the increasing
 3 congestion occurring in the centre of Israel (in the Tel Aviv–Jerusalem–Haifa area), and
 4 the general concentration of economic and social development in this area at the expense
 5 of the periphery of the country. Conversely in Palestine, development is geographically
 6 more evenly spread and there are much more fundamental issues than congestion which
 7 are of daily concern to students such as the uncertainty of getting to classes due to road
 8 blocks, travel restrictions and the overall dismal state of the Palestinian economy.

9 Generally the HUJI groups considered a wider range of environmental and social issues
 10 than the groups in the other workshops. This may be a result of these students being better
 11 informed about the state of the Israeli environment compared to the students at AIES or
 12 AAUJ, but it is more likely a reflection of the fact that HUJI groups spent less time
 13 discussing fundamental issues, such as food security or the territorial extent of the national
 14 entity they were considering.

15 A key issue for all the groups at the AAUJ workshop was the issue of agriculture and
 16 food production, an issue that was not considered by some of the HUJI or AIES groups.
 17 This is a reflection of the relative great importance of agriculture in Palestinian society
 18 compared to its importance in Israeli society. It may also be a reflection of the greater food
 19 insecurity facing Palestine compared to the high level of food security enjoyed by Israel as
 20 a result of its strong economic position.

21 The issue of the Palestinian–Israeli conflict featured much more strongly in the AAUJ
 22 and the AIES groups than with the HUJI groups. In the case of AAUJ this is probably
 23 because the immediate impact of the military occupation on daily life means that the
 24 conflict is ever present. Thus it is not possible for the students to consider the long term
 25 future without considering this issue. In the case of the AIES workshop, the very mixed
 26 nature of the student body meant that ongoing relations between the different ethnic
 27 groups were central to discussions, and the workshop was run as part of the Institute's
 28 Peace Building and Environmental Leadership Seminar series.

29 It was difficult to classify the different groups' visions as either optimistic, neutral or
 30 pessimistic as most visions had both positive and negative elements. For example, a group
 31 might have foresaw higher incomes and more efficient public transport but higher
 32 population densities and increased water scarcity, thus including both positive and
 33 negative elements in their vision. In [Table 1](#), visions are classified as being either optimistic
 34 or pessimistic only where the content was more focused in one direction than the other.

35

37

38 *4.1. Scenarios developed by students at AAUJ*

39

40 The 14 students who participated in the workshop at AAUJ were divided into three
 41 small groups. Because of the high level of uncertainty relating to the future, no group was
 42 able to articulate a very clear or detailed vision of the future but all groups were able to
 43 identify key issues of concern and propose practical measures for dealing with these. In all
 44 of the groups similar issues such as access to water resources, loss of agricultural land to
 45 urbanisation, rapid population growth, and political uncertainty were seen as key
 46 challenges for the future of the environment.

47

1 4.1.1. Group 1

2 This group understood that the future of the environment in Palestine would depend
3 upon the effectiveness of the peace process with the Israelis, and the general stability of the
4 political situation as both of these factors in turn would determine issues such as the return
5 of Palestinian refugees to either Israel or Palestine or whether there would be a significant
6 population transfer of Palestinians out of Palestine. Key future challenges that would
7 influence the Palestinian environment were: reduced water resources, high population
8 growth, increased pollution, and the problem of limited agricultural land. This group's
9 vision for the future of the environment centred on the development of a greater
10 understanding of the environment.

11 In terms of the actions required to deal with current environmental problems and bring
12 about a better environment for 2025, this group considered a number of practical steps. To
13 deal with water resource problems this group suggested increasing awareness about water
14 usage issues amongst the general population, greater recycling of wastewater, desalination
15 of sea water to increase water supplies, and using international law to protect the right to
16 equal access to water. (This was the only group in any of the workshops who looked to
17 international law as providing part of the solution to dealing with an environmental
18 problem.) With regards to rapid population growth, it was proposed to improve education
19 on family planning issues in Palestinian refugee camps. Reforestation was also seen as a
20 priority in order to improve the environment.

21

23 4.1.2. Group 2

24 This group understood that key environmental challenges for the future centred around
25 increasing industrialisation and urbanisation, population growth due to the return of
26 Palestinian refugees, and ensuring access to water. This group's vision for the future
27 focused on providing adequate access to food and water resources for everyone, and using
28 advanced technologies to reduce environmental pollution.

29 In terms of practical steps required now to bring about their vision for the future
30 environment, this group suggested that community based education and consultation on
31 the environment was required. They also thought that the government needed to actively
32 promote environmental research and better regulate water usage and recycling. Waste-
33 water treatment and increasing the area of cultivated land were seen as important, along
34 with the use of biotechnology, as means of increasing food production.

35

37 4.1.3. Group 3

38 This group saw increasing water scarcity and population growth as the key
39 environmental challenges for the future, with their vision for the future centred around
40 developing a clean environment and ensuring adequate access to food and water resources.

41 In terms of practical steps to deal with water resource problems, this group saw
42 increased government regulation of water usage, desalination, reuse of wastewater for
43 agriculture, and genetic modification of agricultural crops for drought resistance as
44 potential solutions. To deal with problems resulting from population growth, high rise
45 housing to reduce land usage, increased recycling to reduce pollution and use of alternative
46 energy sources were seen as mitigation measures.

47

1 4.2. Scenarios developed by students at HUJI

3 One hundred and thirty-two students participated in the workshop at HUJI, with these
 5 students being divided into 23 groups. Given the higher degree of certainty about the
 7 future compared to the Palestinian students, many of these groups came up with visions of
 9 the future that were relatively similar and plausible. Most groups, for example, considered
 11 land-use and transport planning issues, particularly the degree to which national
 13 development would be concentrated in the centre of the country (in the greater Tel Aviv
 15 metropolitan area), and also the degree to which future development would be
 17 concentrated in existing urban areas, thus protecting remaining areas of open space.
 19 Most groups also considered water purification or desalination as a primary means for
 21 dealing with growing water scarcity and declining quality. The most significant difference
 23 between the visions that were articulated related to the level of optimism (or pessimism)
 25 about the ability of the Israeli government and society generally to deal with the major
 27 likely future challenges stemming from increased population and economic development.
 29 Samples of the groups' visions are outlined below.

4.2.1. Group 1

19 This group saw that population growth and economic and technological development
 21 would continue, thus producing a higher standard of living and diminishing open space.
 23 However, there would be greater economic inequality and social injustice. While
 25 technological solutions would be found for some environmental problems, generally there
 27 would be deteriorating environmental quality. Development would continue to be
 29 concentrated in the centre of the country at the expense of the periphery. Effectively, this
 31 group's vision was a continuation of the status quo.

In terms of steps required now to deal with some of the problems foreseen, this group
 27 suggested greater investment in human capital via education. They also saw that more
 29 effective land-use and transport planning would be required, and new technologies would
 31 need to be used to deal with pollution, energy supplies, and water resources.

4.2.2. Group 2

31 This group foresaw the development of an effective transport system, particularly public
 33 transport, which would allow more development to occur on the periphery of the country
 35 and thus reduce regional inequalities. Strict land-use planning would prevent development
 37 occurring in the open spaces remaining in the centre of the country. Waste minimisation
 39 and recycling would be enforced in order to preserve environmental quality, and
 41 desalination would be used reduce dependency upon diminishing water resources and
 43 reduce the need to co-operate regionally on water issues. Unlike the first group, this
 45 group's vision was one of effective governance allowing economic development to occur in
 47 parallel with environmental preservation.

41 The steps required now to bring about this vision centred around better environmental
 43 education and political leadership, better environmental protection laws and enforcement,
 45 together with greater financial resources being devoted to environmental protection.

4.2.3. Group 17

45 This group considering similar issues to those of the other groups such as continued
 47 urban development leading to the loss of open space and the merging of key urban areas

1 such as Tel Aviv and Jerusalem. This group was one of only three HUJI groups, however,
2 that mentioned the conflict with the Palestinians (or Arabs), and the only group that
3 referred to it in any depth. They foresaw that dependency between Israel and Palestine
4 would grow as a lack of resources forced co-operation; the actions of each side would
5 directly affect the other. They thought that gaps between the two sides would increase, and
6 the problems faced by the Palestinians in relation to inadequate water and clean air, and a
7 general lack of environmental awareness would cause a catastrophe in Palestine which
8 would spill over into Israel.

9 This group suggested that one means to deal with common environmental problems
10 would be through technological sharing with the Palestinians in order to lower tensions
11 and improve the environmental quality for both Israel and Palestine.

13 4.3. Scenarios developed at AIES

15 Thirty students participated in the workshop held at AIES, with these students being
16 divided into five groups. Given the mixed nature of the student body together with the
17 ethnically mixed nature of each individual workshop group, it is not surprising that there
18 was a lot more variety in the environmental vision of each group compared to the
19 differences between workshop groups at AAUJ or HUJI. The scenarios developed at AIES
20 tended to be more optimistic than those developed at either AAUJ or HUJI. This is
21 probably due to the mixed Arab–Israeli nature of the group and that the students
22 participating in this study were all involved in a conflict resolution seminar focusing on the
23 conflict. A range of these visions are outlined below.

25 4.3.1. Group 1

27 This group envisaged the establishment of a Middle East Environmental Union to deal
28 with regional environmental problems, based upon the idea that scarcity would lead to co-
29 operation, and co-operation would lead to peace and prosperity. This prosperity would be
30 based upon the sharing of infrastructure, resources and knowledge.

31 In terms of implementing their vision, this group thought that the most critical thing was
32 developing a belief in the possibility of change and understanding the urgency of change.
33 Creating a core of professionals and raising money from national and international sources
34 to tackle environmental problems and implementing pilot projects were seen as key steps.

35 4.3.2. Group 2

37 Regional peace was envisaged by 2025 by this group. They foresaw a range of
38 developments by 2025, including that there would be equitable access to water according to
39 need, greater use of renewable energy, better public transport, sustainable self-sufficient
40 agriculture, reduced consumption, and a change in leadership “from military to people
41 who are more understanding”.

43 In terms of implementing this vision, this group saw the need to stop the occupation,
44 minimise the military, and allow the Palestinians to have their own state. This was to
45 happen simultaneously with education in both Israel and Palestine on tolerance and
46 cultural co-existence. There were also a number of changes required with direct
47 environmental benefits such as making agriculture more sustainable or installing solar
48 panels for energy production in public institutions.

1 4.3.3. Group 3

3 Group 3 developed the least optimistic scenario of the AIES workshop. This group
3 foresaw higher air and water quality resulting from better government regulation, and
5 more efficient public transport. However, they also foresaw the continued loss of open
5 space due to a population explosion which would lead to continued urban sprawl and
7 valuable environmental spaces being developed for things such as airports.

7 In terms of implementing their vision, group 3 thought that their vision was more or less
9 a continuation of the status quo and envisaged very little change.

11 5. Discussion and conclusion

13 Both Israel and Palestine face daunting social and environmental challenges over the
13 next 25 years. Together, they contain an area of less than 27,000 sq km, thus their
15 combined territory is smaller than that of Belgium or the US state of Massachusetts. The
15 population of Israel is likely to increase from around 6.1 million to 8.6 million, with the
17 population density likely to rise from 294 to 414 persons/sq km [10,11]. In Palestine the
17 population is expected to increase from 3.2 million to 6.9 million, with average population
19 density likely to rise from 563 to 1109 persons/sq km. While there is considerable variety in
19 the landscape, because of the harsh desert climate affecting much of the region, population
21 densities in the inhabited areas of the region are and will continue to be much higher than
21 these figures suggest. Naturally available freshwater resources will shrink from their
23 already extremely low level, both in per capita terms and absolute terms. On top of the
23 developmental challenges presented by a rapidly growing population, a shrinking natural
25 resource base, and in the case of Palestine, severe poverty affecting the majority of the
25 population, the Palestinian–Israeli conflict continues to impact upon economic and social
27 development, and general stability. The region faces a long-term low intensity conflict, in
27 which at certain times and in certain places the intensity increases substantially.

29 Despite the very real challenges the region is facing, the students who participated in the
29 mini-foresighting workshops were not particularly pessimistic even though the Israeli
31 students tended to be slightly more pessimistic about the future generally and the future of
31 the environment specifically compared to their Palestinian counterparts. Israeli students
33 were also more sceptical about their own ability to influence the future. Given the much
33 higher standard of living achieved in Israel, the higher environmental quality standards,
35 the lower population density and the better availability of natural resources, this greater
35 degree of pessimism is perhaps somewhat unexpected. Even in terms of the Israeli–Pa-
37 lestinian conflict specifically, it might be expected that Israeli students should be more
37 confident about the future and their ability to influence it as Israel appears to have the
39 upper-hand in terms of determining events on the ground, with the conflict having a much
39 greater impact on daily lives in Palestine than it generally does within Israel and producing
41 a much higher degree of uncertainty in Palestine about what will happen in both the
41 immediate and longer term future.

43 There are a number of general factors which may explain the difference in level of
43 optimism about the future. Firstly, the Israeli students were older on average than the
45 Palestinian students and as people age optimism can be replaced with scepticism. There are
45 other factors that are related to the Palestinian–Israeli conflict which may also explain the
47 difference though. With the conflict having a much greater impact on daily life in Palestine,
47 thus leading to a very difficult living environment, individuals may try to compensate for

1 the present difficulties by focusing more upon what they can only hope will be a better
 2 future. Conversely, with Israel appearing to have the upper-hand in the conflict at present,
 3 some Israelis may be pessimistic that Israel will be able to maintain its advantage
 indefinitely.

5 Differences in terms of the issues considered in the future scenarios developed by the
 different groups of students were not unexpected given that Israel has a moderately
 7 prosperous developed economy while Palestine is at a much earlier stage of its national
 economic development. Whereas most Israeli scenarios dealt with the issue of increasing
 9 development and congestion occurring in the centre of Israel, the Palestinian scenarios
 focused on issues such as agriculture and food security. Differences in environmental
 11 priorities between societies and shifts within individual societies over time have been
 identified by others as a result of changing economic prosperity, with more prosperous
 13 societies generally placing less emphasis on basic material needs [12].

Another significant difference in the scenarios is the fact that the majority of Palestinian
 15 or mixed Palestinian–Israeli groups (in the case of AIES) considered the Palestinian–Israeli
 conflict, while only a minority of the Israeli groups did. This omission on the part of so
 17 many groups suggests that to many students the conflict is in the background and so not
 seen as a particularly fundamental issue to their life or the future generally. The fact that
 19 more Israeli than Palestinians students managed to ignore the issue whilst the effects of the
 conflict on daily life are more severe in Palestinian areas would tend to discount the
 21 counter possibility, namely that students consciously or sub-consciously blocked out the
 issue as a result of trauma or other reasons. It would not exclude the possibility though
 23 that some students ignored the issue because they simply did not see any hope of
 resolution.

25 Overall, these foresighting workshops showed that young people can (and do) think
 systematically and rationally about their future and the future of their environment. Even
 27 in a part of the world with a difficult past and present, and a future with many
 uncertainties, young people are not filled with pessimism but recognise the challenges they
 29 face and can identify realistic solutions to those problems which they see as being of the
 greatest importance.

31 While the various scenarios that students developed showed that there was no
 underlying shared recognition of the importance the Palestinian–Israeli conflict as a cause
 33 of many of the significant environmental, social and economic problems faced by Israel/
 Palestine, there were other critical factors common to all three workshops. All small
 35 groups except one recognised the importance of water issues to the region's future, and
 most groups considered issues related to pollution and agriculture. Most groups also
 37 recognised the importance of education and research as key means for tackling the
 problems they identified. Thus, there would appear to be some common agreement
 39 amongst young people in Israel/Palestine about the key future environmental challenges
 that they face together with possible means for tackling these challenges.

41

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