SEVENTH FRAMEWORK PROGRAMME
THE PEOPLE PROGRAMME

Grant agreement for: Initial Training Networks

Annex I - "Description of Work"

This document refers to PEOPLE Work Programme 2008

Project acronym: THROUGHFLOW
Project full title: Cenozoic evolution of the Indonesian Throughflow and the origins of Indo-Pacific marine biodiversity: Mapping the biotic response to environmental change
Grant agreement no.: 237922
Date of approval of Annex I by Commission: 04 June 2009

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PART A:
A 1 List of beneficiaries and project summary

A.1.1 List of Beneficiaries

Table A1: List of Participants

Beneficiary Number	Full Network Partner	Short Name	Country	Date enter project	Date exit project
1(Coordinator)	Natural History Museum	NHM	United Kingdom	Month 1	Month 48
2	Christian-Albrechts-Universität zu Kiel	CAU	Germany	Month 1	Month 48
3	Stichting Nationaal Natuurhistorisch Museum Naturalis	NNM	Netherlands	Month 1	Month 48
4	Royal Holloway and Bedford New College	RHUL	United Kingdom	Month 1	Month 48
5	Universität Bremen	Uni-HB	Germany	Month 1	Month 48
6	Universidad de Granada	UGR	Spain	Month 1	Month 48
7	Universiteit Utrecht	UU	Netherlands	Month 1	Month 48

Table A2: List of Associated Partners

Associated Partner Number	Associated Partner Name	Short Name	Country	Level of Participation	Organisation Status
1	Curtin University of Technology	CU	Australia	2	Secondary or higher education establishment
2	Murphy Sarawak Oil Co. Ltd.	MO	Malaysia	2	Non-SME
3	Palynova	PN	United Kingdom	2	SME
4	Pusat Survei Geologi	PSG	Indonesia	2	Non profit public body
5	Smithsonian Tropical Research Institution	STRI	Panama	2	Non profit research organisation
6	University of Queensland	UQ	Australia	2	Secondary or higher education establishment

A.1.2 Project Summary

KEYWORDS

Biodiversity inventory: systematics phylogeny taxonomy,Paleontology,Stratigraphy,Marine ecosystems (Climate change),Paleoclimate (Climate change),Paleoceanography

ABSTRACT

A critical agenda for earth and life sciences is to determine how diverse tropical marine ecosystems such as coral reefs will respond to global environmental change. This will require long-term environmental and ecological data that rarely exist for living coral reefs. In contrast, the fossil record provides abundant examples that can be mined to predict future outcomes. The THROUGHFLOW network will train a cohort of eleven ESRs to enable them to reconstruct past environments and patterns of biotic change using up-to-date technologies within a collaborative interdisciplinary framework. The training program will explore the past record of change on coral reefs in SE Asia in response to reorganization of ocean currents during the Cenozoic. This region contains both the Indo-West Pacific Center of Biodiversity (the most diverse shallow marine ecosystems on Earth) and the Indonesian Throughflow (a primary control of global climate). THROUGHFLOW will reconstruct the history of these two features and develop a model for how coral reefs respond to regional environmental change. Practical training will include eleven integrated research projects and a series of joint training activities to facilitate collaboration and provide access to a variety of expertise. THROUGHFLOW will bring important new data to bear on long-standing scientific controversies, and the results will be relevant to a broad audience including industry and policy makers working to predict and plan for the effects of ongoing anthropogenic environmental change. By providing rigorous training in a range of applied techniques in geology and biodiversity, THROUGHFLOW will produce researchers able to pursue successful careers in academia or industry and will enhance the power of the European research community to tackle pressing issues related to the effects of ongoing environmental change on the biosphere.

PART B:
B.1 Description of the joint Research Training Project

B.1.1 Project Overview

The scientific objective of THROUGHFLOW is to reconstruct the biological and environmental history of shallow marine habitats of a part of southeast Asia. This region includes the most diverse extant marine biota in the world as well as the Indonesian Throughflow (ITF) - the sole tropical ocean gateweay and a significant influence on global climate. However, the origins of this biodiversity 'hotspot', and the significance of the ITF as a control on regional diversity remain to be fully understood. As a novel association of earth and life scientists from academic institutions and industry, THROUGHFLOW will able to complete a mulidisciplinary study of key sections in Central Java and Eastern Kalimantan that will integrate data from geology, geochemistry, ocean modelling, and paleontology to understand the Neogene history of the region. This work will require the development of a new integrated methodology for collecting, analyzing, and synthesizing the disparate range of information needed to document the geological record of environmental and biotic change in coral reefs and other highly diverse tropical marine ecosystems. Besides recontructing the history of diversity in the region, we aim to improve awareness in the broad scientific and general community of the value of ancient biotic response to environmental change to aid the prediction of outcomes of ongoing anthropogenic global environmental change on coral reefs and associated ecosystems.

The training objective of THROUGHFLOW is to combine leading researchers with unique experiences of field and laboratory research on the geology, stratigraphy, and palaeontology of SE Asia with experts in global change research to provide a unique training experience for eleven early stage researchers (ESR) in field, laboratory, and transferable skills combining the highest level of specialist skills development with the ability to work productively in a multi-disciplinary environment, as is increasingly essential to pursue high-level careers in industry or academia. The ultimate aim is to provide a cohort of European researchers with a strong professional network that will allow Europe to take the lead in studies of the geologic history of diverse tropical ecosystems.

B.1.2 Concept and Project Objectives

Coral reefs and associated shallow-water habitats support the most diverse and productive marine ecosystems on Earth and are of enormous socio-economic value. However, coral reef systems are under increasing threat from a range of natural and man-made disturbances, and determining the response of marine ecosystems to anthropogenic environmental change is a critical research priority for both Life and Earth Scientists. Ecologists studying modern reefs are faced with the dilemma that they have no baseline data to model the impact of predicted environmental change. However, some useful baseline information is available in fossil record, particularly for shallow marine ecosystems such as coral reefs. Environmental change is a pervasive part of earth history, and modern reef-building corals have survived repeated and varied episodes of past environmental change. Documenting the ancient dynamics is essential to the understanding of tropical ecosystems and requires a large-scale interdisciplinary approach.

SE Asia contains the most diverse terrestrial and shallow marine biota on Earth, yet the factors responsible for the origins and maintenance of this diverse biota remain unknown. Molecular phylogenetic studies suggest that most extant taxa evolved during the Miocene. However, the fossil evidence currently available to document this pattern and its geographic context is sparse, and primarily consists of small collections of fossils and publications from the late nineteenth and early twentieth centuries. The existing data demand taxonomic and stratigraphic revision to accommodate advances in these fields over the past century, but most importantly there is a crucial need to collect new data.

SE Asia contains the modern-day Indonesian Throughflow (ITF). The ITF is the last remaining equatorial oceanic gateway, allowing heat transfer as water flows from the Pacific into the Indian Ocean, and is a major influence on global climate. The long-term history of the ITF is controlled by the complex plate tectonic history of the region**.** Throughout the Cenozoic era, SE Asia has been characterized by convergence of the Indo-Australian and Philippine-Pacific Plates with the stable Asian Craton, and at around the Oligocene-Miocene transition (~25 Ma) the Australian Plate impacted on the Philippine Sea Plate resulting in restrict deep throughflow and initial constriction of the ITF

Is it a coincidence that the most diverse biota on earth occurs in a geologically dynamic region that also contains a major control of the global climate? There is evidence that these phenomena are related via long-term changes in coral reef ecosystems in the region. Previous studies suggest that three important changes occurred near the Oligocene-Miocene transition in SE Asia, including (1) constriction of deep-water flow through the ITF, (2) onset of extensive regional coral reef development, and (3) formation of the ancestral centre of diversity by increased speciation or immigration. The overall aim of the THROUGHFLOW research programme is to determine the precise relationship among these three events using a multidisciplinary approach.

Specific objectives for each WP are included in the descriptions in section B2.1.

B.1.3 Scientific and technological objectives of the research and training programme

B.1.3.1 Research

The research programme of THROUGHFLOW will be delivered by four research-oriented WPs. The scientific objectives of these WPs are:

- WP 1 (Biodiversity): produce a quantitative description of the pattern of biotic change through the study of sections that can be compared with independent environmental proxies.
- WP 2 (Environments and Geology): document the tectonic, geological, and sedimentological context and provide a description of palaeoenvironments at local to basin-wide scales.
- WP 3 (Paleoceanography and Climate): provide records of palaeoceanographic change on orbital timescales that allow integration of biotic evolution, ocean chemistry and circulation changes.
- WP 4 (Stratigraphy and Time): will develop the stratigraphical framework and age models underlying the entire project that will allow the precise correlation of patterns and events on local, regional, and global scales.

More detailed descriptions of each WP, including specific deliverables are included in the Descriptions of WPs in Section B.2.1.

Research material will be collected in the field during two field-based network training activities during months 9 and 21 . Previous field study by our team confirms availability of suitable exposures and well-preserved fossil material in two areas of Indonesia.

All sampling will be undertaken in the field after logging and facies mapping of measured sections. After initial processing, all collections will be shipped to NHM for additional sorting and dispatch to the network nodes for further processing. WP 1 will apply standard palaeontological and ecological techniques to document the temporal pattern of biotic change. We will use bulk sediment samples and time-normalized visual collection of macrofossils, and splits of samples will be distributed among taxonomic experts for further study using standard techniques. WP 2 will complete field mapping and sampling of study sections for quantitative taphonomic and palaeoecological analyses. Sedimentological and diagenetic analysis of samples supplemented by geochemical anlysis of well-preserved fossils will allow recontruction of local-scale paleoenvironmental conditions. Samples of microfossils will be collected and processed by the WPe 4 using standard techniques, especially by building a integrated biozonation scheme based on multiple groups (forams, nannoplankton, and pollen and spores), combined with isotopes and magentostratigraphy. WP 4 will work on study sections, samples from deep sea cores collected by the Ocean Drilling Program, and shallow cores available from Industrial Partners. The sample will be used to analyse bulk and foraminiferal specific isotopes and Mg/Ca Analyses to reconstruct palaeo-temperatures and salinities. In addition, Nd-isotopes in ferromanganese incrustations of foraminifera will be tested as tracers of Pacific and Indian Ocean water masses.

The subject areas are are interdependent so that information generated in the course of one project will be used in other projects (Figure 1). For example, precise chronostratigraphic interpretations for studied deposits will be used to recontruct the history of fossil biota. To facilate data sharing, all information will be maintaind in a project-wide collaborative web site (using the Scratchpads facility) of the EU-funded EDIT programme. ESRs will be required to enter information into this system as part of meeting the requirements for each milestone in the project.

B.1.3.2 Training

The training objectives of the project are to train a cohort of fully equiped ESRs with appropriate skills to have productive careers in academica, industry, and government. We will provide research training in geology and geochemistry, stratigraphy, biodiverisy, paleoceanographay and ocean modelling. In addition to complementary and transferable skills training to ESRs at host institutions (including writing, communication, proposal writing, software, personal skills), the nework will provide training will also be provided on Geographical Information Systems, communicating scient to the general public, Intellectual Property Rights, Research careers in industrial sector, regional ocean management, geotourism, and biodiversity informatics.

The network as a whole undertakes to provide a minimum of 396 person-months of Early Stage Researchers whose appointment will be financed by the contract. Quantitative progress on this, with reference to the table contained in Part C and in conformance with relevant contractual provisions, will be regularly monitored at the consortium level.

Training will be provided via four mechanisms: Local Training, Short visits to other institutions, network training activities (NTAs), and Symposia (SYMs). Local Training in each WP will take advantage of specific expertise and facilities in each institute to provide high-level training in a particular specialist area, in each of the 11 projects to be completed by ESRs (Table B1). As part of these activites, each ESR will be encouraged to make short visits of up to one month per year to other institutions in the network to take advantage of additional expertise and facilities. Each of the THROUGHFLOW NTAs (Table B2) will include a combination of three components including a short lecture-based course, practical field or laboratory-based training, and complementary and transferable skills training. The complementary and transferrable skills training component will supplement opportunities avaible at ESR host institutions. Two international symposiums (Table B2) on the geological, environmental, and biotic history of SE Asia will be held that will provide venues for ESRs to obtain broad overview of current research topics in the region as well as encouraging the development of professional networks between the ESRs and experts from industry and academia in specialist research areas.

In collaboration with their local supervisors, each ESR will develop a personal training plan during the first phase of the projct that will include a detailed list of NTAs to be attended and specific deliverables that will form part of a discussion of their contractual rights and obligations. These plans will be approved by the Supervisory Board. Progress and updates to these plans will be presented at each project milestone to the Supervisory Board at milestone 1. One member of the Management Board will act as a special training and career development advisor to ESRs to help solve any issues that might arise within particular training projects and in arranging any additional training elements.

Host insitutions will be responsible for supporting practical matters relating to ESR mobility and for local

The ITN will support the ESRs on practical matters related to their visits to Indonesia. The project coordinator, and the logistics champion in particular, will coordinate acquisition of visa and research permits as well as contacts with local counterparts. Local stay and food will be coordinated in such a way that all participants will be based in a small number of "basecamps" from which specific groups might take excursions for a limited number of days only, will be located near a regional center. Before traveling to Indonesia there will be a 'diversity training' to prepare the ESR (and other participants) for working in different cultural and climatological conditions. The H&S champion will ensure that all participants conform health regulations for travel to the region. Child-care and other dependent support will be arranged in-country as required for the duration of the field training activities.

The role of the Visiting Scientist is discussed in detail in section B2.2.

B.1.3.3 Role of Associated Members

All associated members will be part of the supervisory board are expected to participate in specific network training activities and international symposiums (Table B3). Representatives from PSG and PN will also be invited to join the Management Board, and associated partner CU and PN will take responsibility for a major part of the research or transferable skills training component of particular NTAs. In addition, all associates will contribute to the supervision of ESR projects. This will include providing background information or additional data, assisting with the preparation of personal training plans and research deliverables, and facilitating networking opportunities for ESRs outside of THROUGHFLOW.

B1.3.3 Risks and Contingency Plans

The project has been planned to with sufficient flexibility to be resistant to a range of potential risks, especially

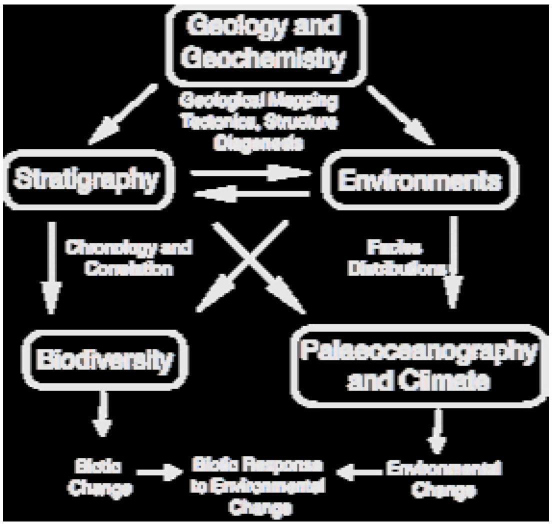


Figure 1. Illustration of information flow among work areas required to address the primary objectives of THROUGHFLOW.

1. Failure to recruit and/or retain sufficient high-quality ESRs: This is clearly a risk for all research projects, especially as our prime recruiting efforts must occur prior to start of the project (and prior to setting a start date for the project). Recruiting is underway, and most network partners already have identified potential candidates for the positions. Late recruits will not jeopardize the project, as long as ESR contracts are able to start by the beginning of the second field season. Complete failure to recruit in any particular post is also not a serious risk to the overall project due to the level of redundancy built into the research plan.

2. Poor intra-network communication: Managing a large team of individually-minded research scientists presents an interesting challenge to the network coordinator and management board. Competing teams are likely to have different priorities, especially during field seasons when there will be

Table B1: Research Training Projects

Work Package	Project Number	Project title	Primary	Secondary	Assoc.
1	1.1	The effects of increasing reef on development coral diversity .	NHM	Uni-HB	UQ
1	1.2	The origins and evolution of the modern Pacific reef algal flora.	UG	RHUL	UQ
1	1.3	Diversity and Taxonomic turnover of mollusks	NNM	NHM	PSG
1	1.4	Cenozoic history of bryozoan diversity in the Indo-West Pacific	NHM	UG	STRI
2	2.1	Shallow marine palaeoenvironments and the ITF.	UG	NNM	CU
2	2.2	High-resolution environmental proxies of microsampled corals and foraminifera	RHUL	CAU	CU
3	3.1	Impact of changes in the ITF on global climate evolution – a modelling approach	Uni-HB	RHUL	PN
3	3.2	Neogene circulation patterns and biogeography of foraminifera	CAU	NNM	MO
3	3.3	Quaternary of the Makassar Strait: Base-line for Cenozoic reconstructions.	CAU	UG	PN
4	4.1	Building a chronostratigraphic framework	UU	NNM	PSG
4	4.2	Inter- and intra specific variation in large benthic foraminifera	NNM	NHM	MO

great pressure to complete a large amount work in brief period of time. We do not anticipate this to be a serious risk -although the composition of the network is novel, all partners have worked together extensively with other members of the project. These strong links will support the network structure as new collaborative linkages are formed. The Scientific Advisory Board will also be available to act as 'referee' in cases where issues cannot be resolved internally.

3. Researcher Mobility: All network participants are highly respected research scientists, and it is possible that one or more colleagues will take advantage of new employment opportunities during the course of the project. The network would obviously suffer, but we would work to include them in network activities as appropriate. There is sufficient redundancy in the expertise provided by participating institutions to support activities of colleagues who leave the project.

4. Access to field sites: Geological field work in tropical developing countries is only possible with strong linkages between personnel and institutions in Europe and the host country. We have long experience in working in Indonesia and elsewhere and do not anticipate any serious risks to continued access. If external factors factors, such as the changing political situation or natural hazards (Indonesia is tectonically active) limit access we will move the project to other sites within Indonesia or to other countries in the region. We currently have strong links to partner institutions in Malaysia, New Guinea, and the Philippines that could be activated to host the planned field work programme.

	Table B2: Network Training Activities, Symposia, and other Events						
	Event Name	**Date**	**Organizer**	**Venue**	**Duration (days)**	**Researcher-Days**	**Programme Outline (Research/Complementary skills training)**
1	SYM-1	1	4	UK	3	12	SAGE: SE Asian Gateway Evolution.
2	NTA-1	5	4	UK	5	0	An introduction to the Geology of SE Asia./GIS and the visualisation of spatial data.
3	NTA-2 (Field Training)	9	3	Indonesia	25	150	High-resolution chronostratigraphy in clastic and carbonate settings./Live from the field: communicating Science to wider audiences.
4	NTA-3	13	1	UK	5	25	Bioinformatics and geoinformatics: new approaches to integrating research data using the WWW/ IPR: Practices and implications for research in the Natural Sciences.
5	NTA-4 (Field Training)	21	1	Indonesia	25	150	Palaeoecology, geological analysis, and interpretation of past environments. / Life on the other side: Research careers in the petroleum industry
6	SAB Review	21	1	Indonesia	10	40	Project review with Scientific Advisory Board
7	NTA-5	25	2	Germany	7	0	Palaeoceanographic proxies and biogeochemical modelling./Marine Resources and Risks: Options for regional ocean management
8	NTA-6	34	6	Spain	6	50	Sedimentology, biostratigraphy, and palaeoecology at a seismic scale/Geotourism: Sustainable tourism activities focused on geoheritage.
9	SYM-2	46	3	Netherlands	3	42	International Symposium on the geological, environmental, and biotic history of Southeast Asia.

Table B3: Participation of Associated Members						
Associated Partner	Short Name	WP	Training Topic	NTA participation	SYM participation	ESR co-supervision
1	CU	2	Geology and Stratigraphy of SE Asia	1*, 2, 4	1, 2	2.1, 2.2
2	MO	4	Stratigraphy of SE Asia,Benthic Foraminiferal Diversity	2, 4	1, 2	3.2, 4.2
3	PN	3	Stratigraphy of SE Asia, Palynology, Neogene Environments	2, 4*	1, 2	1.1, 1.3
4	PSG	4	Geology, Stratigraphy and Palaeontology of SE Asia	2, 4	1, 2	1.3, 4.1
5	STRI	1	Palaeoenvironmental Reconstruction, Bryozoan Ecology	2, 4	1, 2	1.4
6	UQ	1	Coral reef ecology, conservation, and policy	2, 4	1, 2	1.1, 1.2

**Partner is coordinating research or transferrable skills training component*

B.1.4 Management structure and procedures.

The management structure of THROUGHFLOW is illustrated in Figure 2.

THROUGHFLOW will be based on a standard consortium agreement. Using the management allocation, a part-time Project Administrator (PA) will be hired by the co-ordinator to provide key support for the timely production of technical and financial reporting.

All measures required to achieve our objectives will be approved by a Supervisory Board (SB)**.** The SB will include one representative from each network member including primary nodes, industry participants, and associated institutions. In addition, an ESR will be elected to the board by their peers to facilitate effective communication between the researchers and network management. The SB will supervise network activities and ensure adherence to appropriate recruitment and financial policies defined in the consortium agreement as well as defining the skills requirements for the recruited researchers and ensuring full exploitation of network synergies. Planning meetings will be organised at each of the network activities (which also coincide with completion of milestones), where network coordinators will be expected to report on the progress of the research training projects and present plans for NTAs in their work area. When necessary electronic conferencing will be used to allow participation in the board meetings. All major planning decisions will be ratified with the consensus of the entire group.

The SB will be too large for agile decision-making required to address administrative and logistical issues that are sure to arise during the course of the project. Therefore, a network Management Board (MB) will meet quarterly at a NTA or via teleconferencing. The MB includes lead researchers from the five primary nodes plus one of the industrial participants and a senior researcher from the Indonesian host instituiton. Recruitment, NTA logisitics, Training/ESR Advisory, and Informatics/Intellectual Property.

We will appoint an external Scientific Advisory Board (SAB) including three eminent research scientists and one highly experienced research manager from the industrial sector. The SAB will be

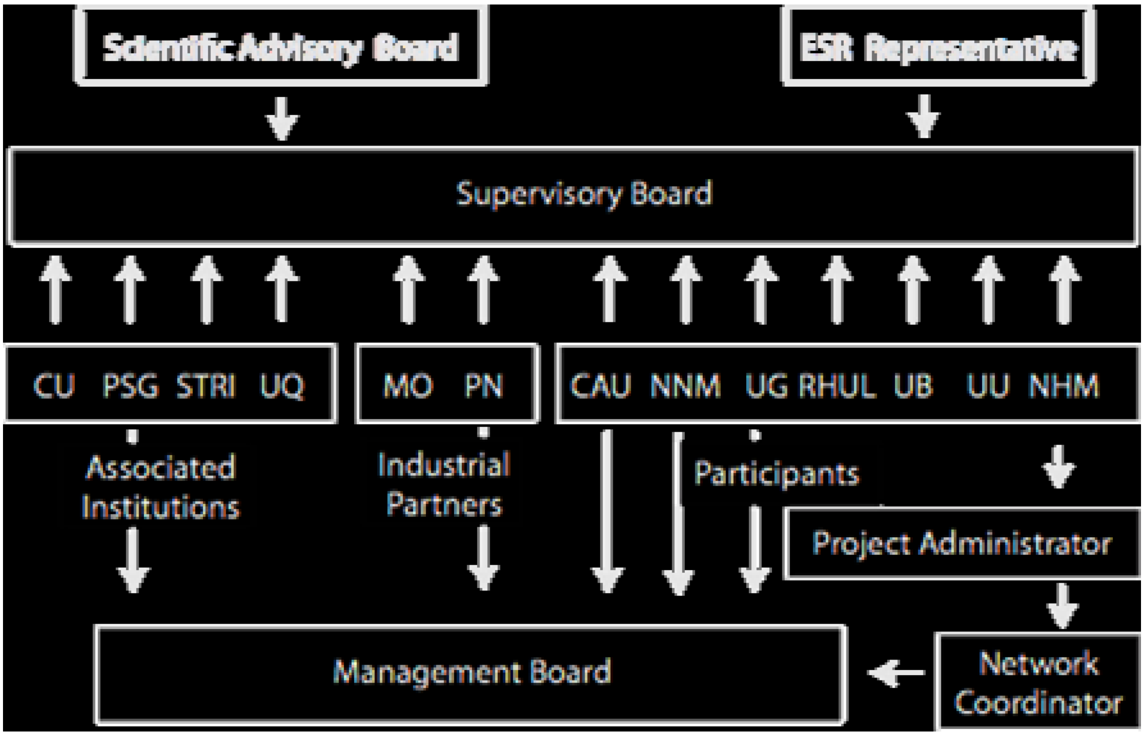


Figure 2. Management Structure of THROUGHFLOW

asked to provide general oversight regarding the overall direction of the research training programme and will produce an external review of network progress during NTA-3. The SAB will be expected to participate in three NTAs, including the two symposiums and NTA-3 to be held in month 22.

A project website will be produced and maintained by the PA and ESRs with support from the NHM interactive media group both for external dissemination and for the internal publication of agendas, meeting reports, updates and other documents related to the project. This site will include an online 'forum' section to facilitate discussion among ESRs. We are also already experimenting with basic multi-way video conferencing as a mechanism for hosting 'virtual meetings' to discuss issues related to the project.

WP coordinators will be responsible for the research training projects within their area and will liaise with project supervisors and co-supervisors to produce personal training plans for each ESR. Likewise, planning and management of the NTAs and Symposiums will be the primary responsibility of particular coordinators (Table B2), although we anticipate that there will be network-wide support for the planning and implementation of these activities.

The Recruitment Coordinator will collaborate closely with the coordinators of each work area to ensure both the open and timely recruitment of excellent ESRs and that the recruitment strategy rigorously follows the criteria of competitiveness, internationality and equal opportunity presented in the *European Charter for Researchers* and *Code of Conduct for the Recruitment of Researchers*.

All vacancies within THROUGHFLOW will be advertised through at least six different channels. (1) communal advertisement in two leading journals to reach a world-wide audience; (2) national and international professional networks, including specialist listservers; (3) the Marie Curie Fellowship Association webpage; (4) advertising at high-level international meetings; (5) e-mailing colleagues and contacts in the scientific community; and (6) advertisements on EURAXESS. Full acknowledgement of the support received from the MC programme will be given in all such publicity and any other material produced by THROUGHFLOW. Due to the high scientific novelty and high-profile research team, we do not anticipate any special difficulties in attracting and recruiting high-quality and well motivated ESRs. While liaising with the Recruitment Coordinator, each work area will conduct an independent recruitment process including interviews. The end result will be a ranked list of applicants for each ESR position by the start of the project.

The selection of the young researchers will be based on the following criteria: (1) Scientific excellence and innovativeness, (2) Previous expertise, (inter-disciplinarity will be an important asset), (3) Strength of academic references, and (4) Performance at the interview.

The Supervisory Board will meet and make the final decision on each ESR after consideration of network-wide priorities. Gender balance will be actively promoted via recruitment within the Network. All of the team leaders in THROUGHFLOW are male, but this tends to reflect the existing situation in senior positions in Earth Sciences in Europe. The EU-wide gender balance is healthier at both post doc and PhD level and the consortium shall take all necessary and reasonable measures to recruit at least 40% women researchers into the project. All ESRs should be in place by month 6 as they will be required to attend NTA-1 to gain an overview of their project area.

We anticipate no subcontracting of work within the project, and the project can be completed without recourse to third-party funding.

B.2 Implementation

B.2.1 Planning of work packages, milestones, and deliverables

Table B4: Work Package List

Work Package No.	Work Package Title	Type of Activity	Lead Beneficiary No.	Person-months	Start month	End month
1	Biodiversity	RTD	1	133	1	48
2	Environments and Geology	RTD	6	66	1	48
3	Paleoceanography and Climate	RTD	2	99	1	48
4	Stratigraphy and Time	RTD	3	66	1	48
5	Management	MGT	1	16.5	1	48
6	Dissemination and Impact	MGT	1	16.5	1	48
Total				396		

Each WP (Table B4) will be responsible for a subdomain of the overall research project and expected to complete the set of objectives and deliverables defined in Table B7. Activities will be fully collaborative with team members usually contributing to several work areas, but four coordinating institutions will assume responsibility for one work area in collaboration with key associated partners (Table B3).

To facilitate planning and implementation, the project will be divided into four phases separated by project-wide milestones (Table B5) that usually coincide with network training activities. The absolute timing of phases depends on project start date, with timing of field seasons constrained by climate in Indonesian field training sites (the early part of the dry season is the best time to undertake field geology in this region).

Table B5: List and Schedule of Milestones					
Milestone no.	Milestone name	WP no's	Lead Beneficiary	Delivery Date	Comments
1	End Phase I	1 - 6	1 - 7	Month 9	ESRs in place with completed personal development plans
2	End Phase II	1 - 6	1 - 7	Month 21	Preliminary reports from first field season complete
3	End Phase III	1 - 6	1 - 7	Month 34	Preliminary reports from second field season complete
4	End Phase IV	1 - 6	1 - 7	Month 48	Project end, complete final reports

Table B6: Tentative schedule of Project Reviews			
Review no.	Tentative Timing	Planned venue	Comments
1	Month 9	Indonesia	End of Phase I
3	Month 21	Indonesia	End of Phase II /SAB Review
2	Month 23	Leiden	Midterm Review
3	Month 34	Granada	End of Phase III
4	Month 46	Leiden	Final Review

Table B7: List of Deliverables

Del No.	Deliverable Name	WP no.	Lead Bene ficiary	Estimated indicative person-months	Nature	Dissem ination Level	Deli very Date
D1	Proceedings of Symposium 1	6	1	2	O	PU	1
D2	Proceedings of NTA-1 (SE Asian Geology)	5	4	0	O	CO	5
D3	Periodic Report 1	5	1	0	R	CO	8
D4	Network Meeting Minutes 1	5	1	0	R	CO	9
D5	Proceedings of NTA-2 (Field I)	5	3	0	O	CO	9
D6	Minutes of Review 1	5	1	0	R	CO	9
D7	Plan for dissemination of the foreground beyond the consortium	6	1	0	R	CO	9
D8	Proceedings of the public education event during NTA-2	6	1	2	O	PU	9
D9	Progress Report 1	5	1	3	R	CO	12
D10	Proceedings of NTA-3 (Bioinformatics)	5	1	0	O	CO	13
D11	Periodic Report 2	5	1	0	R	CO	20
D12	Preliminary report NTA-2/bryozoans	1	1	14.5	R	CO	21
D13	Preliminary report NTA-2/calcareous algae	1	6	14.5	R	CO	21
D14	Preliminary report NTA-2/corals	1	1	14.5	R	CO	21
D15	Preliminary report NTA-2/mollusks	1	3	14.5	R	CO	21
D16	Preliminary report NTA-2/geochemistry	2	4	15	R	CO	21
D17	Preliminary report NTA-2/sedimentology	2	6	15	R	CO	21
D18	Deep sea stratigraphy	3	2	15	O	CO	21
D19	Holocene ITF and climate variability in the Timor Strait	3	2	15	O	CO	21
D20	Time slice ocean models/ ITF	3	5	15	O	CO	21
D21	Preliminary biostratigraphic framework for NTA-2..	4	3	15	R	CO	21
D22	Preliminary magnetostratigraphic framework for NTA-2.	4	7	15	R	CO	21
D23	Network Meeting Minutes 2	5	1	0	R	CO	21
D24	Proceedings of NTA-4 (Field II)	5	1	0	R	CO	21
D25	Mid-term Questionnaire	5	1	1	R	CO	22
D26	Progress Report 2	5	1	3	R	CO	22
D27	Minutes of Midterm Review	5	1	3	R	CO	23
D28	Proceedings of NTA-5 (Palaeoceanography)	5	2	0	O	CO	25
D29	Periodic Report 3	5	1	0	R	CO	33
D30	Preliminary report NTA-4/bryozoans	1	1	12	R	CO	34
D31	Preliminary report NTA-4/calcareous algae	1	6	12	R	CO	34
D32	Preliminary report NTA-4/corals	1	1	12	R	CO	34
D33	Preliminary report NTA-4/mollusks	1	3	12	R	CO	34
D34	Preliminary report NTA-4/geochemistry	2	4	12	R	CO	34
D35	Preliminary report NTA-4/sedimentology	2	6	12	R	CO	34
D36	Makassar/Timor Strait variability in ITF	3	2	11	O	CO	34
D37	Time slice ocean models/Global	3	5	11	O	CO	34
D38	Integrated chronostratigraphic framework	4	3	2	O	PU	34

D39	Preliminary biostratigraphic framework for NTA-4.	4	3	10	R	CO	34
D40	Preliminary magnetostratigraphic framework for NTA-4.	4	7	10	O	CO	34
D41	Network Meeting Minutes 3	5	1	0	R	CO	34
D42	Proceedings of NTA-6 (Sedimentology)	5	6	0	O	CO	34
D43	Progress Report 3	5	1	3	R	CO	36
D44	Evaluation Questionnaire	5	1	0.5	R	CO	42
D45	Proceedings of Symposium 2	6	3	2	O	PU	46
D46	Conference Presentation and publication/bryozans	1	1	6	O	PU	48
D47	Conference Presentation and publication/calcareous algae	1	6	7	O	PU	48
D48	Conference Presentation and publication/corals	1	1	6	O	PU	48
D49	Conference Presentation and publication/mollusks	1	3	7	O	PU	48
D50	Presentations and publications/geochemistry	2	4	6	O	PU	48
D51	Presentations and publications/sedimentology	2	6	6	O	PU	48
D52	Conference Presentation and publication/ocean modelling	3	5	6	O	PU	48
D53	Conference Presentations/Publications palaeoceanography	3	2	13	O	PU	48
D54	Conference presentation/publication on biostratigraphic framework	4	3	2	O	PU	48
D55	Conference presentation/publication on magnetostratigraphic framework	4	7	2	O	PU	48
D56	Network Meeting Minutes 4	5	1	0	R	CO	48
D57	Final Report	5	1	3	R	CO	48
D58	Final plan for dissemination of foreground	6	1	0	R	CO	48
D59	Project website with researcher and public-oriented content	6	1	10.5	O	PU	48

Table B8: Proposed Task Schedule			
Task	Description	Start Month	End Month
1.1	Biodiversity background study	1	8
1.2	Biodiversity data collection	9	21
1.3	Fossil preparation, identification, and analysis	10	30
1.4	Synthesize of biodiversity data from study sites	25	40
1.5	Compare ancient and living biodiversity	34	48
2.1	Geology Background study	1	8
2.2	Geology and geochemical data collections	9	21
2.3	Preparation and analyses of samples	10	30
2.4	Produce interpretation of local paleoenvironments	16	40
2.5	Regional paleoenvironmental synthesis	34	48
3.2	Study Quaternary history of Pleistocene-Holocene Indonesian Throughflow	1	48
3.3	Model Oligocene-Miocene changes of the Indonesian Throughflow	1	48
4.1	Stratigraphic background study	1	8
4.2	Stratigraphic data collection	9	21
4.3	Fossil preparation, identification, magnetostratigraphic analysis	10	30
4.4	Produce a geochronologic framework	26	48
4.5	Compare regional differences in biostratigraphical markers	34	48
5.1	Management	1	48
6.1	Dissemination	1	48

Work Package Descriptions

WP 1 : BIODIVERSITY			
Start Date: Month 1			
Activity Type: RTD			
Participant ID	1	3	6
Person-months per beneficiary	66	33	33

Objectives
To produce a quantitative description of the pattern of biotic change through the study of sections that can be compared with independent environmental proxies. Specific objectives include: (1) Produce an explicit operational taxonomic framework for the key shallow marine taxa in the region, (2) document the stratigraphic distribution of key taxa in the region to highlight temporal intervals of accelerated extinction or diversification in the shallow water biota, (3) determine how changes in the diversity of local communities combine to produce regional patterns of diversity change, and (4) compare the diversity and composition of assemblages in reef and non-reef deposits.

Description of work
Task 1.1: Study published literature and existing collections of fossil bryozoans, calcareous algae, corals, and molluscs to build a preliminary taxonomic framework (**1**[1], 3, 6).
Task 1.2. Perform field work in Java and Kalimantan, including collecting new material from study sections using ecological survey techniques as appropriate (1, **3**, 6)
Task 1.3. Prepare and identify new collections using a working taxonomic framework, including entering new information into project biodiversity database. (**1**, 3, 6)
Task 1.4. Using standard statistical methods and information on age and environment from other WPs, compare biodiversity across study sites (**1**, 3, 6).
Task 1.5. Compare biodiversity from Indonesia with extant diversity from the region and with fossil faunas from outside of SE Asia (**1**, 3, 6).

Deliverables
D12. Preliminary report on the biodiversity of bryozoans for sections studied in NTA-2 (month 21).
D13. Preliminary report on the biodiversity of calcareous algae for sections studied in NTA-2 (month 21).
D14. Preliminary report on the biodiversity of corals for sections studied in NTA-2 (month 21).
D15. Preliminary report on the biodiversity of mollusks for sections studied in NTA-2 (month 21).
D30. Preliminary report on the biodiversity of bryozoans for sections studied in NTA-4 (month 34).
D31. Preliminary report on the biodiversity of calcareous algae for sections studied in NTA-4 (month 34).
D32. Preliminary report on the biodiversity of corals for sections studied in NTA-4 (month 34).
D33. Preliminary report on the biodiversity of mollusks for sections studied in NTA-4 (month 34).
D46. At least two conference presentations and one publication the on biodiversity dynamics of bryozoans (month 48).
D47. At least one conference presentation and one peer-reviewed publication on the biodiversity dynamics of calcareous algae (month 48).

[1] Task Leader in bold.

D48. At least two conference presentations and one publication the on biodiversity dynamics of corals (month 48).
D49. At least one conference presentation and one peer-reviewed publication on the biodiversity dynamics of molluscs (month 48).

WP 2 : ENVIRONMENTS AND GEOLOGY

Start Date: Month 1			
Activity Type: RTD			
Participant ID	4	6	
Person-months per beneficiary	33	33	

Objectives
The Environments WP will provide a quantitative description of shallow-water non-reefal carbonate palaeoenvironments during the Oligocene-
Miocene transition and their temporal and spatial patterns from local to regional scales. Specific objectives include: (1) Identify the major shallow-water marine palaeoenvironments by their physical (sedimentological-geochemical) and palaeobiological characteristics, (2) document the spatial patterns of major carbonate palaeoenvironments at a local ('subregional') scale at the highest stratigraphic resolution available, (3) document the temporal changes of the spatial patterns and interpret them in a sequence stratigraphic framework, and (4) correlate the observed spatial and temporal variations to changes in paleoceanographic, paleoclimatic and biological patterns recognized by researchers from other working areas of the Project

Description of work
Task 2.1. Study published literature on the Paleogene and Neogene geology of the Indo-West Pacific region (4, **6**).
Task 2.2 Perform field work on Cenozoic sections in Indonesia, including lithostratigraphy and facies recognition, identification of major fossil components and taphonomic analyses in selected sections (4, **6**).
Task 2.3. Preparation and analyses of sedimentological, geochemical, and paleontological samples (**6**,4).
Task 2.4. Use sedimentary and paleontological data to interpret ancient environments (**6**).
Task 2.5. Using the paleoenvironmental results and information on age, diversity, paleoceanography and paleoclimate to produce an integrated model on spatial and temporal evolution of shallow water paleoenvironments (**6**,4)

Deliverables:
D16. Preliminary report on the geochemical analysis on material collected in NTA-2 (month 21).
D17. Preliminary report on the sedimentology from sections studied in NTA-2 (month 21).
D34. Preliminary report on the geochemical analysis on material collected in NTA-4 (month 34).
D35. Preliminary report on the sedimentology from sections studied in NTA-4 (month 34).
D50. At least one conference presentation and one peer-reviewed publication on the geochemical results (month 48).
D51. At least one conference presentation and one peer-reviewed publication on the sedimentological results (month 48).

WP 3 : PALAEOCEANGRAPHY AND CLIMATE			
Start Date: Month 1			
Activity Type: RTD			
Participant ID	2	5	
Person-months per beneficiary	66	33	

Objectives
To provide records of palaeoceanographic change on orbital timescales that allow integration of biotic evolution, ocean chemistry and circulation changes. Specific objectives include: (1) Correlation of isotope records from shallow marine sites in the ITF pathways with high resolution records from Indian Ocean and West Pacific ODP sites to provide a chronologic framework on orbital time scales. (2) Document the stratigraphic distribution of foraminiferal key taxa in order to improve the biostratigraphic framework and recognize intervals of accelerated extinction or speciation. (3) Characterize local water masses (salinity, surface temperatures) with geochemical (stable isotopes, Mg/Ca) and micropalaeontological proxies. (4) Integrate proxy data with biogeochemical box models and global and regional circulation models.

Description of work
Task 3.1 (Neogene circulation patterns and biogeography of foraminifera in the Indo-Pacific connection) will reconstruct the Oligocene-Miocene history of the early constriction of the Indonesian Seaway and the development of an early Indonesian Throughflow using a combination of foraminiferal biostratigraphy/biogeography, Mg/Ca-thermometry, stable carbon and oxygen isotopes and water mass tracers as indicators of Pacific/Indian Ocean water mass mixing. In a first phase we will examine the impact of an initial closure of the tropical meridional deep-water connection and of major Oligo-Miocene climatic and sea level events on foraminiferal assemblages and geochemical water mass proxies on both sides of the gateway using material from ODP Sites in the tropical Pacific and eastern Indian Ocean. Records from the Indonesian Archipelago (commercial wells and outcrop sections, which are obtained in the framework of this ITN) will then be correlated to this stratigraphic and paleoceanographic framework (**2**).

Task 3.2 (Late Pleistocene-Holocene Indonesian Throughflow in the Makassar and Timor Straits: Baseline for Cenozoic reconstructions) will achieve a calibration of palaeoceanographical, palaeontological and sedimentological proxy records of intensity and hydrologic structure of the Indonesian Throughflow within the narrowest, most efficient and oceanographically best explored present-day gateways, the Makassar Strait between Borneo and Sulawesi and the Timor Strait between Timor and NW Australia. In combination with oceanographic data from several past and ongoing monitoring programmes we will calibrate palaeo-circulation and -hydrography and -climate proxies (Mg/Ca palaeothermometry, O, C, and Nd isotopes in planktic and benthic foraminifers, pollen/spores, sortable silt and other sedimentological current indicators) with observed and modeled modern and glacial surface, thermocline and deep-water circulation patterns (**2**).

Task 3.3 Oligocene-Miocene changes of the Indonesian Throughflow and their impact on global climate evolution – a modelling approach will explore the influence of Oligocene-Miocene local tectonic changes on the Indonesian Throughflow (ITF) and global climate by means of climate modelling. The role of ITF changes in shaping the global ocean circulation and its influence on climate will be studied using the comprehensive Community Climate System Model, version 3 (CCSM3). Time-slice experiments for 30 Ma, 20 Ma, and 10 Ma before present will be performed using a state-of-the-art global climate model with four interactively coupled components representing atmosphere, ocean, land surface, and sea ice. The climate model will be set up with palaeogeographic configurations based on plate tectonic reconstructions for the three time frames. The main results from P3 will be an improved understanding of the role of ITF changes in shaping Cenozoic climate evolution with a particular eye towards tectonic events as a major driving force (**5**).

Deliverables
D18. Orbitally tuned reference stable isotope stratigraphy based on existing and new records from ODP Sites relevant to the ITF (month 21).
D19. Reconstruction of Holocene Indonesian Throughflow and climate variability in the Timor Strait by means of stable isotopes, Mg/Ca, Bo/Ca and faunal/floral parameters) and sedimentologic proxy records (sortable silt) (month 21).
D20. Time-slice models of Indonesian Throughflow structure and intensity for 30 Ma, 20 Ma, and 10 Ma before present (month 21)
D36. Reconstruction of Holocene Indonesian Throughflow and climate variability in the Makassar Strait and comparison to Timor Strait (month 34)
D37. Time-slice models of impact of Indonesian Throughflow on global circulation and climate for 30 Ma, 20 Ma, and 10 Ma before present (month 34)
D52. At least one conference presentation and one peer-reviewed publication on ocean circulation and the evolution of the ITF (month 48).
D53. Publication of regional pattern of environmental change as modelled from palaeoceanographic results on project website. (month 48)

WP 4 : STRATIGRAPHY AND TIME

Start Date: Month 1			
Activity Type: RTD			
Participant ID	3	7	
Person-months per beneficiary	33	33	

Objectives
To produce the stratigraphical framework and age models underlying the entire project that will allow the precise correlation of patterns and events on local, regional, and global scales. Specific research objectives include: (1) Sample sections and produce biostratigraphic zonations for stratigraphically significant microfossils (larger benthic and planktonic foraminifera, calcareous nannoplankton, pollen), (2) Produce a solid geochronologic framework by using magnetostrategraphy and Sr-isotope dating methods, (3) Incorporate the new zonations into the regional schemes based on (a) existing information held in European research institutions and (b) sources in the Petroleum industry to produce a rigorous stratigraphical framework that allows high resolution correlation between sections, and to published regional and global schemes.

Description of work
Task 4.1. Study published literature and existing collections of stratigraphically important taxa (**3**).
Task 4.2. Perform field work in Java and Kalimantan during NTA-2 and NTA-4, including collecting new material from study sections using as high resolution for stratigraphic sampling as possible (**3**, 7).
Task 4.3. Prepare and analyze the new collections preparing a stratigraphic framework for the

sections of Java and Kalimantan (**3**)
Task 4.4. Correlate the biostratigraphic framework to existing paleomagnetic references and stable-isotope, resulting in a geochronologic framework that can be employed by the other WPs (**7**, 3).
Task 4.5. Compare regional differences in the importance of biostratigraphical markers (3, **7**).

Deliverables
D21. Preliminary biostratigraphic framework for sections studied in NTA-2 (month 21).
D22. Preliminary magnetostratigraphic framework for sections studied in NTA-2 (month 21).
D38. Preliminary biostratigraphic framework for sections studied in NTA-4 (month 34).
D39. Preliminary magnetostratigraphic framework for sections studied in NTA-4 (month 34).
D40 Integrated chronostratigraphic framework for publication on the project website (month 34).
D54. At least one conference presentation and one publication on the biostratigraphic framework (month 48).
D55. At least one conference presentation and one publication on magnetostratigraphic framework (month 48).

WP 5 : NETWORK MANAGEMENT

Start Date: Month 1							
Activity Type: MGT							
Participant ID	1	2	3	4	5	6	7
Person-months per beneficiary	3	3	3	1.5	1.5	3	1.5

Objectives
To ensure the efficient function of the ITN.

Description of work

Task 5.1. Coordinate the ITN, including managing intra-network communications, adminstrating a network information website, and organizing meetings of the Management and Supervisory Boards (**1**, 2, 3, 4, 5, 6, 7).

Deliverables
D2. Deliver NTA-1 (5)
D3. Periodic Report 1 (8)
D4. Network Meeting Minutes 1 (9)
D5. Deliver NTA-2 (9)
D6. Review 1 (9)
D9. Progress Report 1 (12)
D10. Deliver NTA-3 (13)
D11. Periodic Report 2 (20)
D23. Network Meeting Minutes 2 (21)
D24. Deliver NTA-4 (21)
D25. Mid-term Questionnaire (22)
D26. Progress Report 2 (22)
D27. Midterm Review (23)
D28. Deliver NTA-5 (25)
D29. Periodic Report 3 (33)
D41. Network Meeting Minutes 3 (34)

D42. Deliver NTA-6 (34)
D43. Progress Report 3 (36)
D44. Complete Evaluation Questionnaire (42)
D56. Network Meeting Minutes 4 (48)
D57. Deliver Final Report (48)

WP 6 : DISSEMINATION AND IMPACT

Start Date: Month 1							
Activity Type: MGT							
Participant ID	1	2	3	4	5	6	7
Person-months per beneficiary	3	3	3	1.5	1.5	3	1.5

Objectives
To maximize dissemination of research results to the broadest possible audience.
Description of work

Task 6.1. Coordinate dissemination of research results using publications, websites, training courses, and other media (**1**, 2, 3, 4, 5, 6, 7).

Deliverables

D1. Organize international symposium SYM1 (Month 1).
D7. A plan for dissemination of foreground beyond the consortium during the lifetime of the project and afterwards (Month 9).
D8. Public outreach event during NTA-2 using live feeds to Natural History Museum audience (Month 9).
D45. Organize international symposium SYM2 (Month 46)
D58. Produce a final plan for use and dissemination of foreground (Month 48).
D59. A project website with including results of the project presented in forms appropriate for researchers and the general public (Month 48)

B.2.2 Planning of conferences and Visiting Scientists contribution

As part of our network activities, we plan to organize two three-day international symposiums and other events open to external participants as per Table B2.

A Visiting Scientist working as a senior consultant in the petroleum industry will be invited to join THROUGHFLOW for 6 weeks during each year of the project. They will be based within WP 3, and will contribute to the training program in the following ways:

1. As a member of the Supervisory and Management Boards, and facilitating the participation of an industry-based researcher as a member of the Scientific Advisory Board (years 1-4).

2. By co-supervising ESR research projects in WP 3 , in particular projects 3.1 and 3.2 (years 1-4).

3. By organizing workshop and transferable skills training components of NTA-4 (year 2)

4. By providing general advisory service to all ESRs with respect to the stratigraphy and environmental history of SE Asia as well as advice regarding career opportunities as a consultant for the petroleum industry (years 1-4).

5. By participating in network training activities and symposia (years 1-4)

B.3 Impact

B.3.1 Research Indicators of Progress

The network will provide the following indicators of progress in its periodic, mid-term review, and final reports:

B.3.1.1 Research Activities

• General progress with research activities programmed at individual, participant team and network level. Possible problems encountered and nature/justification for adjustments, if any, to the original research work plan and/or timetable.

• Specialist exchange among network teams and visit of Senior Researchers from inside and/or outside the network.

• Individual and joint publications, directly related to the work undertaken within the project (including citation index).

B.3.1.2 Training Activities

• General progress with training programmed at individual, participant team and network level (Career development Plan, supervision, coaching or mentoring in place at each host institution).

• The rate of recruitment of ESR for each participant and for the network as a whole (ratio person-months filled/offered) and time and duration of each individual appointment training are not counted as appointments, but as part of the networking activities.].

• The nature and justification for any deviation from the original plan (as refereed to table A3.1 of part C) or adjustments, if any, to the original research work plan and/or timetable.

• The number and place of the short visits/secondments undertaken or organised by each ESR within the network (full participant and associated members including number of visits of the ESR to their home scientific community).

• Participation in training events and network meetings and to international conferences (number, names, place date).

• Achievements regarding the acquisition of complementary skills (for example: project management, presentation skills, language courses, ethics, intellectual property rights, communication, entrepreneurship....).

• Level of satisfaction of the trainees (e.g. as expressed in response to questionnaire and their expectation to present their PhD thesis and when.).

• Highlights on more particularly innovative developments (novel concepts, approaches, methods and / or products) and on wider societal and/or ethical components of the project, such as public outreach activities.

B. 3.1.3 Management and impact

• Effectiveness of the recruitment strategy in terms of equal opportunities (including gender balance) and open competition at international level.

• Effectiveness of the "training events and conferences" open to external participants and integration in the training programme.

- Effective contribution of Visiting Scientists to the research training programme.

B.3.2 Dissemination and Impact

Research results will be published in mainstream scientific journals and presented at leading international conferences, including the two symposiums organised as part of our network activity. Each ESR will be expected to participate as a co-author in at least three publications, and as first or single author on at least one publication. Due to the large volume of work to be published, we anticipate producing edited volumes including contributions from the symposia (as special publications of the Geological Society of London or the Systematics Association, for example).

Besides publication of research papers, the THROUGHFLOW website will serve as an ongoing data repository. Where journal policy permits, preprints of all publications resulting from the research training will archived on this website. We will make all non-proprietary data available as part of the EU funded EDIT "scratch pad" facility hosted at NHM. This will facilitate establishing linkages to a wide variety of federated databases and all our data to be published to a large audience in a maximally useful form. Participation in these data networks will also ensure sustainability of the THROUGHFLOW data repository, as responsibility for its maintenance will be transferred to the NHM at the close of the project.

All intellectual property rights will be managed according to the policies of host institutions and industrial collaborators as required. Wherever possible, we will negotiate with our institutions for permission to release all results into the Creative Commons. This will be coordinated by a designated Informatics/IP Champion.

At the end of the project, we will submit a final plan for use and dissemination of the foreground that will cover our plans for the management of foreground with a description of the use of the results.

We do not anticipate any risks for citizens/society associated with our project.

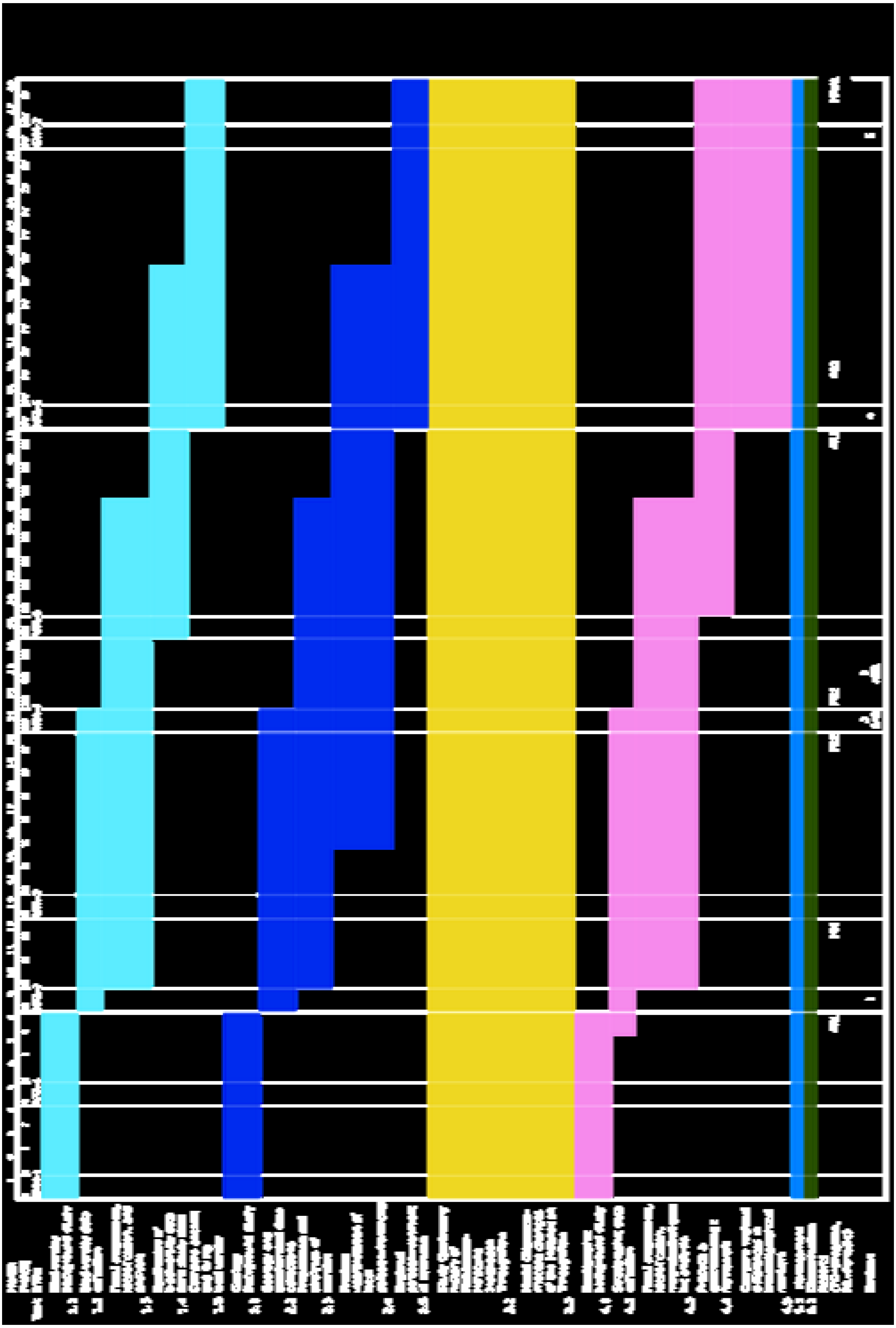
We anticipate that some of the results of the project will be used indirectly in the formulation of policy related to biotic response to global environmental change. In particular, information about the historical conditions of the SE Asian marine ecosystems may help highlight potential pathways to changes occurring on medium to long time scale. We are currently in the midst of a global climate crisis and a global biodiversity crisis. The results of the current project will contribute to the appreciation of the interrelatedness of these crises, as well as to the realization that global patterns are not translated linearly into regional or local environmental change.

B.4 Ethical Issues

There are no ethical issues related to this project.

B.5 Gender Issues

With support of our recruitment champion, we will endeavor to recruit ESRs so that at least 40% are female. We will encourage participation of women in all network activities and will assist with family requirements during NTAs as required (including arranging local child care where possible).



Part C

A3.1:
Overall Indicative Project Deliverables

Project Number [1]	237922	Project Acronym [2]	THROUGHFLOW

One Form per Project

	Initial Training 0-5 years						Visiting Scientists						Total	Events	
	Early-Stage researchers			**Experienced researchers**			**Visiting scientists (<10)**			**Visiting scientists (>10)**					
	Months	Researchers	% Fixed amount contract (B)	Months	Researchers	% Fixed amount contract (B)	Months	Researchers	% Fixed amount contract (B)	Months	Researchers	% Fixed amount contract (B)	Months	Researcher event days	Number of events
NHM	72	2	0%	0	0	0%	0	0	0%	0	0	0%	72	215	3
CAU	72	2	0%	0	0	0%	0	0	0%	6	1	100%	78	0	0
NNM	72	2	0%	0	0	0%	0	0	0%	0	0	0%	72	192	2
RHUL	36	1	0%	0	0	0%	0	0	0%	0	0	0%	36	12	1
uni-HB	36	1	0%	0	0	0%	0	0	0%	0	0	0%	36	0	0
UGR	72	2	0%	0	0	0%	0	0	0%	0	0	0%	72	50	1
UU	36	1	0%	0	0	0%	0	0	0%	0	0	0%	36	0	0
Overall Total	396	11	0%	0	0	0%	0	0	0%	6	1	100%	402	469	7

Part D

A3.2:
Overall Maximum Community Contribution

Project Number [1]	237922	Project Acronym [2]	THROUGHFLOW

One Form per Project

The project is lab based ☒

	Monthly living and mobility allowance (A)	Travel allowance (B)	Career exploratory allowance (C)	Contribution to the participation expenses of eligible researchers (D)	Contribution to the research/ training/ transfer of knowledge programme expenses (E)	Contribution to the organisation of international conferences, workshops and events (F)	Management activities (including audit certification) (G)	Contribution to overheads (H)	Total
Year 1	309,110.56	11,500	22,000	46,200	49,800	48,600	34,269.51	48,066.94	569,547.01
Year 2	476,594.67	11,000	0	79,200	79,200	64,500	56,901.22	75,103.07	842,498.96
Year 3	476,594.67	11,000	0	79,200	79,200	15,000	56,901.22	75,103.07	792,998.96
Year 4	198,581.10	0	0	33,000	33,000	12,600	23,708.86	31,292.95	332,182.91
Total	1,460,881.00	33,500	22,000	237,600	241,200	140,700	171,780.81	229,566.03	2,537,227.84

APPENDIX – Extract from People Work Programme 2008

Table 3.1: Reference rates for monthly living allowances (cost of living index 100)[25]

Researchers Categories	***A (EUR/year)***	***B (EUR/year)***
Early-stage researchers	***34 500***	***17 250***
Experienced researchers (4-10 years experience)	***53 000***	***26 500***
Experienced researchers (>10 years experience)	***79 500***	***39 750***

This amount represents an increase of roughly 1,9% of the 2007 Work programme, reflecting the average inflation in the EU during the intervening period as published by Eurostat.

Table 3.2. Travel allowances

Distance[1] (km)	***Fixed-amount contribution (EUR)***
< 500	*250*
500 – 1 000	*500*
1 000 – 1 500	*750*
1 500 – 2 500	*1 000*
2 500 – 5 000	*1 500*
5 000 – 10 000	*2 000*
>10 000	*2 500*

For researchers eligible to receive travel allowances, the allowance is based on the direct distance (in a straight line) between the place of origin and the host institution of the researcher, calculated on the basis of one payment for every period of 12 months or less, when the first period or the last one is less than 12 months. Only one travel allowance shall be paid per period of 12 months, independently of possible interruptions or stays with different partners.

25 Rates for individual countries are obtained by applying to these rates the correction factors for cost of living, as referred in Table 3.3

Table 3.3 Correction Coefficients – The EU-25 Member States[26, 27]

Austria	*102,2*	*Estonia*	*76,5*	*Hungary*	*66,5*	*Luxembourg*	*100*	*Slovak Rep.*	*82,2*
Belgium	*100,0*	*Finland*	*112,0*	*Ireland*	*113,3*	*Malta*	*97,5*	*Slovenia*	*80,8*
Cyprus	*99,0*	*France*	*104,4*	*Italy*	*103,9*	*Netherlands*	*101,2*	*Spain*	*95,5*
Czech Republic	*77,2*	*Germany*	*101,5*	*Latvia*	*71,1*	*Poland*	*71,6*	*Sweden*	*108,9*
Denmark	*133,5*	*Greece*	*90,1*	*Lithuania*	*71,2*	*Portugal*	*91,4*	*UK*	*109,2*

The non-EU Countries (and Romania and Bulgaria while in transition period for the calculation, and New Caledonia a French overseas territory)

Albania	*82,7*	*Croatia*	*105,8*	*Japan (Naka)*	*113,7*	*Papua NewGuinea*	*75,6*	*Turkey*	*83,7*
Algeria	*84,5*	*Cuba*	*97,1*	*Japan (Tokyo)*	*119,9*	*Paraguay*	*70,8*	*Uganda*	*55,5*
Angola	*113,5*	*Dem Rep Congo*	*132,4*	*Jordan*	*72,3*	*Peru*	*78,4*	*Ukraine*	*104,6*
Argentina	*56,4*	*Djibouti*	*96,8*	*Kazakhstan*	*125,2*	*Philippines*	*60,2*	*US*	*100,5*
Armenia	*105,7*	*Dominican Rep.*	*71,9*	*Kenya*	*77,8*	***Romania***	***62,7***	*Uruguay*	*72,9*
Australia	*99,1*	*Ecuador*	*70,8*	*Kyrgyzstan*	*80,3*	*Russia*	*120,7*	*Vanuatu*	*114,5*
Bangladesh	*43,7*	*Egypt*	*51,0*	*Laos*	*71,3*	*Rwanda*	*87,1*	*Venezuela*	*60,9*
Barbados	*125,7*	*El Salvador*	*86,4*	*Lebanon*	*90,8*	*Saudi Arabia*	*88,8*	*Vietnam*	*54,2*
Benin	*92,3*	*Eritrea*	*49,4*	*Lesotho*	*61,8*	*Senegal*	*80,7*	*West Bank*	*92,7*
Bolivia	*48,4*	*Ethiopia*	*85,7*	*Madagascar*	*72,3*	*Serbia*	*61,1*	*Yemen*	*68,2*
Bosnia & Herzegovina	*77,7*	*Fiji*	*71,3*	*Malawi*	*70,4*	*Sierra Leone*	*75,1*	*Zambia*	*69,3*
Botswana	*62,1*	*FYROM*	*69,7*	*Malaysia*	*74,8*	*Singapore*	*103,4*	*Zimbabwe*	*47,2*
Brazil	*76,2*	*Gabon*	*116,6*	*Mali*	*91,2*	*Solomon Islands*	*88,7*		
Bulgaria	***76,4***	*Gambia*	*55,8*	*Mauritania*	*67,7*	*South Africa*	*59,9*		
Burkina Faso	*89,7*	*Gaza Strip*	*92,7*	*Mauritius*	*70,7*	*South Korea*	*112,4*		
Cambodia	*70,4*	*Georgia*	*95,1*	*Mexico*	*70,2*	*Sri Lanka*	*55,4*		
Cameroon	*110,1*	*Ghana*	*79,9*	*Moldova*	*52,6*	*Sudan*	*52,1*		
Canada	*90,6*	*Guatemala*	*80,6*	*Morocco*	*86,8*	*Suriname*	*51,9*		
Cape Verde	*77,4*	*Guinea*	*56,4*	*Mozambique*	*69,3*	*Swaziland*	*62,6*		
Cen African Rep.	*120,1*	*Guinea-Bissau*	*100,7*	*Namibia*	*72,8*	*Switzerland*	*116,3*		
Chad	*131,2*	*Guyana*	*60,6*	*Nepal*	*68,8*	*Syria*	*65,5*		
Chile	*76,6*	*Haiti*	*109,5*	***New Caledonia***	***134,5***	*Taiwan*	*89,9*		
China	*76,7*	*Honduras*	*74,9*	*New Zealand*	*89,0*	*Tajikistan*	*70,2*		
Colombia	*63,2*	*Hong Kong*	*101,3*	*Nicaragua*	*60,7*	*Tanzania*	*58,8*		
Congo	*130,4*	*India*	*45,3*	*Niger*	*89,3*	*Thailand*	*60,3*		
Costa Rica	*69,1*	*Indonesia*	*83,9*	*Nigeria*	*94,7*	*Togo*	*92,4*		
Côte d'Ivoire	*109,4*	*Israel*	*109,6*	*Norway*	*131,7*	*Trinidad & Tobago*	*70,4*		
		Jamaica	*91,3*	*Pakistan*	*52,2*	*Tunisia*	*71,8*		

[26] For the EU-25 Member States based on the Council Regulation No 1895/2006 of 19 Dec 2006 (OJ L397, 30.12.2006) page 6, adjusting the weightings applicable to the remuneration of officials of the European Communities. For the other countries (and the most recent two EU Member States in transition) it is based on **Council Regulation (EC) No 453/2007 of 25 April 2007 laying down the weightings applicable from 1 July 2006 to the remuneration of officials of the European Communities**. Please note that the basis of the calculation of the two sets of coefficients differ in detail)

[27] For countries where the correction coefficient is not available (not indicated in the table, (eg Montenegro for which a survey is under way in the 2nd half of 2007), the Commission will decide on a case by case basis. For countries where there are multiple entries, but none of them exactly match the location of the fellowship, then the lowest coefficient for that country will be applied. For Iceland the rate of Norway apply