Netherlands Water Partnership

Strategic Watercards

International Opportunities for the Dutch Water Sector

February 2002

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Contents

Samenvatting

Achtergrond en doelstelling van het onderzoek

De Nederlandse regering ambieert om de internationale positie van de Nederlandse watersector te versterken en beoogt tegelijkertijd een duurzame ontwikkeling te stimuleren. Om deze ambitie gestalte te geven zal een strategisch marketingplan worden opgesteld. Voor de opstelling van dit plan is informatie nodig over internationale ontwikkelingen in de watersector, over de omvang van de Nederlandse watersector en over haar concurrentiekracht. Daarnaast zijn gegevens nodig over kansen en bedreigingen die zich in de internationale watermarkt voordoen of worden verwacht. Het NWP (Netherlands Water Partnership) heeft het initiatief genomen voor de ontwikkeling van het strategisch marketingplan en EIM en DHV gevraagd kwantitatieve en kwalitatieve gegevens te leveren over de Nederlandse watersector, haar internationale concurrentiekracht en acties te formuleren om de concurrentiekracht te versterken.

Onderzoeksaanpak

Voor het onderzoek is een breed scala aan onderzoeksinstrumenten ingezet. Voor het vaststellen van de belangrijkste internationale trends, kansen en bedreigingen, is uitgebreide desk research verricht. Voor het karakteriseren van de Nederlandse watersector is een telefonische enquête uitgevoerd onder meer dan 200 respondenten. In drie workshops met deelnemers uit bedrijfsleven en instituties zijn de resultaten van de desk research en de enquête verder uitgewerkt. Het onderzoek is begeleid door een klankbordgroep met vertegenwoordigers van het NWP, Nederlandse bedrijven en instanties[1], het Ministerie van Economische Zaken en van de EVD. Een kerngroep met vertegenwoordigers van Ballast Nedam, RIZA and Aquanet zorgde voor verdere inhoudelijke toetsing tijdens het onderzoek.

Definitie van de watersector

Voor het onderzoek is de volgende indeling in marktsegmenten gehanteerd:

- Watervoorziening
- Afvalwater
- Waterbeheer
- Irrigatie en drainage
- Waterkracht
- Waterbouw

Watervoorziening omvat de subsegmenten drinkwatervoorziening en -behandeling, drinkwatertransport en -distributie, industriële watervoorziening en -behandeling, industrieel watertransport en –distributie.

Afvalwater omvat de subsegmenten collectie en/of sanitatie, industrieel afvalwater, huishoudelijk afvalwater en hergebruik van afvalwater.

Waterbeheer omvat de subsegmenten: integraal waterbeheer, grondwater, oppervlaktewater, water kwantiteit, waterkwaliteit

Irrigatie en drainage kan worden onderverdeeld in irrigatie en drainage.

Waterkracht is een segment van beperkte omvang en wordt niet nader onderverdeeld. Het onderzoek zal weinig aandacht besteden aan waterkracht.

Waterbouw is een omvangrijke markt en omvat de volgende segmenten: kustontwikkeling, havenconstructie en baggeren.

[1] Van Essen Instruments, NUON, NIB Capital, NEDECO en IHE.

De Nederlandse watersector in cijfers

Tabel S.1 geeft een cijfermatig overzicht van de Nederlandse watersector met de omzet per marktsegment en een onderverdeling naar thuismarkt en exportmarkten. De totale omzet van de Nederlandse watersector bedraagt € 11,5 miljard, waarvan 66% op de thuismarkt wordt gerealiseerd en 34% wordt geëxporteerd. Waterbouw is de grootste deelsector waarin € 3,5 miljard omgaat met een exportaandeel van 51%. Waterbouw wordt in omvang gevolgd door watervoorziening (omzet € 3,1 miljard) en afvalwater (omzet € 2,4 miljard). Er zijn circa 820 bedrijven actief in de watersector. De grootste partijen zijn actief in de waterbouw; 12% van alle bedrijven is werkzaam in dit segment maar zij zorgen voor 30% van de totale wateromzet. In afvalwater opereren de kleinste spelers; 35% van alle bedrijven is werkzaam in dit segment maar zij realiseren slechts 21% van de totale omzet in de watersector. De Nederlandse watersector is sterk internationaal georiënteerd; 60% van de spelers ontplooit internationale activiteiten. Het aandeel op de wereldmarkt schommelt voor de meeste segmenten rond 2%, met als grote uitzondering de waterbouw, dat 35% van de wereldmarkt in handen heeft.

Tabel S.1 Omzet van de Nederlandse watersector, totaal en onderverdeeld naar marktsegment (in miljard €) (n=167)

	Omzet		Onderverdeling omzet tussen thuismarkt en exportmarkten	
	in € mld	in %	Thuismarkt	Exportmarkten
Watervoorziening	3,1	27%	2,6	0,5
Afvalwater	2,4	21%	1,5	0,9
Waterbeheer	1,4	12%	1,1	0,3
Irrigatie en drainage	0,8	7%	0,4	0,4
Waterkracht	0,1	1%	0,1	
Waterbouw	3,5	30%	1,7	1,8
Overig	0,2	2%	0,1	0,1
Totale wateromzet	11,5	100%	7,6	3,9

In het onderzoek worden de diverse segmenten nader geanalyseerd en omschreven. Op grond van de verkregen inzichten uit de desk research, enquêtes en de workshops zijn SWOT-analyses opgesteld voor de verschillende marktsegmenten, waarbij kansen, bedreigingen, sterkten en zwakten in ogenschouw zijn genomen. Op basis van deze SWOT-analyses kunnen de volgende conclusies en aanbevelingen worden vastgesteld.

De positie van de Nederlandse watersector op buitenlandse markten kan worden versterkt door samenwerking

De Nederlandse regering ambieert om de internationale positie van de Nederlandse watersector te versterken en beoogt tegelijkertijd een duurzame ontwikkeling te stimuleren. Daartoe zou het aandeel op de wereldmarkt (momenteel circa 2%) moeten worden verhoogd. Er is voldoende potentieel in termen van capaciteit en expertise om van de groei van de wereldmarkt te profiteren, maar voor een werkelijke groei van het marktaandeel zijn gerichte acties vereist om de structurele zwaktes van de sector te verbeteren. Dit betekent onder meer een gezamenlijke inspanning om tot een grotere schaal en een meer geïntegreerd aanbod te komen. De Nederlandse spelers kunnen beter gunstige vormen van samenwerking ontwikkelen die de concurrentiekracht en de schaal vergroten in plaats van elkaars bescheiden internationale posities te beconcurreren.

Belangrijke trends: integratie, deelname private sector, toenemende complexiteit en schaal

De wereldmarkt vertoont een enorme potentie voor groei. Omvangrijke investeringen zijn nodig om de groeiende wereldbevolking en industrieën van water te voorzien, en om tegelijkertijd waterschaarste te voorkomen en onze ecosystemen te beschermen. Dit

veroorzaakt een coördinatieprobleem en een financieringsprobleem van gelijke orde. De bestuurlijke capaciteit en conventionele financieringsbronnen van de publieke sector en internationale samenwerking worden als onvoldoende aangemerkt om de uitdagingen aan te pakken. Daarom wordt gezocht naar deelname van andere partijen, zowel publieke als private, om extra management capaciteit en financiering te leveren. Dit leidt tot een toenemende complexiteit van markten en contractsvormen en tot een grotere schaal van projecten om de navenant hogere transactiekosten te kunnen terugverdienen. Integratie komt naar voren als het centrale thema: integratie van publieke en private partijen en financieringsmechanismen, integratie van industrieel, stedelijk en agrarisch watergebruik, integratie van ontwerp, realisatie, beheer en financiering en van huidige en toekomstige behoeften.

Kansen

Groeisectoren zijn stedelijke en, in nog sterkere mate, de industriële watervoorziening en afvalwaterzuivering om de groei van de wereldbevolking en economische ontwikkeling te faciliteren. Daarnaast is waterbeheer een sterke groeisector om de vereiste integratie te organiseren en de bronnen te onderhouden. In het algemeen liggen de beste kansen op het gebied van grootschalige geïntegreerde projecten waarmee in een klap zowel technische, beheersmatige als financiële problemen kunnen worden geadresseerd, en die voldoende schaalgrootte hebben om de hoge ontwikkelings- en transactiekosten te kunnen terugverdienen. De mogelijke vormen, combinaties en de mate van integratie zullen verschillen, afhankelijk van de behoeftes van de verschillende segmenten. In tegenstelling tot de andere segmenten is op de markt voor irrigatie en drainage weinig groei te verwachten, maar ook daar liggen er kansen op het gebied van integratie en privatisering.

Kracht: technologie en expertise, gebaseerd op een kwalitatief hoogwaardige thuismarkt

Voor alle marktsegmenten geldt dat de Nederlandse kracht is gebaseerd op technologie en expertise, een lokaal netwerk en een goede reputatie door bewezen kwaliteit. De Nederlandse watersector richt zich op kwaliteit en duurzame relaties en niet op "inpakken en wegwezen". Deze positie is gegrondvest in de hoge kwaliteitsnormen, die op de thuismarkt gelden. De thuismarkt blijkt ook bepalend voor de sterke expertisegebieden: goed ontwikkeld watermanagement, grote havens, landwinning en -bescherming, waterdiensten voor een hoogwaardige voedingsmiddelen- en procesindustrie, en goed ontwikkelde drainagesystemen en irrigatiesystemen voor de glastuinbouw. Sterke activiteitengebieden variëren aanzienlijk per marktsegment: het leveren van goederen en systemen in watervoorziening en afvalwater, advies en ontwerp in waterbeheer en in irrigatie en drainage, en aanneming van werken in de waterbouw.

Zwakten: gebrek aan schaalgrootte, private sector deelname en integratie

Er heerst een vreemde paradox: hoewel de Nederlandse expertise in hoog aanzien staat, wordt dat alleen in de waterbouw zichtbaar in een groot marktaandeel op de wereldmarkt. In andere marktsegmenten is of wordt veel kennis overgedragen, maar lukt het niet om grote projecten te verwerven voor de ontwikkeling van infrastructuur. In de waterbouw konden grote en op de wereldmarkt concurrerende spelers ontstaan door grote en innovatieve aanbestedingen vanuit de Nederlandse overheid. Zulke spelers ontbreken in de andere segmenten, omdat deze gedomineerd worden door publieke spelers, die niet gewend zijn aan een concurrerende omgeving en die niet de ambitie hebben of in staat zijn om te exporteren en (buitenlandse) risico's te nemen. Juist nu de wereldmarkt vraagt om sterke private spelers, die in staat zijn om geïntegreerde oplossingen te leveren met voldoende schaalgrootte om zowel technische, operationele en financiële problemen aan te pakken, heeft de Nederlandse watersector daar geen antwoord op. Er is maar één private operator die in staat is en de ambitie heeft om te exporteren. Het gevolg is een watersector, die grotendeels bestaat uit kleinere en gespecialiseerde partijen met een beperkte capaciteit om voldoende schaalgrootte en integratie te

ontwikkelen. Daardoor kan onvoldoende worden ingespeeld op de toenemende complexiteit en schaalgrootte van internationale projecten.

Aanbevelingen concentreren zich op de belangrijkste uitdagingen voor de Nederlandse watersector: samenwerking, integratie, financiering, kennis en private sector ontwikkeling

De belangrijkste uitdagingen voor de Nederlandse watersector zijn de 5 elementen samenwerking, integratie, financiering, kennis en private sector ontwikkeling. Deze elementen zijn cruciaal voor de versterking van de internationale positie van de Nederlandse watersector. Om resultaten te bereiken op deze gebieden is het niet alleen noodzakelijk om te luisteren naar de behoeften van de Nederlandse bedrijven. Het gaat ook om de juiste houding en om de bereidheid van alle relevante partijen om hun verantwoordelijkheid te nemen en met elkaar samen te werken. Ondersteuning is vooral nodig voor het midden- en kleinbedrijf (MKB) (het overgrote deel van alle bedrijven in de watersector) voor de ontwikkeling van know how en vaardigheden om zo de uitdagingen het hoofd te kunnen bieden. Veel MKB-bedrijven hebben de potentie en zijn ook bereid om hun exportomzet te verhogen door samenwerking, maar zij beschikken vaak niet over de noodzakelijke informatie, schaalgrootte en middelen. Daarnaast zouden de spelers die wel in staat zijn om grotere internationale projecten uit te voeren gestimuleerd moeten worden om deze projecten ook daadwerkelijk binnen te halen. De hierna geformuleerde aanbevelingen richten zich op private sector ontwikkeling, samenwerking en integratie, op de ontwikkeling van nieuwe financieringsvormen en op de creatie en verspreiding van kennis over markten, beschikbare financiële faciliteiten, complexe contracten, etc. De aanbevelingen zijn relevant voor alle Nederlandse spelers in de watersector. Gezien de grote relevantie van de onderwerpen voor het MKB zijn de aanbevelingen echter vooral voor deze groep bedrijven relevant.

Uitvoering: voor de uitvoering van de aanbevelingen wordt geadviseerd om werkgroepen te formeren onder coördinatie van het NWP met vertegenwoordigers van alle relevante partijen. Speciale aandacht zal daarbij moeten worden gegeven aan het afgeven van signalen naar de politiek toe en mogelijke beïnvloeding van de formulering van het nieuwe Regeerakkoord na de verkiezingen.

Aanbeveling: onderzoek mogelijkheden voor een grotere deelname van de private sector in de watersector

Het Nederlandse politieke klimaat houdt vast aan publiek eigendom van de waterinfrastructuur. Er bestaan echter allerlei tussenvormen, waarin het publiek eigendom samengaat met een grotere betrokkenheid van private partijen in het beheer met garantie van hoge kwaliteitsnormen en veiligheid. Deze mogelijkheden verdienen meer aandacht en diepgaander onderzoek met betrekking tot de te behalen voordelen voor de Nederlandse watersector in termen van kostenbesparingen en een toename van de internationale concurrentiekracht.

Aanbeveling: innovatieve aanbesteding op de Nederlandse markt

Nederlandse publieke partijen zouden zich meer bewust kunnen zijn van de mogelijkheden om grote, geïntegreerde projecten aan te besteden. Dit kan kosten besparen en tegelijkertijd innovatie, integratie, samenwerking en het opbouwen van voldoende schaalgrootte stimuleren in de private sector. Het voorbeeld van Harnaschpolder en van de aanbestedingen door Rijkswaterstaat zijn wat dit betreft navolgenswaardig.

Aanbeveling: herziening van de exportfinancieringsinstrumenten

De bestaande exportfinancieringsinstrumenten zouden herzien moeten worden met betrekking tot de specifieke eisen van de internationale watermarkt en mogelijkheden om samenwerking en integratie te bevorderen. Speciale faciliteiten zijn nodig voor:

- de dekking van hoge voorbereidings- en transactiekosten bij grote geïntegreerde projecten;
- het afdekken van lange termijn investeringsrisico's bij grote geïntegreerde projecten voor verschillende typen van betrokken partijen (zowel publieke als private).

Aanbeveling: pilotproject

Meer specifiek zou een pilotproject in bijvoorbeeld een Oost-Europees land kunnen worden geformuleerd (in overleg met het gastland) voor een geïntegreerd project, dat wordt ondersteund met Nederlandse exportfinanciering of fondsen van internationale samenwerking en dat aanbesteed zou moeten worden onder Nederlandse spelers. Uiteraard moet samenwerking tussen Nederlandse inschrijvers en lokale partijen in het gastland wel mogelijk zijn om zo kostenbesparingen te realiseren en de lokale ontwikkeling te stimuleren.

Aanbeveling: strategische inzet van waterbeheer

Consultants, instanties en samenwerkingsverbanden op het vlak van waterbeheer zouden meer aandacht kunnen besteden aan het bevorderen van geïntegreerde aanbiedingen vanuit het Nederlandse bedrijfsleven en van meer directe Nederlandse betrokkenheid bij realisatie en beheer en onderhoud.

Aanbeveling: verbeter de samenwerking met kennisinstituten

De resultaten van het onderzoek tonen een sterke samenhang tussen (export)prestaties en samenwerking met kennisinstituten. Tegelijkertijd komt naar voren dat bedrijven niet tevreden zijn over de kwaliteit van de samenwerking met kennisinstituten. De samenwerking op dit vlak moet dus worden verbeterd, omdat het van cruciaal belang is om concurrentievoordelen in technologie en expertise te realiseren c.q. te handhaven.

Aanbeveling: verbreed het gezichtsveld tot over de Atlantische Oceaan

De Nederlandse spelers zijn grotendeels gericht op Europa, Azië en het Midden-Oosten. Belangrijke markten als Noord en Zuid-Amerika krijgen minder aandacht, hoewel ze omvangrijk zijn en in de meeste marktsegmenten groeimogelijkheden bieden. Het feit dat de privatisering in deze regio's reeds verder is voortgeschreden en deze markten daardoor competitiever zijn, zou de relatief minder grote interesse van de Nederlandse sector kunnen verklaren.

Aanbeveling: steun netwerkactiviteiten in de Nederlandse watersector

Het belang van netwerkevenementen is aangegeven in de workshops en in de enquête. Bedrijven die graag beter willen presteren op exportmarkten zouden betere mogelijkheden moeten krijgen om elkaar te ontmoeten. Dit kan worden bewerkstelligd door de organisatie van workshops over specifieke thema's die als knelpunt zijn genoemd in de studie, zoals:

- complexe contracten en markten;
- landenspecifieke informatie;
- voor- en nadelen van lokale productiefaciliteiten;
- etc.

Het faciliteren van netwerkactiviteiten zal niet alleen resulteren in praktische tips over deze thema's maar ook in een grotere kennis over en inzicht in elkaars activiteiten. Dit vormt de basis voor meer samenwerking in projecten en voor een verdere integratie van Nederlandse activiteiten. Het NWP kan een leidende rol spelen bij de organisatie van dergelijke evenementen, wellicht in samenwerking met de EVD en de Kamer van Koophandel.

Aanbeveling: stimuleer export clustering

Daarnaast kan export clustering worden gestimuleerd. Clusters worden gedefinieerd als netwerken van verschillende typen bedrijven, die producten of diensten voortbrengen door samenwerking en onderlinge kennisuitwisseling. Het Ministerie van Economische Zaken heeft veel ervaring met het faciliteren en stimuleren van innovatieve clusteractiviteiten in bijvoorbeeld het multimediacluster, waarbij zoveel mogelijk gebruik wordt gemaakt van het bestaande instrumentarium. De focus bij innovatieve clustering ligt op de ontwikkeling van nieuwe producten of diensten. De voorgestelde geïntegreerde benaderingswijze voor de Nederlandse watersector kan echter ook als een innovatieve activiteit worden beschouwd die alleen kan worden gerealiseerd door samenwerking en onderlinge kennisuitwisseling. Het Ministerie van Economische Zaken zou dan ook een belangrijke faciliterende rol kunnen spelen voor

clusteractiviteiten in de Nederlandse watersector, maar zal daar niet zelf het initiatief toe nemen. Dit initiatief ligt bij een speciale werkgroep die door het NWP wordt gecoördineerd.

Aanbeveling: op maat uitgewerkte product/markt-combinaties

Het in kaart brengen van de Nederlandse watersector is meer dan een rapport presenteren met feiten en gegevens over de sector. Om een concreet en proactief marketingplan op te kunnen stellen voor een bepaalde regio en de Nederlandse watersector goed te profileren in die regio, is meer kennis nodig omtrent specifieke marktcondities en landenbehoeften. Er zijn met andere woorden op maat uitgewerkte plannen nodig om tot een effectieve marktbenadering te komen. Voor dergelijke plannen moeten de kennis en vaardigheden van de verschillende relevante partijen (het NWP, bedrijven, ambassades, EVD, en Kamer van Koophandel) zo optimaal mogelijk worden benut. De beste manier om tot een effectieve profilering en promotie te komen van de Nederlandse watersector is door ons te concentreren op enkele veelbelovende product/markt-combinaties (PMCs) die resulteren uit de specifieke SWOT-analyses voor ieder marktsegment. Om tot gedetailleerde acties voor een PMC in een bepaald land of regio te komen is echter ook informatie nodig omtrent specifieke marktcondities, landenbehoeften en project karakteristieken.

Gedeeltelijk uitgewerkte product/market-combinaties

De volgende PMCs zijn geformuleerd en gedeeltelijk uitgewerkt met het doel om de internationale concurrentiekracht van de Nederlandse watersector te versterken.

PMC: grote internationale projecten in stedelijke watervoorziening

De Nederlandse watersector is bijna volledig afwezig op de internationale markt voor grote stedelijke watervoorzieningsprojecten. De sector mist daardoor een belangrijke groeimarkt. De Nederlandse spelers missen voldoende schaalgrootte om deze markt te betreden. Deze PMC is geformuleerd om een grotere schaal te creëren, waardoor deze markt toegankelijk wordt.

PMC: geïntegreerde aanbiedingen in waterbeheer

Leveranties van goederen en systemen en van contractingactiviteiten zijn minder goed ontwikkeld in waterbeheer. Verder kunnen in de toekomst financieringsproblemen worden verwacht die een bedreiging vormen voor de Nederlandse spelers in dit segment. Dit PMC is bedoeld om te profiteren van de relatief sterk positie van Nederlandse consultants en instituten en om hun expertise te gebruiken om toegang te krijgen tot nieuwe financiële bronnen waaronder private bronnen. Door integratie met activiteiten op het gebied van consulting, financiering en van contracting kan een hogere omzet in de levering van goederen en systemen worden verwacht.

PMC: geïntegreerde levering van goederen en systemen door kleine leveranciers

Het merendeel van de Nederlandse spelers zijn kleine leveranciers van goederen en systemen. Zij zijn daarmee ook succesvol. Hun centrale focus ligt op de productie van hardware die zij omgeven met consulting- en/of contractingactiviteiten en soms ook met training. Om hun concurrentievoordelen te kunnen behouden (technologische kennis en expertise) zouden zij voortdurend moeten proberen om hun producten en diensten te innoveren en te verbeteren. Daarnaast zouden zij ook op zoek moeten naar nieuwe markten. Niet alleen technologische kennis is cruciaal voor hen om te overleven maar ook de beschikking over marktkennis en lokale netwerken. Voor sommigen van hen is ook de productie in lagelonenlanden een noodzakelijke voorwaarde geworden om voldoende competitief te blijven.

PMC: 'full service' voor private partijen in irrigatie

De Nederlandse consultants en kennisinstituten (Universiteit van Wageningen) hebben uitgebreide kennis over alle aspecten van irrigatie in tropische agricultuur, maar zij zijn sterk afhankelijk van conventionele financieringsbronnen van de publieke sector en internationale samenwerking. Privatisering is een belangrijke trend in irrigatie, die leidt tot een verschuiving van de vraag van de publieke naar de private sector. Een mogelijkheid is om dit proces te begeleiden en om deze geprivatiseerde partijen te ondersteunen door een volledig pakket van diensten aan

te bieden, waaronder de levering van apparatuur en onderhoudsdiensten, financiële regelingen en training.

PMC: hergebruik van stedelijk afvalwater

Gebrek aan financiering vormt vaak een knelpunt voor de behandeling van stedelijk afvalwater. Dit is echter mogelijkerwijs niet het geval wanneer behandeld afvalwater voor bepaalde doeleinden kan worden hergebruikt. Door complete en innovatieve oplossingen aan te bieden, inclusief de waterketenbenadering, kan een nieuwe markt worden gecreëerd en tegelijkertijd een oplossing voor het financieringsprobleem worden geboden.

Summary

Background and aim of the study

The Dutch government aims to contribute to global sustainable development, while strengthening the Dutch presence in the foreign water sector. In order to do so a strategic marketing plan is needed. This, in turn, requires more data about the international trends in the water sector, and about the size of the Dutch sector and its international competitiveness. In addition, information is required about the strengths and weaknesses of the Dutch industry and about the opportunities and threats expected in the international water environment. The Netherlands Water Partnership (NWP) has taken the initiative for the development of the strategic marketing plan. For the input of the plan NWP has asked EIM and DHV to quantify and qualify the Dutch water sector and its international competitiveness and to formulate actions for strengthening Dutch competitiveness.

Study approach

A wide range of research activities were undertaken to execute the study. Extensive desk research was carried out to assess international trends, opportunities and threats. For the quantification and qualification of the Dutch water sector a telephone survey in which more than 200 respondents were approached for the qualification and quantification of the Dutch water section. In addition, three workshops were held with participants from the sector itself and from intermediate and trade organisations active in export promotion. The outcome of the various study activities were presented and discussed in the steering committee of the study with representatives from NWP, the Dutch companies and institutes[1], the Ministry of Economic Affairs and from the EVD and, in a special expert group, with representatives from Ballast Nedam, RIZA and Aquanet.

Definition of the water sector

According to the definition maintained in the study, the water sector comprises the following market segments:

- water supply
- wastewater
- water(resources)management
- irrigation and drainage
- hydropower
- water construction

Water supply includes the sub segments drinking water supply and –treatment, drink water transport and –distribution, industrial water supply and –treatment and industrial water transport and –distribution.

Wastewater covers the following sub segments: collection and/or sanitation, industrial market, households/domestic and the re-use of water.

Water(resources)management includes the sub segments integrated water management, groundwater, surface water, water quantity, water quality.

Irrigation and drainage can be subdivided in irrigation activities and drainage activities.

Hydropower is a very small market segment in the Dutch water sector and is not further segmented. Unlike the other segments hydropower is not described in detail in this report.

Water construction is a large market in the water sector consisting of the following major sub segments: coastal development, harbour construction, dredging.

[1] Van Essen Instruments, NUON, NIB Capital, NEDECO and IHE.

Dutch water sector figures

The figures for the Dutch water sector are summarised in Table S.1 with the total turnover broken down by market segment and with a further specification of domestic and export turnover. The total turnover of the Dutch water sector equals € 11,5 billion of which 66% is realised in the domestic market and 34% in export markets. Water construction is the largest market with a total turnover of € 3,5 billion and a relatively high export share of 51%. In size water construction is followed by water supply (€ 3,1 billion) and wastewater (€ 2,4 billion). Most of the turnover in these segments is realised in the Netherlands. About 820 Dutch companies are active in the water sector. The largest players operate in water construction; 12% of all players are active in this market segment, but they account for 30% of total turnover. The average size in wastewater is much smaller; 35% of all players are active in this segment, but they account for only 21% of total turnover. The players in the Dutch water sector are quite active internationally with more than 60% of players having foreign activities. Despite this international orientation, the international market share varies around 2%, water construction being the exception with an international market share of 35%.

Table S.1 Turnover in the water sector, in total and broken down by market segment (in € billion) (n=167)

	Turnover		Breakdown of turnover between domestic and export markets	
	in € billion	in %	Domestic	Exports
Water supply	3,1	27%	2,6	0,5
Wastewater	2,4	21%	1,5	0,9
Water(resources)management	1,4	12%	1,1	0,3
Irrigation and drainage	0,8	7%	0,4	0,4
Hydropower	0,1	1%	0,1	
Water construction	3,5	30%	1,7	1,8
Other	0,2	2%	0,1	0,1
Total water turnover	11,5	100%	7,6	3,9

In the study the various market segments have been further elaborated and analysed. Combining insights from desk research and the survey, SWOT-analyses were made for each segment taking into consideration growth opportunities, threats, strengths and weaknesses. In addition, three workshops were held to further elaborate the results of the various SWOT-analyses. From the SWOT-analyses and the workshops he following general conclusions can be drawn:

The Dutch presence in the foreign water sector can be increased by co-operation

The Dutch government aims to promote Dutch expertise and strengthen the Dutch presence in the foreign water sector, while contributing to global sustainable development. Therefore the international market share of the Dutch water sector (currently around 2%) should be increased. There is a potential of capacity and expertise to benefit from the increasing world demand, but for real growth of market share specific actions are needed to overcome the structural weaknesses of the sector. Amongst other things this implies joint efforts for creating scale and integrated solutions. This means that Dutch players should find beneficial forms of co-operation in order to become more competitive on a world scale instead of competing for each other's modest market shares.

Main trends: integration, private sector participation, increased complexity & scale

The world water market shows an enormous potential for growth, massive investments are needed to supply growing populations and industries, while still preventing water scarcity and maintaining the ecosystems. This creates a co-ordination problem and a funding problem of equally enormous dimensions. The management capacity and conventional funding sources of the public sector and ODA are deemed insufficient. Therefore participation of other parties is sought, from both private and public parties, to provide management capacity, know how and funding. All this leads to an increasing complexity of markets, projects and contracts and to a larger scale of projects to earn back increased development and transaction costs. Integration evolves as the major challenge: for public and private parties and funding mechanisms, of urban, industrial and agricultural users, of consulting, realisation, operating and funding and of present and future needs.

Opportunities

Growth sectors are urban and, to an even greater extent, industrial water supply & wastewater treatment to support growing populations and economies and water (resources) management to organise integration and maintain sources. In a general sense the main opportunity is to be found in large scale integrated projects, which solve technical, operational and/or financial problems in one strike and which have sufficient scale to earn back high development and transaction costs. This can occur in many different forms and varieties as regards to integration, according to the specific needs of different market segments. The irrigation & drainage market shows less promise for growth, but here also integration and privatisation offer opportunities.

Strength: technology & expertise based on "high quality domestic market"

Throughout all market segments strength is based on technology/expertise, a good local network and reputation or proven experience. The Dutch water sector clearly builds on quality and good relations and not on "hit and run". This position is based on the high-quality standards prevalent in the Dutch home market. Strength is closely related to expertise developed in the home market: high developed water management, large harbours, land reclamation and protection, water services to a sophisticated food and process industry and well developed drainage and irrigation systems (greenhouses). Strong activity areas vary largely per market-segment: procurement in water supply and wastewater, consulting in water (resources) management and irrigation & drainage and contracting in water construction.

Weaknesses: lack of scale, private sector participation and integration

There is a strange paradox: although the Dutch expertise is highly acknowledged in many fields, only in water construction this has resulted in a major share of the world market. In other sectors we are transferring a lot of know how, by capacity building and twinning projects, but we are failing to win the larger projects. In water construction large competitive players had a chance to develop because of innovative tendering of large projects by the Dutch government. Such players are missing in the other market segments, because public players not capable or willing to export and manage foreign risks dominate these segments. Now that the world market calls for large private players, which are capable of providing integrated solutions of sufficient scale, that tackle technical, operational as well as financial problems, the Dutch sector has no answer. There is only one private operator capable and willing to export. The result is a water sector, which consists mainly of smaller and specialised parties, with a limited capability to develop sufficient scale and integration. Insufficient economies of scale are generated to cope with the increasing complexity and scales of the world market.

Recommendations concentrate on major challenges for the Dutch water sector: co-operation, integration, financing, knowledge and private sector development

The major challenges in the Dutch water sector are the five elements co-operation, integration, financing, knowledge and private sector development. These elements are crucial for the strengthening of the international position of the Dutch water sector. In order to achieve results in each of these areas it is not only a matter of meeting the requirements of the players in the Dutch water sector. It is also the right attitude and willingness of all relevant parties to take their responsibility and to co-operate with each other. Support is especially necessary for the small and medium sized enterprises (SMEs) in developing know how and skills to meet these challenges and complexities. Most SMEs have the potential and are also willing to increase their export turnover by co-operating, but they simply lack the necessary information, scale and means. In addition, private players that are able to win larger international projects should be encouraged to apply for these projects. The recommendations formulated focus on stimulating private sector development, co-operation and integration, on the provision of new financial facilities and on the creation and dissemination of knowledge about new markets, financing facilities, complex contracts, etc. The recommendations are relevant for all Dutch players in the water sector. Due to the high relevance of these topics for SMEs, however, the recommendations are particularly relevant for this group.

Execution: task forces should be established co-ordinated by NWP with representatives of all relevant parties for the execution of individual recommendations. Special attention should be given to influencing the formulation of the new Dutch Government Act (Regeerakkoord) after the elections this year.

Recommendation: investigate private sector participation options for the Dutch water sector

The Dutch political climate adheres to public ownership of water infrastructure. Therefore we are lacking large private players willing and capable to export and win large international projects. Many options exist for the Dutch water sector combining public ownership with more involvement of private players in management, while maintaining high quality standards and security levels. These options deserve better and more in-depth research after their benefits to the Dutch water sector as regards to reducing costs and improving international competitiveness.

Recommendation: innovative tendering in domestic market, export finance and ODA

Dutch public parties might be more eager to apply for integrated projects of a relatively large scale. This may reduce costs for the public players and at the same stimulate innovation, integration, co-operation and scale for private suppliers. Public parties may follow the example of Harnaschpolder or of Rijkswaterstaat in relation to water construction in this respect.

Recommendation: review of export financing instruments

The existing instruments should be reviewed as regards to the requirements of the water market and possibilities to stimulate co-operation and integration. Specific instruments are needed to:

- cover high preparation and transaction costs for large (integrated) projects;
- reduce long term investment risks for large (integrated) projects for various parties involved (public as well as private).

Recommendation: pilot-project

More specifically a pilot-project should be formulated in for instance Eastern Europe in co-operation with the receiving government for an integrated project to be supported by Dutch export financing and/or development aid (for instance the PSO-programme) and to be tendered among Dutch players. Dutch players may associate with local players to reduce costs and stimulate local development.

Recommendation: strategic use of water(resources)management
Consulting players and institutions in water(resources)management and co-operation agreements in this field could pay more attention to stimulating integrated offers from the Dutch water sector and to involve more parties in activity areas of realisation and operations.

Recommendation: improve co-operation with knowledge institutes
The results indicate a strong relationship between export performance and co-operation with knowledge institutes. At the same time, co-operation with these institutes is considered unsatisfactory in most market segments and should be improved, since this co-operation is of crucial importance for maintaining competitive advantages in technology and expertise.

Recommendation: enlarge focus to regions across the Atlantic
The focus of the Dutch players is predominantly on Europe, Asia and Middle East. The important markets across the Atlantic (North America, Latin America) receive less attention although these markets also have a considerable size and offer growth opportunities in most segments. The fact that these markets, to some extent, have developed into privatised and more competitive water markets may be a major cause.

Recommendation: support networking activities in the Dutch water sector
The importance of networking events was stressed in the workshops and the survey. Companies that are willing to perform better on export markets should have the opportunity – better than at this moment – to meet each other. This could be arranged through the organisation of workshops about specific themes, which have been mentioned bottlenecks in this study. In this respect the following themes can be mentioned:

- complex contracts and markets;
- country specific information;
- pro's and contra's of local production facilities;
- etc.

Facilitating networking activities will not only result in some practical tips about these themes, but also in better knowledge and understanding of each other's activities. This forms the basis for more co-operations in projects and for a further integration of Dutch activities. NWP may play a leading role in the organisation of such events, perhaps in co-operation with EVD and/or the chambers of commerce.

Recommendation: stimulate export clustering
In a further step also export clustering should be stimulated. Clusters are defined as networks of different types of companies, which create certain products or services by co-operating and exchanging knowledge with each other. The Dutch Ministry of Economic Affairs have gained experience with facilitating and stimulating innovative clustering activities in for example the multimedia cluster by using existing instruments. The focus in innovative clustering is on the development of new products or services. The proposed integrative approach for the Dutch water sector, however, can also be considered an innovative activity that can only be realised by co-operating and by exchanging knowledge. As a result, the Dutch Ministry of Economic Affairs could play an important role as a facilitator of clustering activities in the Dutch water sector, but cannot be expected to take the lead. The lead should be with a special task force co-ordinated by NWP.

Recommendation: tailor-made elaborated product-market combinations
Profiling the Dutch water sector is more than just drawing up a report with facts and figures about the sector. For the effective profiling of the sector more knowledge is necessary about specific market conditions or country specific needs before a concrete and proactive plan can be compiled for certain (geographical) markets. In other words, tailor-made plans are necessary in order to come to an effective market approach. For such plans the knowledge and skills of various parties involved (NWP, companies, embassies, EVD and chambers of commerce) should be exploited. The best way to come to an effective profiling and promotion

of the Dutch water sector is by concentrating on certain promising product/market-combinations (PMCs), which follow from the specific SWOT-analyses for each market segment. In order to come to more detailed actions for a PMC in a certain country or region the entire spectrum of information is required, including country needs, specific market conditions and project characteristics.

Partially elaborated product/market-combinations

The following PMCs have been formulated and partially elaborated to strengthen the international competitiveness of the Dutch water sector:

PMC: large international projects in urban water supply

The Dutch water sector is almost completely absent from the international market for large urban water supply projects. As a consequence, the sector is missing a major growth market. The Dutch players lack sufficient scale to enter this market. The PMC formulated here is intended to take this hurdle and to create more scale.

PMC: integrated offers in water(resources)management

Procurement and contracting are underdeveloped in water(resources)management. In addition, funding problems can be expected in the future creating a serious threat for Dutch players in this market segment. This PMC is intended to reap benefits from the strong international position of the Dutch consultants and public institutions and to use their expertise to obtain access to new financial sources including private financial sources. By integrating consulting, financing and procurement/contracting a higher turnover in realisation can be expected.

PMC: integrated procurement by small procurement players

The majority of the Dutch players belong to this category. Members of this group are successful in what they are doing. Their central focus is on the production of hardware that they extend with consulting and/or contracting services and perhaps sometimes also with training. In order to keep their competitive advantages (technological know-how and expertise) they should continuously try to improve and innovate their products and services. In addition, they should look for new geographical markets. Not only technological expertise is crucial for them to survive but also the possession of market knowledge and local networks. For some of them production in low wage countries has already or will become a necessary condition for their survival on the international playing field.

PMC: full service for private parties in irrigation

The Dutch consultants and knowledge institutions (Wageningen University) have extensive know how about all aspects of irrigation and tropical agriculture, but they depend heavily on ODA and public sector demand. Privatisation is an important trend in irrigation, resulting in a shift in demand from the public sector to the private sector. An opportunity is to manage this process and to support these newly privatised parties by offering a full range of services, which includes service support, the delivery of equipment, financial arrangements and training.

PMC: urban wastewater and its re-use

Urban wastewater has to cope with a major funding problem to finance sewerage system and treatment facilities. However, if treated wastewater can be re-used for other purposes economic value is created, and as a result also the funding for the treatment. Offering complete and innovative solutions including the water chain approach may present an opportunity for the Dutch players by creating a new market and solving the funding problem at the same time.

1 Introduction

1.1 Background

Water has become an important factor in Dutch international policy. With the Programme for the Netherlands Involvement in the foreign water sector 'Partners for Water', the Dutch government aims to contribute to global sustainable development, while strengthening the Dutch presence in the foreign water sector. In order to do so a strategic marketing plan needs to be developed. The Netherlands Water Partnership (NWP) has taken the initiative for the development of this plan. However, this requires more data about the international trends in the water sector, about the size of the Dutch sector and its international competitiveness. In addition, information is needed about the strengths and weaknesses of the Dutch industry and about the opportunities and threats expected in the international water environment.

1.2 Study objectives

The objective of this study is to:

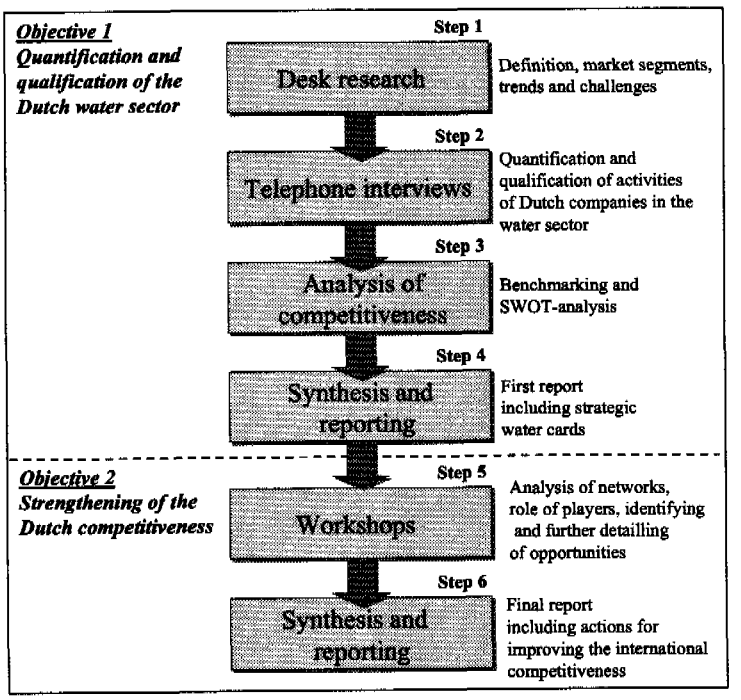
1 quantify and qualify the Dutch water sector and its international competitiveness. Relevant questions in this respect are: what is the definition of the water sector? What are the characteristics of the different market segments? What are the strengths and weaknesses of the Dutch water sector and what opportunities and threats can be distinguished in each market segment? How do Dutch companies perform on the international playing field?

2 formulate actions for strengthening Dutch competitiveness. What can be learnt from the SWOT-analysis in each market segment? Which players are important with respect to export activities? What are the network relationships of these players? What are potential scenarios and combinations of players/products/services/markets for export? What are important items that require action?

1.3 Approach

In Figure 1.1 the various steps of the study approach are presented linked to the two study objectives. In total about 230 companies have been interviewed. In Annex 1 more details are provided about the response.

Figure 1.1 Study approach



1.4 Water sector market segments

The water sector comprises the following market segments:

- water supply (WS)
- wastewater (WW)
- water(resources)management (W®M)
- irrigation and drainage (I&D)
- hydropower (HP)
- water construction (WC)

Water supply includes the sub segments drinking water supply and –treatment, drink water transport and –distribution, industrial water supply and –treatment and industrial water transport and –distribution.

Wastewater covers the following sub segments: collection and/or sanitation, industrial market, households/domestic and the re-use of water.

Water(resources)management includes the sub segments integrated water management, groundwater, surface water, water quantity, water quality.
Irrigation and drainage can be subdivided in irrigation activities and drainage activities.
Hydropower is a very small market segment in the Dutch water sector and is not further segmented. Unlike the other segments hydropower is not described in detail in this report.
Water construction is a large market in the water sector consisting of the following major sub segments: coastal development, harbour construction, dredging.

1.5 Structure of the report

In the following chapter the global market for water and relevant trends are described. In chapter 3, the focus will be on the Dutch water sector in general before going into more detail about the various strategic water cards. These water cards are described in chapters 4 to 8 for each of the market segments of the water sector excluding hydropower. In chapter 9 conclusions are drawn and actions for improving the Dutch international competitiveness are formulated and further elaborated.

2 Global Market & Trends

2.1 Global market

The global water market in goods and services amounts to € 425 billion.

Table 2.1 World Water Market (including service provision and management) (in € billion)

Market segments	Annual turnover
Water supply	157
Wastewater	135
Water(resources)management	67
Irrigation and drainage	39*
Hydropower	17*
Water construction	10
Total	425

* Investment levels only

Source: Mason's Water Yearbook 2000-2001

Water supply (€ 157 billion) is the largest market, closely followed by wastewater treatment (€ 135 billion). Together they make up a huge combined market of nearly € 300 billion. Only rough estimates are available, however, since many costs are hidden by (cross) subsidies and intermediate transactions within the industry.

The world market for water (resources) management is the third market in size with an estimated turnover of € 67 billion. This market covers the management and monitoring of water resources. The size is estimated by taking the share of the Dutch water (resources) management market as compared to the Dutch water supply and wastewater market segments and relating this share to the international figures of the latter segments.

No figures exist for the value of the world market for irrigation and drainage, for there are very few examples of water being provided on an economic basis to customers in this market segment. Instead the annual investment level of € 39 billion is presented of which € 28 billion is accounted for by developing countries.

The market for hydropower of € 17 billion is also given in terms of annual investment level only. The hydropower investments are concentrated in the developing world, because in the developed world most opportunities have been tapped. Water construction is the smallest market with € 10 billion turnover, but very important for the Dutch water sector which has captured an estimated 35% share of the world market.

The size of the various regions in the world market is estimated by population sizes, water consumption and average tariff levels. See table 2.2 for a breakdown by region.

Table 2.2 Size of the various regions in world market (in € billion)

	Water Supply	Wastewater
North America	44,0	37,9
EU	41,1	35,3
Asia and Middle East	35,9	30,9
Latin America	17,1	14,7
Eastern Europe	14,4	12,4
Africa	5,1	4,4
Total	157,6	135,6
Netherlands	2,7	2,3

Source: Mason's Water Yearbook 2000-2001, UNFPA.

International operators

With the growing involvement of the international private sector, the large water multinationals with a strong operating capacity will constitute an important part of the market. The 10 largest players in the international private water sector are predominantly based in Western Europe and one in Brazil. The largest three cover almost 10% of the world market for water supply and wastewater. The USA-players are slightly smaller, but some have a strong international profile like Bechtel with close to 4 million international connections, based on home markets of less than 1 million. Since they are already in an excellent starting position to seize the growing investment opportunities around the world, a major future market force is expected to remain centred in the western world. This in spite of the fact that a major share of global investments will take place in developing countries and emerging markets.

Table 2.3 10 largest operators

	Population served (in millions)			Turnover in water in € billion
	Domestic market	International markets	Total	
Suez-Lyonnaix (Fr)	14	94	108	10
Vivendi / US Filter (Fr/U.S.)	25	78	103	14
GWE (Ger / UK)	21	16	37	5
Agbar (Sp)	14	20	34	0,6
SAUR (Fr)	6	22	28	1,4
United Utilities (UK)	7	18	25	1,7
SABESP (Brazil)	19		19	0,5
Severn Trent (UK)	8	7	15	1,6
Anglian Water (UK)	6	6	12	1,1
FCC (Sp)	10	1	11	0,2

Source: Mason's Water Yearbook 2000-2001

2.2 Major trends

World Water Vision 2025

Launched at the World Water Forum 2000 in The Hague the World Water Vision 2025 describes the major trends and needs for the water sector in the next decades.

Water stress

By 2025 it is expected that some 3 billion people will live in areas, which have to cope with "water stress", compared to some 500 million people nowadays. Water stress can be defined as the circumstance under which water abstraction for all major functions together (domestic, industrial, agricultural and natural ecosystems) exceeds the renewal of water sources. This shows the urgency for investments in order to prevent a catastrophe.

Agriculture largest user

Agriculture is by far the largest user accounting for 70% of all water withdrawal for its account. Industry takes 22% and domestic use is only 8%. Industrial and domestic supply is reported to be very inefficient, consuming only minor shares of the water withdrawal. Given the threat of water stress, efficiency has to be improved. Agriculture as the largest water consumer, fortunately, is reported to be more efficient already consuming 70% of its actual withdrawal, though there is still room for improvement (to 90-95%).

Table 2.4 Water use, water withdrawal and real consumption

Water use	Water withdrawal	Share
Agriculture	2.500 km^3	69%
Industry	750 km^3	21%
Domestic	350 km^3	10%
Total	3.600 km^3	100%

Source: World Water Vision 2025

Consensus on solutions

Consensus is starting to take shape among international institutions, experts, investors and governments as regards to the critical actions to be followed:

- Involving all stakeholders in integrated water (resources) management;
- Moving to full cost pricing for all water services;
- Increasing public funding for research and innovation;
- Co-operating to manage international basins;
- Massively increasing investments in water.

Consensus among policy makers and international institutions, however, will not preclude that local implementation of such actions may still have to cope with a lot of resistance.

Increasing investments

In the next 10 to 25 years the world water market will be an example of accelerated investment levels, especially in the developing countries and emerging markets. These are the regions where population growth, massive migration to the cities and industrialization generate a huge demand for investments in water services. The challenge is to secure a sufficient supply of clean water for the growing demand of the world population, agriculture and industry, while maintaining a safe and healthy environment. In many regions the treatment of municipal and industrial wastewater is only starting to take shape.

Investment forecasts as part of the "World Water Vision for 2025" provide for an overall increase in the desired annual investment level from € 80-90 billion per annum in 1995 to € 200 billion per annum in the period from 2000 to 2025. These numbers are calculated for new works only and are based on the need to meet the requirements ensuing from a growing population and industry. Investments in replacement, rehabilitation or upgrading of existing systems, which may account for a major share of the market in the OECD-countries are not included nor investments in hydropower or water construction. So, the estimate of € 200 billion annual investment is based on conservative assumptions.

Highest growth in environment & industry

Besides the growth of overall investment in absolute numbers the same forecasts show a dramatic shift of the relative share of investments in agriculture (from 44% down to 17%) towards investments in environment and industry (from 14-19% up to 41,5%). The relative share of investments in (urban) water supply and sanitation is rather stable following the overall growth rate of the sector. Agriculture shows no growth at all, maintaining an investment level of € 34 billion per annum, as table 2.5 illustrates.

Table 2.5 Investments in extension per annum in the World Water Market (in € billion and in shares)

World Water Market	Investments in € billion		Share (%)	
Investments p.a.	1995	2025	1995	2025
Agriculture	35-40	34	44	17
Environment & industry	11-17	83	14-19	41,5
Water supply & sanitation	34	83	37-42	41,5
Total	80-91	200	100	100

Source: World Water Vision 2025

In addition it is expected that in the OECD-economies the annual investments in water supply and wastewater will amount to some € 55 billion (Source Mason's Water Yearbook 2000-2001), comprised mainly of upgrading and replacement.

Hydropower has a substantial potential for growth, especially in the developing countries where only 30% of potential sites have been tapped. The actual growth will depend on whether the need for clean energy will win from concerns about the destruction of natural sites and villages (Source: ICOLD).

Growing dominance of private sector

In order to meet the growing demand for investments and higher efficiency the role of the private sector, consisting of both international and local players, is considered to be of crucial importance. Since 1988 nearly 6% of the world population have had their water and/or sewerage services privatised (Source: David Owen in W&WI 2/2001). The share of the international private sector in covering desired investments is expected to grow from 4% to about 26% and the share of the local private sectors may grow from about 19% to 50%. This means that the combined local and international private water sector will mobilise nearly 70% of all required investments in 2025 amounting to some € 161 billion per annum. Whether this will really happen depends heavily on the ability of governments to implement sound legal frameworks supportive to private sector involvement. In Latin- America this seems to be the case, but in Asia for instance little progress is being made. The share of the public sector will decline from 65% in 2000 to 17% in 2025 and the share of donors will go down from 12% in 2000 to 7% in 2025. In addition the hydropower sector, not in-

cluded in the World Water Vision calculations, is considered likely to become a stronghold for private sector involvement. The high share of private sector involvement does not necessarily mean an equal share of capital transfer, for the private sector tends to finance substantial parts of investments from its operational cash flow.

Table 2.6 Water services (in € billion and in shares)

	in € billion		Share (%)	
Water services	2000	2025	2000	2025
Public sector	44	27	17%	65%
Local private sector	13	80	50%	19%
Int'l private sector	3	43	26%	4%
Int'l donors	8	11	7%	12%
Total	68	161	100%	100%

Source: World Water Vision 2025

Competitive markets

Because of the growing dominance of the private sector, market conditions will change substantially and the market will become much more competitive. Although full-cost pricing is expected to become more important, pressure will be strong to lower the cost of better services and quality. Independent regulators will become the watchdogs to prevent parties from generating easy profits. The world water market will undergo a transformation from a market dominated by the public sector and donor agencies to a market dominated by the private sector with quite different rules and practices. Business communities from countries with a competitive water home-market like France, United Kingdom, Spain and parts of the US will have a competitive edge over other parties.

International operators

With the growing involvement of the international private sector, the large water multinationals with a strong operating capacity will constitute an important part of the market. The major players of the international private water sector are predominantly based in Western Europe and the USA. Since they are already in an excellent starting position to seize the growing investment opportunities around the world, a major future market force is expected to remain centred in the western world. This in spite of the fact that a major share of the global investments will take place in developing countries and emerging markets.

Highest investments in Asia

The next table gives an overview derived from investments per region. Total needs per annum for water supply, wastewater and agriculture come close to the € 200 billion estimated in the World Water Vision. The highest investments are expected in Asia. North America with its still growing population will remain a major market, outweighing the EU with its stagnant population. Latin America will also surpass the EU in importance. In the EU and Eastern Europe the focus will be on achieving compliance with EU regulations, especially in the field of wastewater treatment. Africa can gain in importance as a market, if indeed adequate funding can be mobilised.

Table 2.7 Investments per annum (in € billion)

Investments p.a.	Water supply & Wastewater	Agriculture	Total
Asia and Middle-East	45	28	73
North America	35	6,5	41,5
Latin America	28	1	29
Western Europe	20	1	21
Africa	11	2,5	13,5
Eastern Europe	8		8
Total	147	39	186

Source: World Bank, Masons Water yearbook 2000-2001, PriceWaterhouseCoopers

Growing importance of water (resources) management

In order to guide the required investment flows effectively, sound water(resources)management is a prerequisite. Monitoring water quality and water quantity of sources, groundwater and ecosystems is required to take the right measures. A clear regulatory framework is necessary to support private investments and stimulate efficiency. Furthermore, strong management capacity is essential to stimulate the development of adequate know how, involve all stakeholders, allocate scarce resources and raise sufficient funds.

3 The Dutch water sector

3.1 Introduction

In this chapter the Dutch water sector is quantified and further characterized. In order to assess the size and characteristics of the Dutch companies that are active in the water sector over 200 companies have been interviewed by telephone. In addition 20 companies (consultancy firms and NGOs) have filled out written questionnaires and interviews have been conducted with 4 financial institutions.

3.2 Domestic and export turnover of the Dutch water sector by market segment

Table 3.1 Turnover in the water sector, in total and broken down by market segment (in € billion) (n=167)

	Turnover		Breakdown of turnover between domestic and export markets		
	in € billion	in %	Domestic	Exports	Total
Water supply	3,1	27%	84%	16%	100%
Wastewater	2,4	21%	62%	38%	100%
Water(resources)management	1,4	12%	82%	18%	100%
Irrigation and drainage	0,8	7%	55%	45%	100%
Hydropower	0,1	1%	99%	1%	100%
Water construction	3,5	30%	49%	51%	100%
Other	0,2	2%	72%	28%	100%
Total water turnover	11,5	100%	66%	34%	100%

In table 3.1 the figures for the Dutch water sector are summarized with the total turnover broken down by market segment and with a further breakdown of domestic and export turnover. In the next pages the figures for the water sector are elaborated into more detail.

Total turnover broken down by market segment

Figure 3.1 Total turnover in Dutch water sector and by market segment (in € billion)

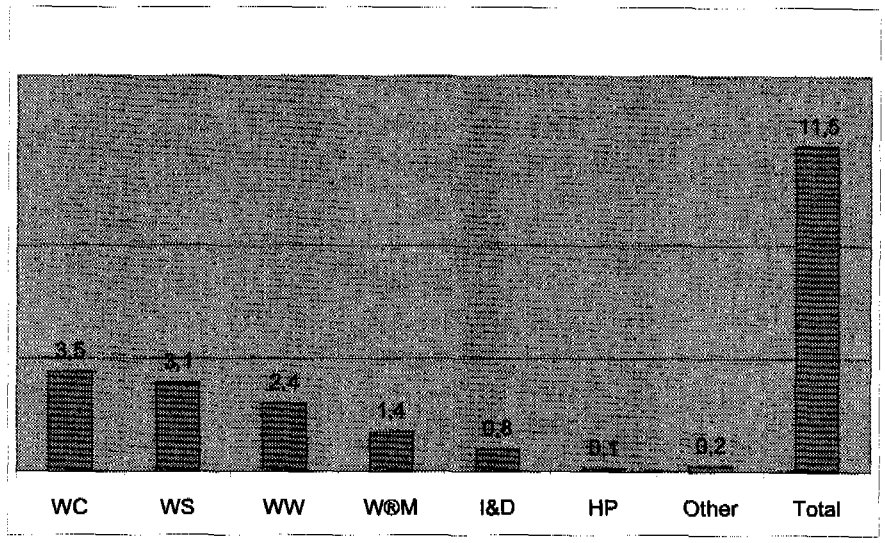


Figure 3.1 shows the size of the various segments. The total turnover in the water sector amounts to € 11,5 billion representing 41% of the total turnover of the parties involved. Water construction is the largest segment accounting for one third of the total, hydropower the smallest.

Number of players and their turnover broken down by market segment

Figure 3.2 Players in the water sector broken down by their most important market segment and a breakdown of their turnover over the various market segments of the water sector

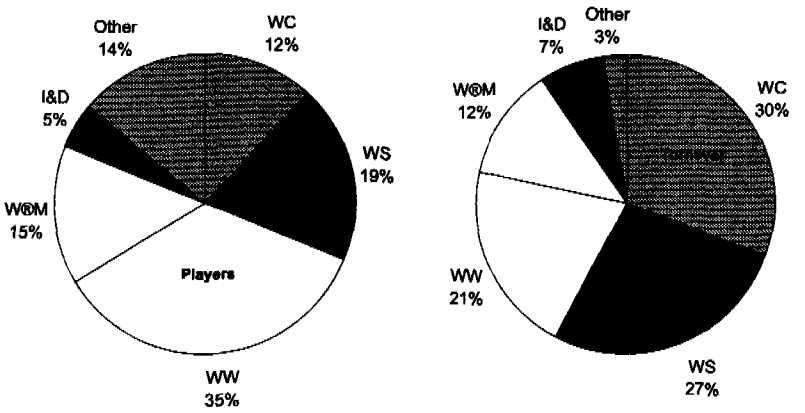


Figure 3.2 gives an indication of the relative size and strength of the Dutch players in different segments. About 820 Dutch companies are active in the water sector. The largest players operate in water construction, where 12% of players account for 30% of turnover. The average size in wastewater is much smaller, where 35% of players account for only 21% of turnover.

Figure 3.3 Geographical scope of activities broken down by market segment (n=220)

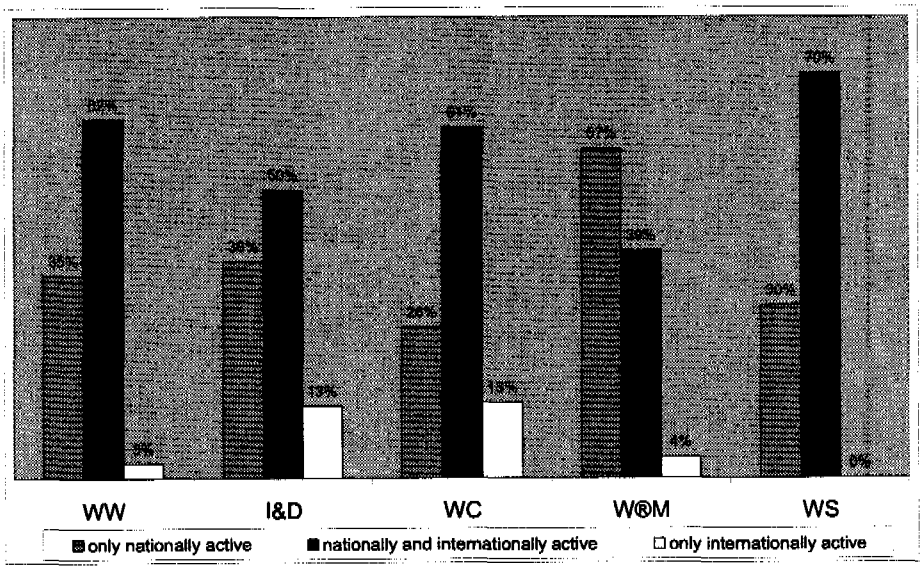


Figure 3.3 demonstrates the difference in the international orientation of Dutch parties in the various market segments. Water construction is the most internationally oriented segment; 74% of all companies that consider water construction to be their most important market segment, is internationally active; 12% is only internationally active. In fact all segments are quite internationally active with more than 60% of players having foreign activities, except for water (resources) management (43%). The high degree of international activity in water supply (70%) does not result in a correspondingly high export turnover though (only € 0,5 billion), as will be demonstrated in figure 3.4.

Figure 3.4 Turnover in domestic- and export markets, total and by segment (in € billion)

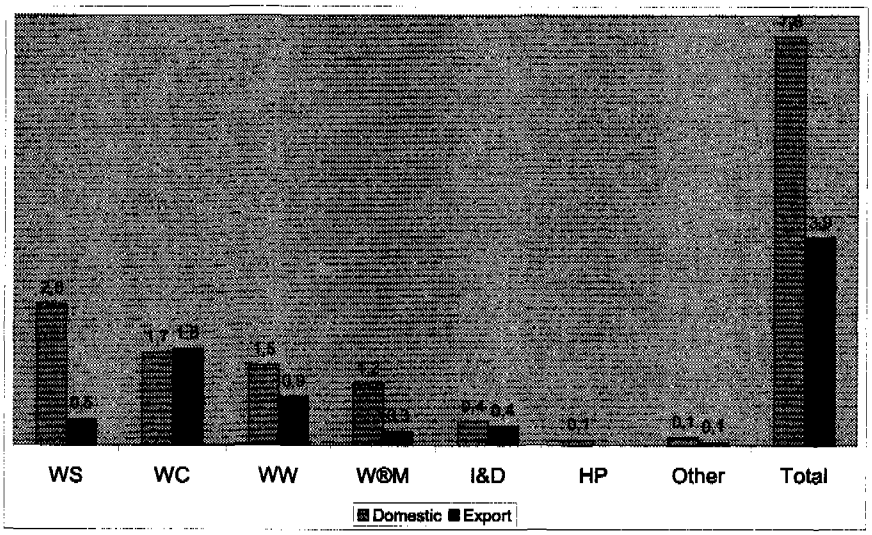


Figure 3.4 shows the size of the domestic and export markets of the various segments. About two thirds (€ 7,6 billion) of total water turnover is accounted for by national demand, one third is made in foreign markets. Total export value adds up to € 3,9 billion. Water construction covers almost half of the total water export value with € 1,8 billion and wastewater covers close to one quarter with € 0,9 billion. Water supply has the largest domestic market, but its export is relatively modest with € 0,5 billion.

Figure 3.5 Dutch sector compared to world market (in € billion en %)

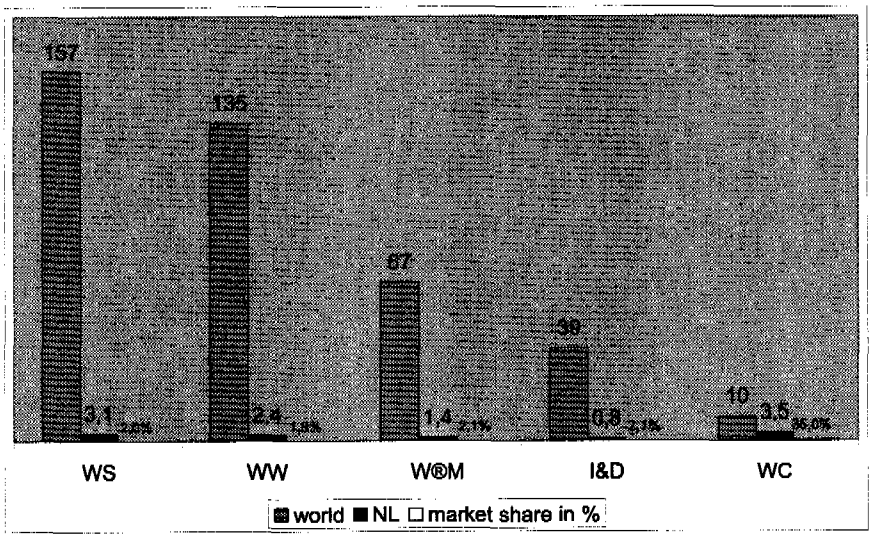


Figure 3.5 presents the relative size of the Dutch water sector compared to the world market. All segments have a share of around 2% of their respective world market segments. Water construction, in contrast, accounts for 35% of the world market.

Figure 3.6 Share of turnover generated in domestic and export markets

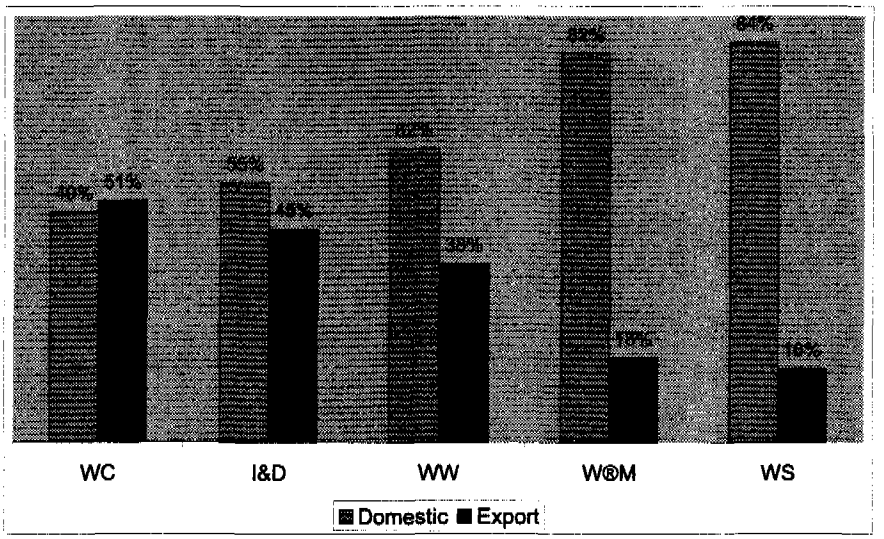
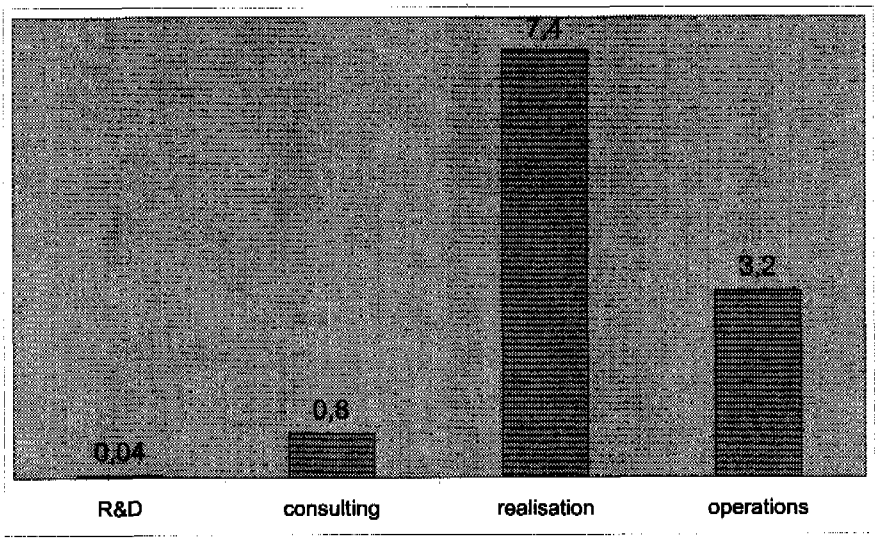


Figure 3.6 shows the international versus national share of turnover of the various segments. Water construction is the most internationally oriented segment with an export share of turnover of 51%. Water supply and water (resources) management are the most nationally oriented segments with export shares of respectively 18% and 16% of turnover.

3.3 The project cycle and its activity areas

Turnover of the project cycle broken down by activity area

Figure 3.7 Turnover of the project cycle of the Dutch water sector by activity area (in € billion)

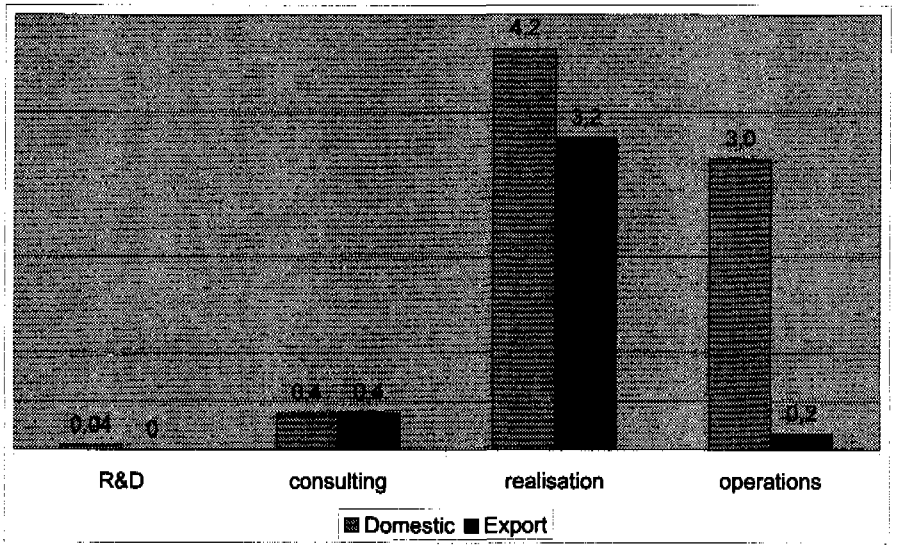


Legenda:
R&D: players that focus on research & development
Consulting: players that focus on advise and/or design
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting
Operations: players that manage the infrastructure

Figure 3.7 shows the turnover of the Dutch water sector generated by players with a different focus on the activities of the project cycle. Players focussing on realisation cover more than two third of total turnover. Players focussing on consulting services (including design/engineering) cover some 10% of the turnover of the realisation players, which corresponds with a reasonable share in an individual project. The share of players in operations is more than a quarter of total turnover. Project cycles may vary strongly per market segment and per domestic or export market, as will be demonstrated in specific figures for the various market segments. It should be noted that realisation turnover may include some turnover of players in finance.

Domestic and export turnover of the project cycle broken down by activity area

Figure 3.8 Project-cycle in home and export markets (in € billion)



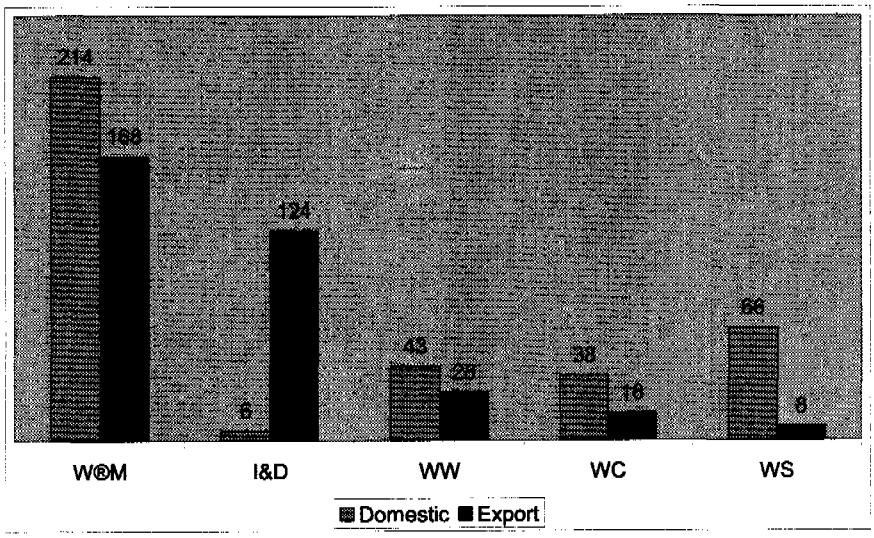
Legenda:
R&D: players that focus on research & development
Consulting: players that focus on advise and/or design
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting
Operations: players that manage the infrastructure

Figure 3.8 shows the size of the export turnover in different areas of the project cycle compared to domestic turnover. Consulting and realisation are strong export activities, when compared to the domestic turnover; the international presence in operations is very modest in that respect.

The relative export strength of the activity areas may vary substantially by segment as the next series of figures will show. If the export turnover comes close to the domestic turnover, the activity area or segment is considered to be strong. Export shares, which surpass the domestic share, are rare in the Dutch water sector. Even in the most successful export segment, water construction, the share of export turnover only slightly surpasses the domestic turnover (see figure 3.4). Apparently, the need for a strong domestic market as condition for export achievements also holds true for the water sector.

Consulting turnover broken down by market segment

Figure 3.9 Consulting turnover by market segment (in € million)

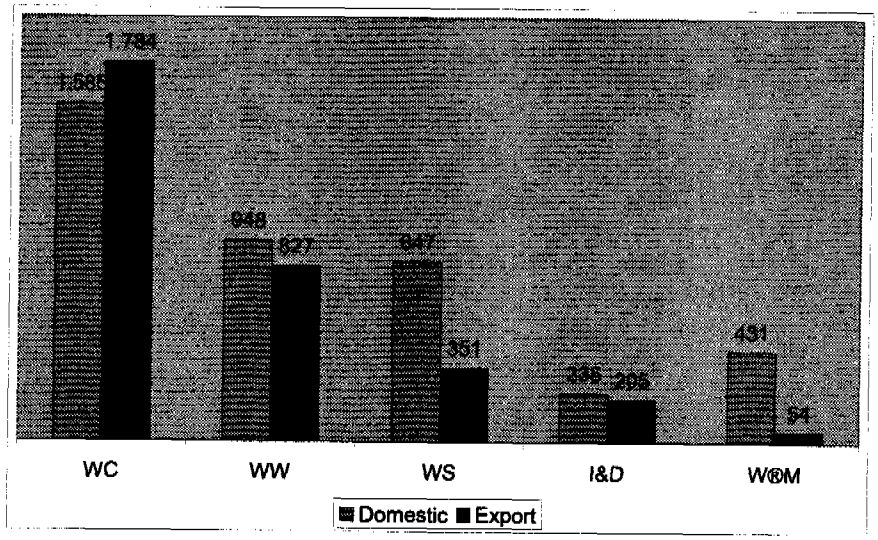


Legenda:
Consulting: players that focus on advise & design

Figure 3.9 indicates the relative strength of consulting activities on export markets in different market segments. Export of consulting services in water (resources) management and irrigation and drainage are very strong compared with their domestic markets and together cover some three quarters of all consulting export. Irrigation and drainage is the exception to the rule that successful export requires a strong domestic market. The export values for consultancy services in water construction and water supply are relatively weak.

Realisation turnover broken down by market segment

Figure 3.10 Realisation turnover by market segment (in € million)

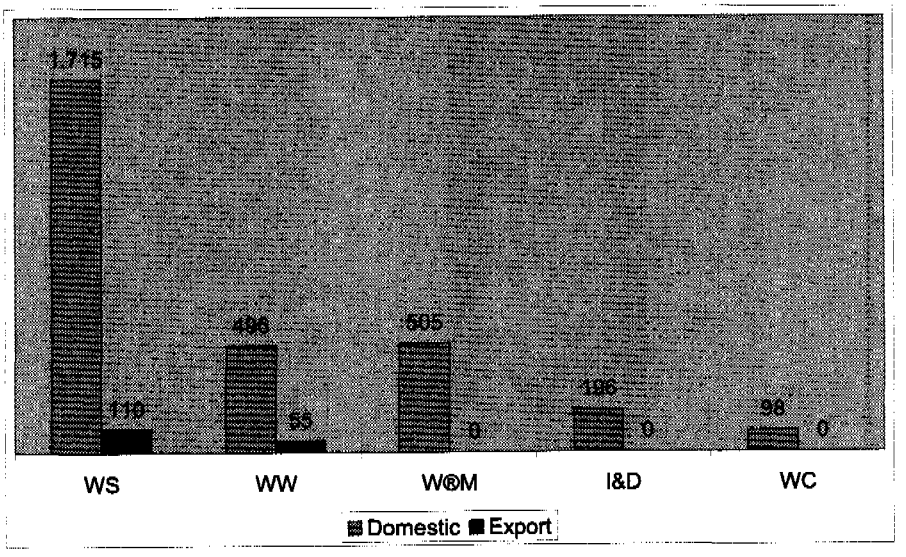


Legenda:
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting

Figure 3.10 shows the relative strength of export activities in realisation in different segments. Realisation export in water construction is larger than its domestic realisation and covers more than half of all realisation export. Realisation export in wastewater and irrigation are also strong and come close to their domestic turnover. Realisation export in water (resources) management and water supply are relatively weak compared to their domestic turnover.

Operations turnover broken down by market segment

Figure 3.11 Operations turnover by market segment (in € million)



Legenda:
Operations: players that manage the infrastructure

Figure 3.11 presents Dutch exports in operations. Export is limited to operations by private parties. Only water supply and wastewater have export activities in private operations and these are very modest compared to domestic turnover. In the other segments export markets for private operations have hardly developed. Therefore, only a small fraction of export turnover is realised in operations, although this activity area constitutes 23% of total turnover.

Achievements and opportunities by type of player

Figure 3.12 Achievements and opportunities in the international water market by type of Dutch player

Activities & growth expectations					Achievements		
Advise	Design	Procurement	Contracting	Operations	Export turnover (in € million)	Average export turnover (in € million)	Growth of export share
+					382	2,7	++
+	+/-	++			371	2,7	+
				+/-	764	4,6	++
		+/-			763	21,7	+
		++			23	0,2	+
		++			85	2,3	+
					1.233	146,8	+
				++	165	165,0	++
					83		
					3.868	7,7	+

Figure 3.12 shows what export turnover is realised by various types of players, what their growth of export share has been over the past three years and what their expectations are in various activity areas. The type of player is characterised by its focus on activity areas. The players that focus on consultancy activities (advise and design) have recorded an export turnover of € 382 million or € 2,7 million on average. The development of their export share has been favourable, but only in advise do they foresee growth opportunities.

Not only consultants, but also the other types of players reported growth of export share in the past three years. Highest growth was reported by consultants and broadly oriented players that combine consulting, procurement and contracting. Highest growth expectations were reported in activity areas contracting and procurement.

Most export turnover (€ 1233 million; 30% of total) is achieved by a few large contractors that focus on contracting alone (mainly by companies active in water construction). Other substantial shares of export turnover are generated by players that combine consulting with contracting capabilities (€ 763 million; 20% of total) or that combine consulting with contracting and procurement capabilities (€ 764 million; 20% of total). These two latter types of players see opportunities to further broaden their scope, respectively in procurement and operations. The players, that do cover consulting services and procurement but not contracting, account for about € 371 million or about 10% of total export turnover. They, in particular, expect a further growth of their procurement activities. Players that focus on procurement only or on procurement and contracting, but are lacking consulting capabilities, have the smallest share covering respectively 1% or 2% of export turnover. Export turnover in operations, € 165 million or 4% of total, is generated by one single player.

3.3 Co-operation and export financing instruments

Degree of co-operation broken down by market segment

Figure 3.13 Degree of co-operation with a breakdown by most important market segment (n=219)

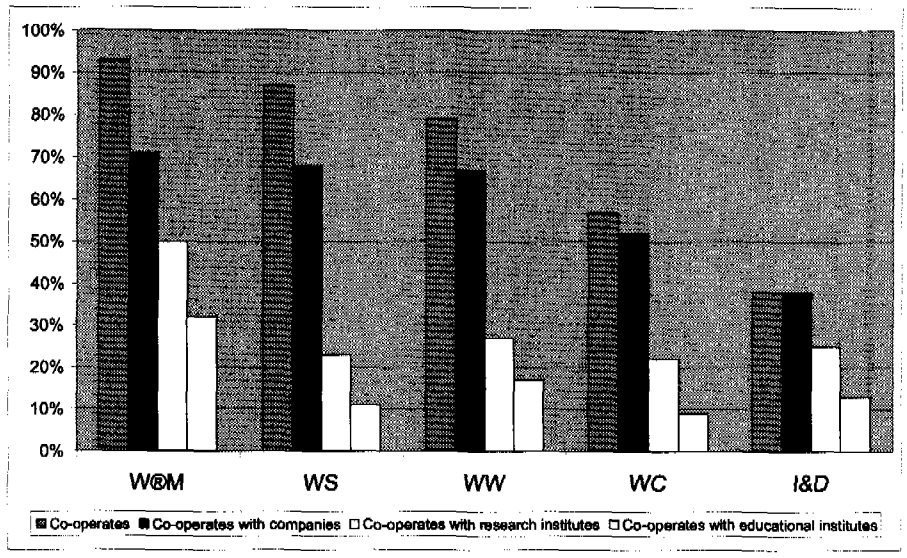
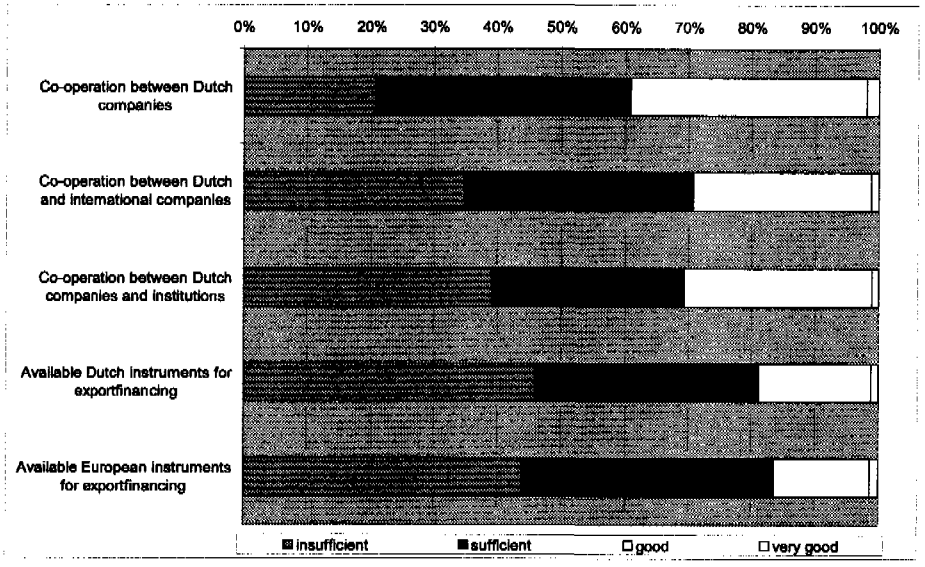


Figure 3.13 gives an impression of co-operation behaviour in the various segments. The highest degree of co-operation can be observed in water(resources)management and water supply. Respectively 93% and 87% of all companies that consider this market segment to be their most important market, do co-operate with other parties. The highest degree of co-operation occurs with other companies, followed by research institutes and educational institutes. Companies in water construction and irrigation and drainage operate more individually. The degree of co-operation with knowledge institutes is highest in water(resources)management.

Satisfaction with co-operation and export financing instruments

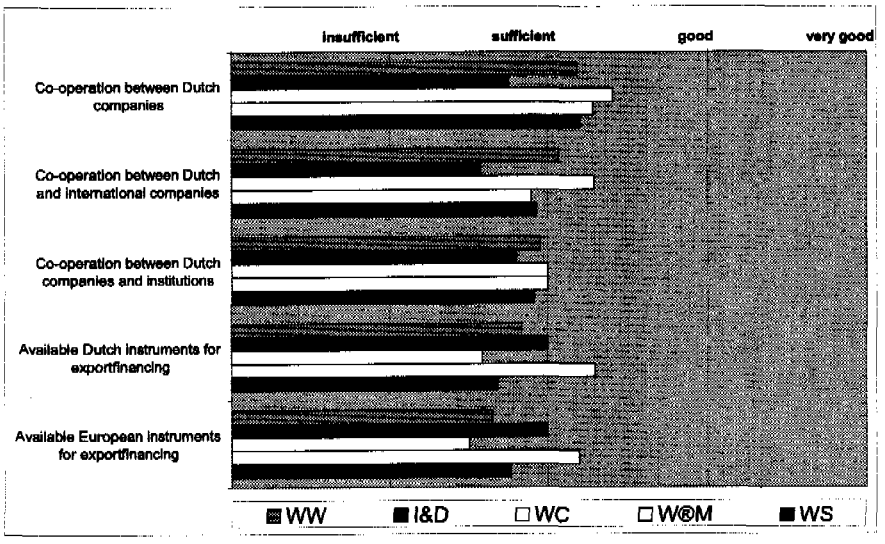
Figure 3.14 Satisfaction with co-operation and export financing instruments (n=219)



From figure 3.14 it can be concluded that the companies are more satisfied about the co-operation between Dutch companies than about the co-operation between Dutch companies and international companies and between Dutch companies and institutions. Nearly 80% is satisfied about the co-operation between Dutch companies. Only 21% considers the co-operation to be insufficient. As regards to co-operation with institutions only 60% is satisfied, whereas a mere 40% qualifies co-operation as being insufficient.
As regards the co-operation with knowledge institutes only 60% of the companies is satisfied, while 40% considers this co-operation to be insufficient.

Satisfaction with co-operation and export financing instruments by segment

Figure 3.15 Average satisfaction levels with co-operation and export financing instruments, broken down by market segment (n=219)



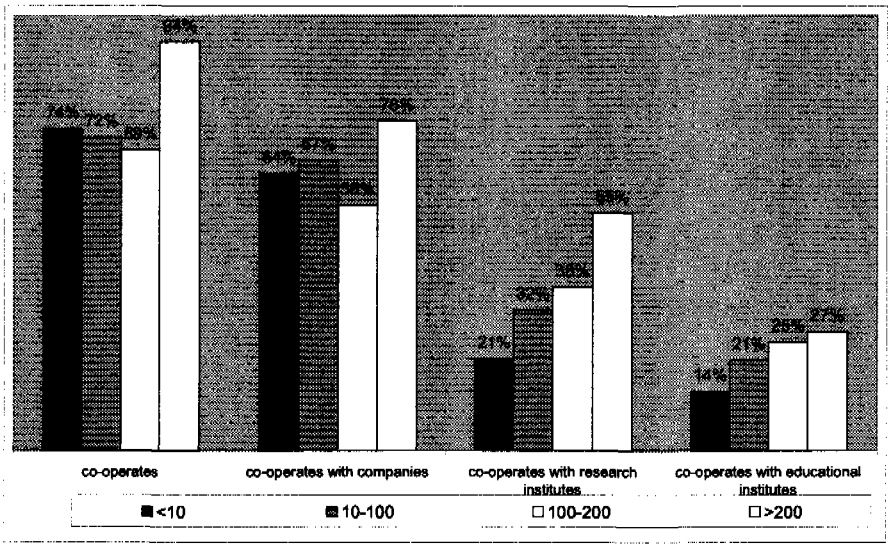
From figure 3.15 it can be concluded that companies active in irrigation and drainage show not only the lowest degree of co-operation, but also the lowest score on their assessment of the co-operation between companies and institutions. Figure 3.15 also shows that water constructors are most satisfied about all three types of co-operation, in spite of the fact that the co-operation degree is not that high in water construction as was shown in figure 3.13.

About 30% of all companies make use of one or more of the Dutch instruments for export financing. The following instruments are mentioned most often in this context: ORET/MILIEV, PSB, PSO and export credit financing by NCM. In particular companies that consider water construction their most important market use the Dutch instrument most frequently (41%). The lowest penetration of these instruments can be observed in water(resources)management (17%). The use of European instruments for this purpose is much lower; 15% of the Dutch companies make use of these instruments. Again, the water constructors are best able to find their way; 29% of them make use of European instruments.

From the satisfaction levels in figure 3.15 regarding the Dutch and European instruments it can be concluded that companies that are most aware of the instruments, are most critical in their judgment about these instruments. For instance, although the use is the lowest water(resources)management contains the companies with the highest satisfaction level regarding Dutch and European instruments for export financing. The opposite appears to be true for water construction. This may point at a relationship between the fact that some companies are more used to cope with available export financing instruments than others. Companies active in water(resources)management and in irrigation and drainage, for instance, are better used to work in ODA-(financed) projects. As a result, they may be better able to cope with similar export financing instruments such as PSO or ORET/MILIEV, although the availability of these instruments may be relatively low in these market segments.

Degree of co-operation broken down by size class

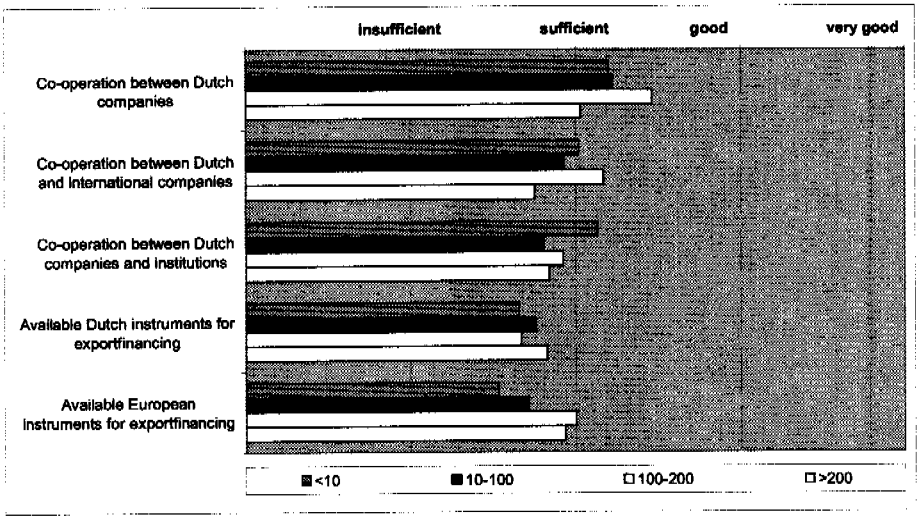
Figure 3.16 Degree of co-operation broken down by size class (n=214)



In figure 3.16 a further analysis by firm size shows that the degree of co-operation is highest for the largest companies with more than 200 employees, while the same figure for smaller companies varies around 70%. Both small and large companies often co-operate with other companies. Large companies, however, tend to co-operate more often with research and educational institutions than small companies.

Satisfaction with co-operation and export financing instruments by size class

Figure 3.17 Average satisfaction levels with respect to co-operation and export financing instruments, broken down by firm size (n=219)



From figure 3.17 it appears that the lower degree of co-operation amongst smaller companies does not seem to be a problem for them. Companies with fewer than 200 employees are more satisfied about the level of co-operation between Dutch companies and between Dutch and foreign companies than companies with over 200 employees.

It also appears that companies with over 100 employees are somewhat more satisfied with the available European instruments for export financing than their smaller colleagues. Apparently, larger companies are more capable of using these instruments effectively.

Co-operation and growth

Figure 3.18 Co-operation characteristics and increase of turnover

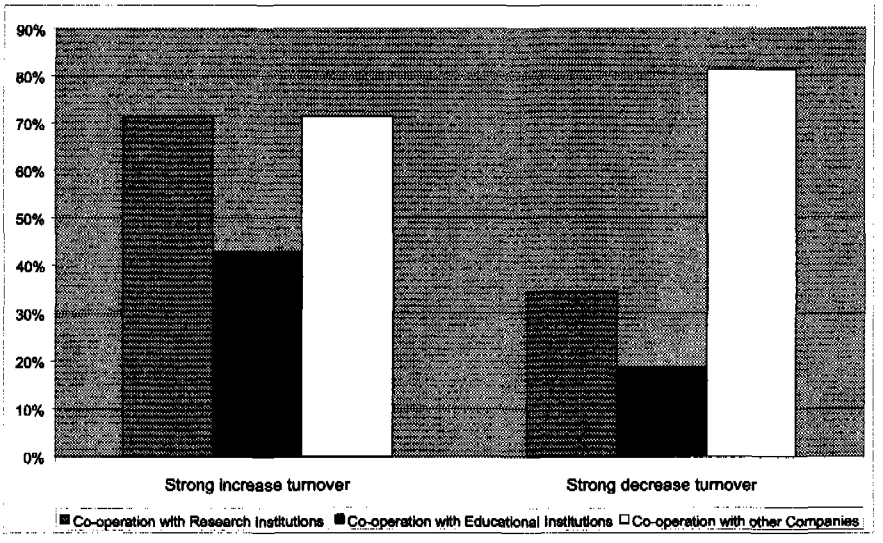


Figure 3.18 shows that co-operation with Research Institutions and Educational Institutions may be an important indicator for company growth. Companies reporting a strong increase in turnover are co-operating twice as much with Research Institutions and Educational Institutions as companies reporting a strong decrease in turnover. Co-operation with other companies is found to be a less significant indicator for growth since the co-operation intensity with other companies is more or less the same for companies with a relatively good or poor performance.

Figure 3.19 Co-operation characteristics and increase of export share

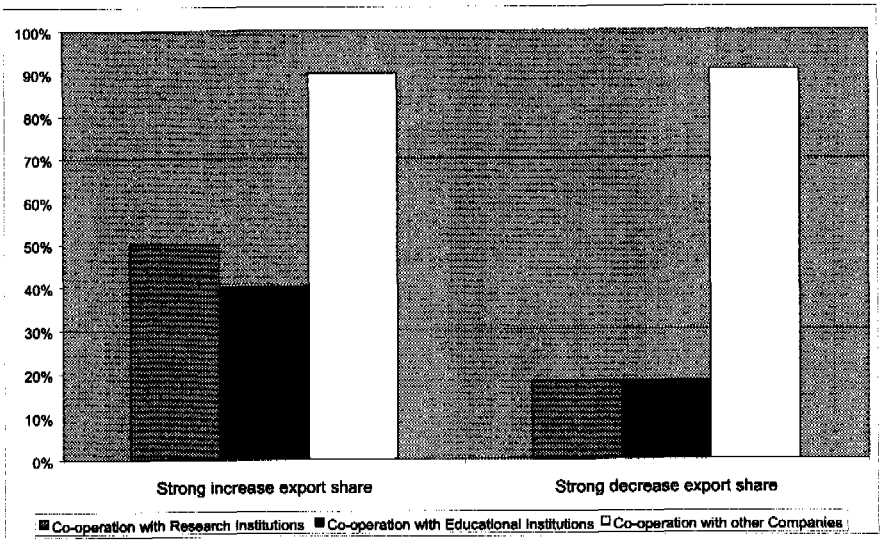


Figure 3.19 shows that co-operation with Research Institutions and Educational Institutions is also an important indicator for the growth of export share. Companies reporting a strong increase of export share are co-operating more than twice as much with Research Institutions and Educational Institutions as companies reporting a strong decrease in export share. Again, co-operation with other companies turns out to be a less significant indicator for growth since the co-operation intensity with other companies is more or less the same for companies with a relatively good or poor performance.

3.4 Financial sector

Several Dutch banks were interviewed concerning their activities in financing the exporting Dutch water sector. No turnover or loan volume figures were obtained. Banks tend to be involved in various roles:

- Corporate Finance
- Project Finance
- Transaction advisor

The corporate finance activities geared to the Dutch water sector are mainly limited to companies exporting capital goods, as the Dutch water companies have very few international activities.

Project finance activities may be employed for projects of the large (international) private operators. This is an international market centred in London. Here a substantial share of the necessary investments of US$ 180 billion per annum, projected by the World Water Vision 2025, will be arranged. Some Dutch banks have a position in this market thanks to their international network and may be invited to act as co-arranger or underwriter. Only projects starting at some US$ 50-100 million are large enough to make the high transaction costs viable. This means that only large players can enter the market as financer or operator. The absence of Dutch utilities in this market (with one exception) is an impediment for Dutch players to enter the market.

Banks may act as transaction advisor for private sector transactions as well. The reward includes a combination of retainer and success fees. Because there is no Dutch domestic market for private sector transactions it is hard to gain sufficient hands-on experience to become an important player in this field. Dutch consultants struggle with the same problem.

Emerging markets and developing countries (in which investment requirements will be high) present a special challenge for the financers. Risks are high for a number of reasons: low trustworthiness of government authorities, earnings in weak local currencies, a tradition of water tariffs below cost-level and political interference for tariff-increases, lack of institutional capacities and a poor legal framework. For the finance of projects in such circumstances the following conditions, at least, must be fulfilled:

- A sound feasibility study to assess costs and risks
- An adequate legal framework and institutional capacity
- A strong operator to manage the project throughout the years
- Guarantees against specific risks

Project development in such countries can be very time and money consuming requiring the execution of feasibility studies and the creation of supportive legal and institutional conditions. Many potential projects therefore remain undeveloped. Seed money is needed for project development and for creating supportive conditions. Furthermore guarantees are needed for specific risks associated with international water operations. Without such guarantees the Dutch operators, especially the majority of publicly owned operators, cannot take

the risks involved in running international water operations. This severely inhibits the international expansion of the Dutch water sector.

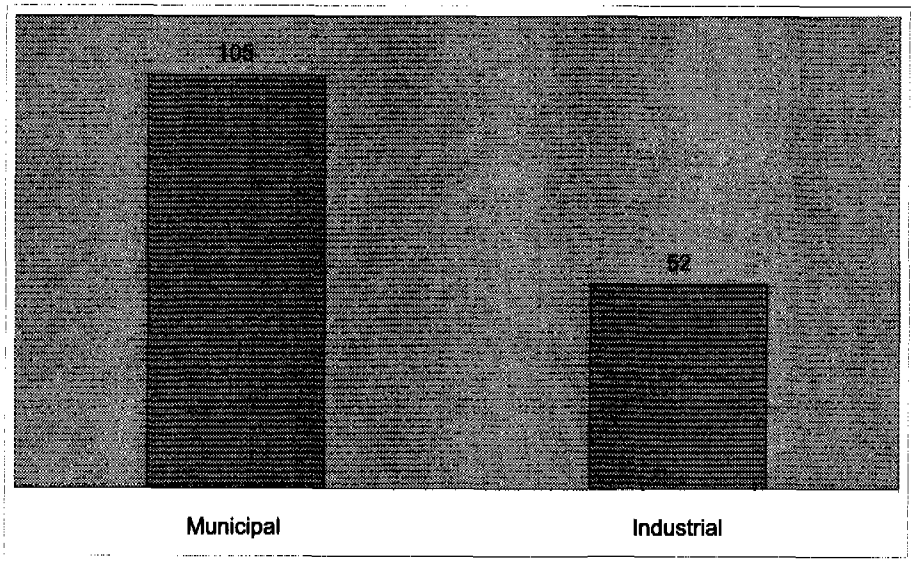
It should be investigated whether synergy could be created with policies of international cooperation to provide certain guarantees and seed money, because investments in water infrastructure and efficient operations may support certain objectives of international cooperation in emerging markets and developing countries. Feasibility studies financed by Dutch public means should also pay more attention to favourable investment conditions and opportunities for Dutch suppliers.

4 Strategic water card: water supply

4.1 Major international trends, challenges and opportunities

Size of the international market for water supply by segment

Figure 4.1 Global market for goods/services for water supply (turnover in € billion)



Source: Masons Water Yearbook 2000-2001

Figure 4.1 shows that municipal needs are still dominant. The global market for goods and services for water supply currently consists for two thirds of municipal needs and for one third of industrial needs. The industrial market is expected to catch up in the next decades.

Size of the international market for water supply by region

Figure 4.2 Estimate of regional markets in water supply (turnover in € billion)

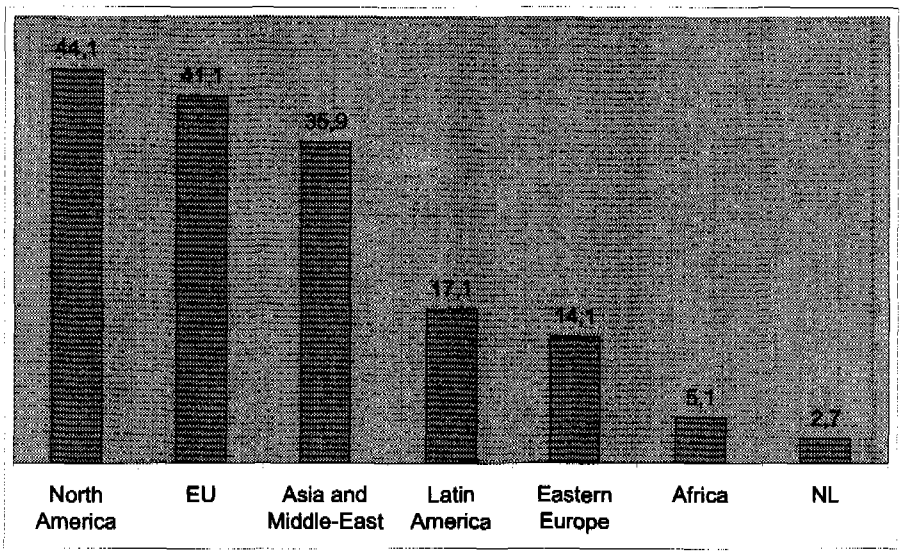


Figure 4.2 proves that North America and the European Union are the largest regional markets. Asia has the most potential for future growth, though, as per capita demand and tariff levels are expected to rise along with economic development. Table 4.1 shows how this estimate of the relative weight of various regions is based on population figures, estimated per capita consumption and reported average water tariffs (Source: Global Water Supply and sanitation Assessment Report 2000, WSSCC). Since in general the industrial supply market is assumed to measures about 50% of the municipal supply market these figures have been added. The same calculations have been applied to the Dutch market, of which the results correspond with the outcomes of the interviews. (The average Dutch domestic tariff level has been deducted from the benchmark by VEWIN, 2001)

Table 4.1 Water supply market per region (estimated figures)

	Population in million	Daily consumption per capita in liters	Tariff/m^3 in €	Municipal in € billion	Industry in € billion	Total in € billion
North America	300	400	0,67	29,3	14,7	44,0
EU	375	200	1,00	27,4	13,7	41,1
Asia, Middle-East	3.500	75	0,25	24,0	12,0	35,9
L.America,Carribean	500	125	0,50	11,4	5,7	17,1
Central, Eastern Eu.	350	150	0,50	9,6	4,8	14,4
Africa	800	30	0,39	3,4	1,7	5,1
Total	5.825			105,1	52,5	157,6
Netherlands	16	200	1,50	1,8	0,9	2,7

Continued growth in large urban areas, in North America, Asia, Latin America and Africa

The water supply market is shaped by population growth and economic activity. Although already 80% of world population has safe drinking water, the need for safe drinking water will grow since the world population is expected to increase by 1,5 billion until 2025. This population growth will be accompanied with massive migration to the cities. These two factors call for substantial investments in the extension of water supply facilities in the growing urban areas.

As can be deducted from table 4.1, Asia, Latin America and Africa have a high potential for growth if their large and growing populations are combined with higher consumption levels and increasing tariffs (full cost pricing). The North American market will also continue to grow, because of its still increasing populations. The European market, in the west as well as in the east, has less potential in this respect, as there will be no population growth.

Integrated offers of considerable scale required

Large metropolitan areas call for equally large projects. Also the need to pay back high transaction costs require a minimum project size of € 50-100 million. Both developments call for consortia of sufficient scale, which can provide integrated offers for complete projects.

Supply is not efficient

Table 4.2 Water use, water withdrawal, real consumption and efficiency

Water use	Water withdrawal	Real consumption	Efficiency
Industry	750 km^3	80 km^3	11%
Domestic	350 km^3	50 km^3	14%

Source: World Water Vision 2025

As is indicated in table 4.2, in general water supply is not efficient in many parts of the world. This applies to municipal as well as industrial supply. For domestic supply high leakage is caused by insufficient cost-recovery and therefore lack of capital to invest in networks. For industry low efficiency is the result of under-pricing of water supply by public operators or free and unlimited access to fresh water sources. Increasing water-scarcity will call for better management, investments to rehabilitate systems and full-cost pricing.

Best chances for private sector operations in urban water supply

The need to attract capital for the rehabilitation and extension of systems and better management to increase and maintain efficiency holds the winning card for the private sector, both in the developed world and in the developing world. Especially in the developing world, participation of a private operator with a sound reputation is an important precondition to attract funding. This will lead to full-cost pricing of water-tariffs as the main condition for private operators to participate. Water supply may be the first sector to fully attract private investors, ahead of wastewater treatment, because supplied water has direct economic value and most populations are willing to pay for safe water. Some 70% of future investments is expected to be operated by private sector investors, both internationally and locally. Large and financially strong consortia built up around a strong operator will win the long-term water supply concession contracts in the large urban areas around the world, thus securing turnover and profit for periods of 25-30 years in one single strike. A 30-year concession in a (modest) one million city in for instance Indonesia, may generate some € 1billion turnover during the concession period.

Special opportunity: outsourcing by industry

The trend for full cost pricing, partly induced private sector management, invokes another trend for industrial outsourcing. Confronted with rising water tariffs as a result of valuing real cost and full-cost pricing the industry may choose to organize its own water supply and start recycling. This often entails combinations with wastewater treatment and offers good opportunities for suppliers of closed water systems for the industry, starting in the developed world where full-cost pricing has already become prevalent. In this respect real progress has been made in the US (Source: David Owen, Delphi International). But also in areas of the developing world where water stress is becoming prevalent, the industry has already started recycling its process water.

Future high potential for growth: desalination

The market for desalination is still very modest, because of the relatively high cost compared to the use of conventional fresh water sources, but has a strong potential for growth. The1999 market value in Middle East, North Africa and Europe together, is worth € 1,3 billion (Frost & Sullivan). The Middle East accounts for 30% of the total market. Companies with prior market experience continue to dominate. The market is strongly fluctuating. Costs have declined 10% since 1995, but need to come down more before the desalination market will really take-off (Source W&WI 2/2001). The average costs from new plants range from US$ 0,50 per m^3 for brackish water to US$ 1,0 per m^3 for seawater. The costs are expected to come down to US$ 0,15 / 0,25 to 0,25 / 0,50 in 2025, making desalination a major solution for the growing water stress in the world (Source: world water vision 2025).

4.2 Dutch Supply Figures

International market share

After water construction, water supply is the largest segment in the Dutch water sector. With a total turnover of € 3,1 billion in water supply Dutch companies account for an international market share of 2%. This market share is in line with the respective market shares of the other market segments. The majority of Dutch companies (70%) are internationally active in this market segment. However, the export share of total turnover in this market segment is only 16%, which means that only small fractions of the turnover are made abroad.

Breakdown of export turnover by sub segment

Five sub segments can be distinguished within the water supply market: drinking water supply & treatment, drinking water transport & distribution, industrial water supply & treatment, industrial water transport & distribution and a group with other activities in water supply.

Figure 4.3 Export turnover by sub segment (in € million) (n=35)

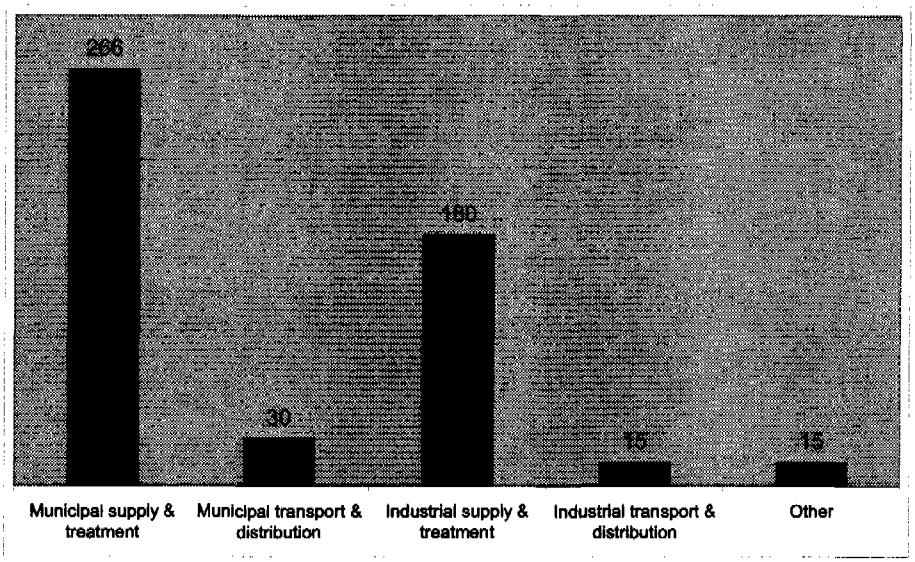


Figure 4.3 shows that the focus of export in water supply is on supply & treatment rather than on transport & distribution. Municipal turnover clearly exceeds the industrial, though the industrial share is slightly higher than the industrial share of the world market. The total export value of water supply amounts to € 486 million.

Activity intensity in each sub segment

Figure 4.4 Percentage of players active and foreseeing opportunities by sub segment (n=35)

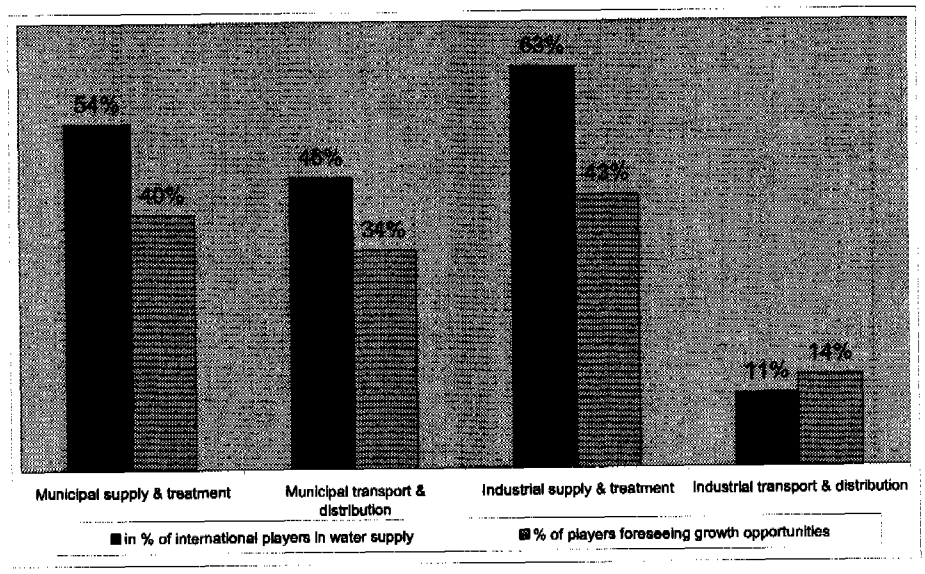


Figure 4.4 shows the percentage of players active in each sub segment and the percentage of players foreseeing growth opportunities in each sub segment. It appears that sentiments are equally positive in municipal and industrial sub segments, but with a higher appreciation for sub segments in transport & distribution. Although small in size at this moment, the markets for water transport & distribution, both municipal and industrial, seem to be growth markets. Most of the companies active in municipal transport & distribution foresee growth opportunities. With respect to industrial transport & distribution other players not yet active in this segment also foresee growth opportunities.

Table 4.3 *Development of the competitiveness of Dutch companies in water supply (n=33)*

		1996	1997	1998
Turnover	Dutch companies	100	109	117
	Foreign competitors	100	109	128
Employment	Dutch companies	100	105	114
	Foreign competitors	100	106	126
Gross margin	Dutch companies	10,1	10,4	10,6
	Foreign competitors	5,1	8,8	7,9
Current ratio	Dutch companies	1,5	1,5	1,6
	Foreign competitors	1,9	1,9	1,9
Quick ratio	Dutch companies	1,2	1,2	1,2
	Foreign competitors	1,3	1,4	1,4

* current ratio is the quotient of current assets and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations (the higher the value, the better companies are able to do this)

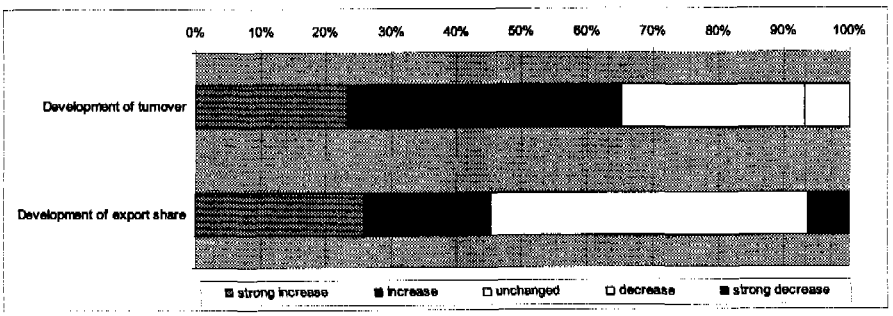
**quick ratio is the quotient of current assets minus inventories and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations without relying on the sale of inventories (the higher the value, the better companies are able to do this)

Source: Reach, Amadeus, EIM/DHV, 2001.

Based on financial data of national and international players in water supply, an analysis has been made of the development in the international competitiveness of the Dutch companies in this market segment. In the period 1996-1998 foreign competitors recorded higher growth rates in turnover and employment than the Dutch companies. In contrast with other market segments, such as wastewater, the gross margin is high; for the Dutch companies even higher than for their foreign competitors. This high margin could be explained by the public status of the Dutch operators. The current and quick ratios, on the other hand, are somewhat less favourable for the Dutch companies, indicating that foreign competitors are better able to pay-off short-term obligations.

Development of turnover and export share

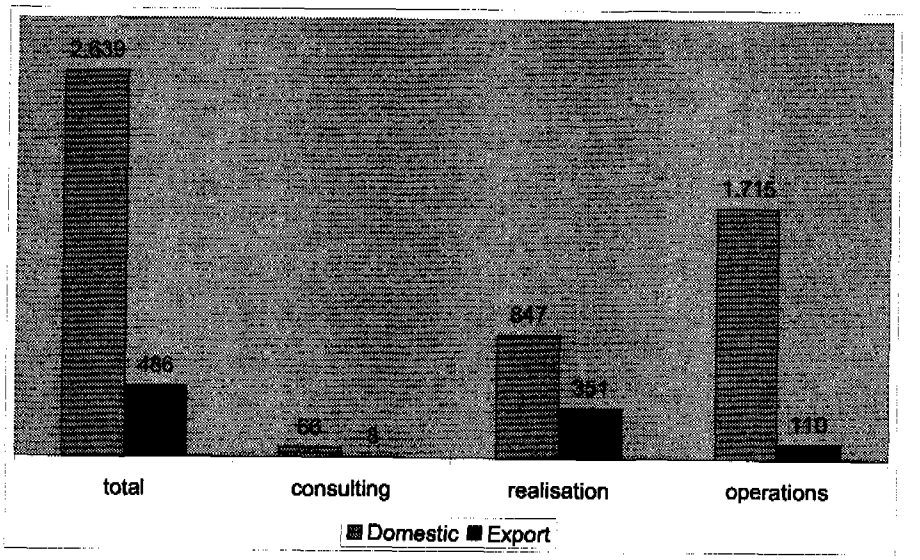
Figure 4.5 Development of turnover and export share in water supply during the last three years (n=33)



From Figure 4.5 it appears that the overall development of turnover and export have been favourable during the last three years. Less than 10% suffered a (strong) decrease in turnover and export, while 65% recorded a (strong) growth of turnover and 45% a (strong) growth of exports. The favourable development of turnover and export share need to be placed in a relative context since the direct comparison between Dutch companies and their foreign competitors in table 4.3 has indicated a relatively low international performance. Both table 4.3 and figure 4.5 indicate that the international market for water supply is very attractive.

Performance along the project cycle

Figure 4.6 Project-cycle in domestic and export markets (€ million)



Legenda:
Consulting: players that focus on advise and/or design
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting
Operations: players that manage the infrastructure

Figure 4.6 shows the export turnover in different activity areas, compared to domestic turnover. Realisation is the strongest export activity, but most other market segments, such as water construction, irrigation and drainage and wastewater, achieve much higher export shares in realisation. Consulting is weak, both in terms of export share and as compared to the realisation activities. Operations is still under developed, but has shown considerable growth in recent years, because of the activities of one single large private operator.

Achievements and opportunities by type of player

Figure 4.7 Achievements and opportunities in the international water supply market by type of Dutch player

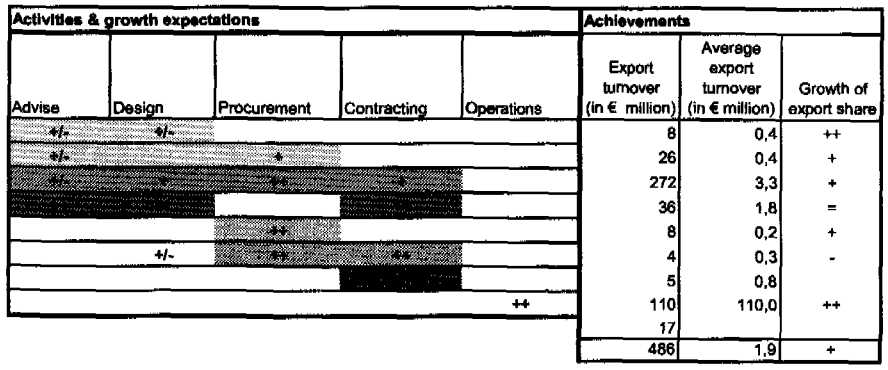


Figure 4.7 shows what export turnover is realised by various types of players, what the development of their export share has been over the past three years and what their expectations are in various activity areas. The type of player is characterised by its focus on activity areas. The various types of players can be distinguished by the coloured cells in each row.

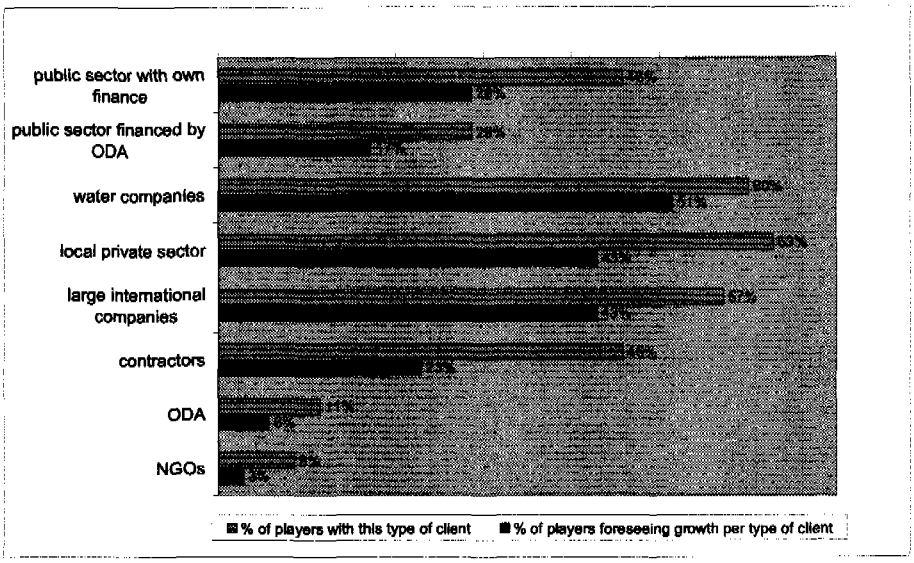
Not all types of players reported growth of export shares over the past years, but expectations are quite positive overall.

One single player in operations generates almost 25% of export turnover. This position was built up during the past two to three years and exemplifies the tremendous potential of international operations. Among the other types of players little interest is reported about entering the operations market. Their size would be to small anyhow considering the scale of *international operating projects*.

Among the smaller players (excluding the single operator) integration along the project-cycle has developed well, since 56% of total export turnover or € 272 million is generated by players combining consulting, procurement and contracting. Considering their modest average size most of them must be specialised in specific elements of water supply systems and only a few of them in complete systems. Apparently, players that account for substantial parts of the large international water supply projects are rare. With a minimum size of US$ 50-100 million a few of those projects would easily double the current export turnover of the Dutch water sector in water supply. The consulting services for one single large project alone would surpass the total export turnover in water supply reported by Dutch consultants. This absence from the market for large international projects could explain the fact that the Dutch players are lagging behind in growth in comparison with their foreign competitors (see table 4.3).

Type of clients

Figure 4.8 Type of clients and perceived growth opportunities (in % of the total number of respondents) (n=35)



Although a breakdown of total turnover cannot be provided, Figure 4.8 provides insights in the importance of several types of clients. The local private sector is the type of client mentioned most frequently by the Dutch companies as a destination for their products and/or services. Two thirds of them (or 43% of all respondents that consider water supply to be their most important market) foresee growth opportunities for their sales to this type of client. Also water companies and large international companies are important client groups of which the water companies seem to have the highest growth potential.

4.3 Perceived strengths, bottlenecks, threats and growth opportunities

Strengths and success factors perceived by Dutch players

The following strengths are mentioned by the companies, which are active in water supply:

- product characteristics (technology, expertise, wide product range, etc.) (45%)
- service characteristics (reliability, customer orientation, price/quality ratio) (25%)
- local network (25%)
- market knowledge (5%)

The first three strengths are also considered success factors leading us to the conclusion that the companies are quite satisfied about their own strengths and international performance. Beside these success factors the following are also mentioned:

- problem solving attitude (5%)
- partnerships (5%)
- foreign production facilities (5%)

Threats and bottlenecks perceived by Dutch players

International competition is the most important threat (mentioned by 62% of the companies), followed by the following elements:

- complexity of markets and contracts (24%)
- lack of government support (5%)
- no threats (10%)

The bottlenecks are:

- lack of personnel/ capacity problems (25%)
- uncertainty/lack of knowledge about export markets (25%)
- lack of government support (10%)
- financing (5%)
- no bottlenecks (20%)

In the near future, the international position of the Dutch water supply sector can be further strengthened. A relatively high percentage 80% of the companies foresee growth opportunities in the international water supply market. The growth opportunities mentioned by the respondents can be categorized as follows:

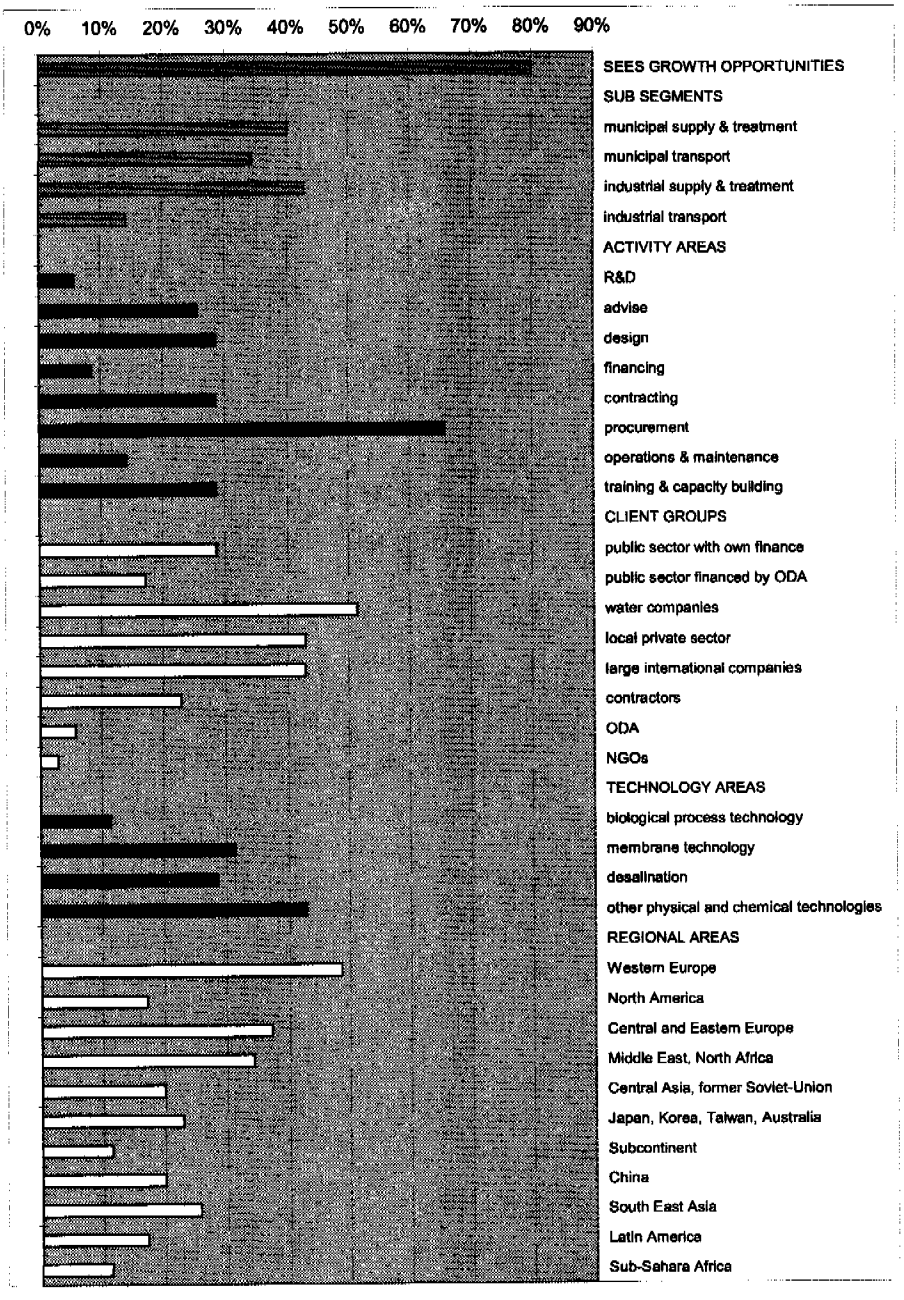
- further penetration in current market(s) (57%)
- diversification (with current products/services entering new (geographical)markets (24%)
- regulations (10%)
- product development (10%)

Growth opportunities perceived by Dutch players

Figure 4.9 provides the basis for a further analysis of the growth opportunities perceived by the respondents. With respect to the four sub segments most growth opportunities are seen in industrial supply & treatment (mentioned by 43% of all respondents that consider water supply their most important segment). Looking at the activity areas procurement is mentioned most often as a growth area in this market segment (66%). Nearly 30% also see growth opportunities in design, contracting and training & capacity building. Water companies and other client groups in the private sector are by far the most promising customers in

the international water supply market. According to 43% of the companies, further growth can be realised in other physical and chemical technologies. Membrane technology is another important growth area, mentioned by 31% of the companies, followed by desalination with 29%. Most of the growth opportunities in water supply are expected in Western Europe (including the Dutch market): 49% of the companies perceive growth opportunities in this geographical region. Central and Eastern Europe (mentioned by 37% of the companies) and the Middle East, North Africa (34%) are also areas with a high perceived growth potential.

Figure 4.9 Opportunity table (in % of players in water supply foreseeing growth opportunities in sub segments, client groups and specific activity, technology and regional areas, n=35)



4.4 Overall SWOT-analysis

Table 4.4 Overall SWOT-analysis for water supply

% of players reporting growth	***% of players reporting decline***
• Export share: 45%	• Export share: 7%
• Turnover: 65%	• Turnover: 8%
Opportunities desk research	***Threats from desk research***
• Urban water supply, industrial outsourcing	• Large scale of projects
• Private sector, water companies	• Large private consortia
• Operations, integrated offers	• Operation skills required
• Desalination	
• Asia, North America, Latin America	
Opportunities perceived (80% of players)	***Threats perceived***
• Industrial as well as urban	• Competition
• Private sector and water companies	• Complex markets & contracts
• Procurement	• Lack of government support
• Physical, chemical, membrane, desalination	
• Europe, Middle East	
• Penetration current markets (57%)	
• Current products, new markets (24%)	
Strengths	***Weaknesses/bottlenecks***
• Urban as well as industrial water supply	• Lack of scale
	• Public home-, private export market
• Client base in private sector	• Co-op foreign companies unsatisfactory
• Local network	• Lack of market knowledge
• "Integrated procurement"	• "Integrated contracting"
	• Lack of operating skills, low export share in all activities
• Technology/expertise	• Low co-op research/education, satisfaction insufficient
• Service characteristics: reliability, customer focus, price/quality	• Lack of personnel
	• Export financing unsatisfactory
	• Lack of government support
Success factors	
• Technology/expertise	
• Co-op with knowledge institutes	
• Integrated offers including operations	
• Local network	
• Price/local production	
• Government support	

Performance

The Dutch players in water supply are performing well and have booked a high growth of turnover and a considerable growth in export share in recent years. On the other hand export is relatively undeveloped, for export turnover compared to domestic turnover remains low in all activity areas.

Strengths

Most export turnover (60%) is realised by what may be called "integrated procurement players". They focus on a specific element of the water supply system, for which they offer integrated services of procurement combined with consulting and/or contracting. They're relatively small in size and strength is based on technology and specialised services, instead of volume or financial power. They rely on a well-developed local network for marketing and sales and have achieved a strong client base in the local and international private sector and industry leading to future growth potential. Furthermore, there is one large private operator, which in recent years has successfully entered the growing international operations market and already accounts for more than 20% of Dutch export turnover in water supply. This player has the financial strength to develop and operate large water supply concessions.

Opportunities

The general sentiment is very positive with 80% of players perceiving opportunities for growth, mostly in current markets with current products. Since this is in line with their central expertise, most players remain focussed on procurement opportunities, in nearby regions (Europe and Middle East) and in both industrial and urban markets. Much lower expectations exist for consulting and contracting and even lower expectations for operations. In addition to physical/chemical technologies desalination is recognised as a growth opportunity. The huge market for developing and/or operating large urban projects in private consortia, particularly in Asia, North and Latin America is not mentioned as such by the majority of Dutch players. With the exception of one large private operator, scale and operating skills are lacking for the players to directly address that opportunity. Instead they focus on nearby regions as Europe and Middle East, in a role as sub-contractor to larger parties (private sector) or they concentrate on the industrial market, which may require a smaller scale. The trend towards industrial outsourcing, however, will mean a similar challenge for the Dutch suppliers in the industrial market: offering complete systems including operations and not just specific elements of the system.

Weaknesses

The central weakness is the absence of large private parties or combinations, which could address the opportunity of contracting and/or operating large urban projects. Because of the public character of the Dutch sector, there is no domestic market in which such combinations could be developed. Public operators act as contractors for their own needs, but are not capable or willing to export. There is only one private operator. This leads to a low export share in all activity areas. The smaller players are specialised suppliers or subcontractors, which do not have the scale and the skills to fill in the gap. Apparently, economies of scale are insufficient to develop adequate know-how about the complex markets and contracts, to cover all major export markets and to establish satisfactory co-operation relations with foreign companies. This creates high development and transaction costs that must be earned back in small projects. Furthermore, satisfaction regarding facilities for export financing is low, which leads to the conclusion that these facilities are insufficiently geared towards the needs of the water supply sector. Against the background of the strong

focus on technology of Dutch players, the low degree of co-operation with knowledge institutes and the unsatisfactory level of this co-operation can be considered weaknesses as well.

Threats

The increasing scale of international projects, especially in urban water supply, but in the future in industry as well, represents a threat to the Dutch water supply sector. The international consortia, which are capable of executing such projects, will be constituted from large players surpassing the scale of the Dutch players and will require operating skills and a private sector risk-profile. These consortia may develop an economy of scale unprecedented in the water supply market and wipe out the smaller Dutch players in innovation, marketing and service. More threats are to be expected from competition from players in low wage countries and from the complexity of markets and contracts. The development of private sector operations and integrated offers is a major cause for this increasing complexity.

Actions

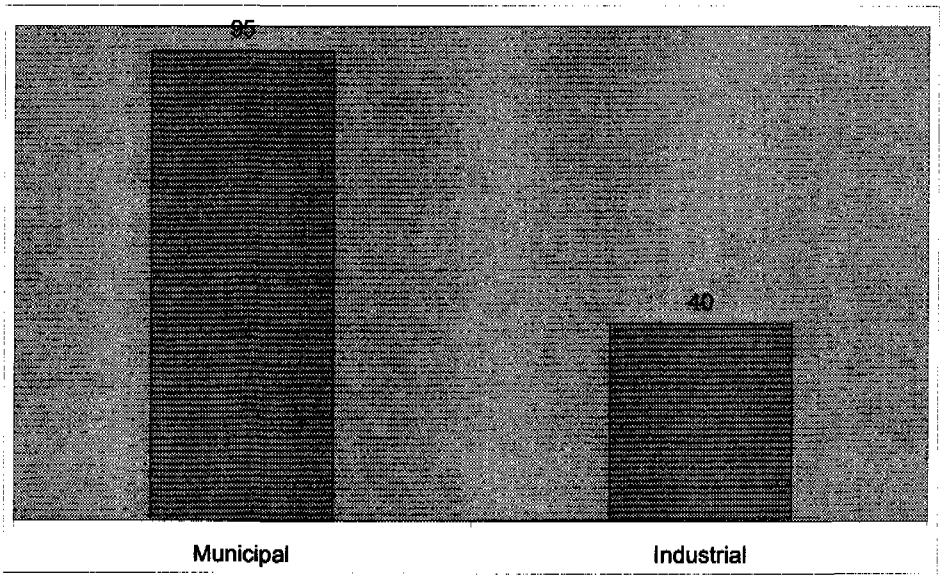
- Stimulate partnerships for integrated offers and more economies of scale
- Make export-financing facilities supportive to integrated offers including operations
- Support development of know how
- Review of export financing facilities

5 Strategic water card: wastewater

5.1 Major international trends, challenges and opportunities

Size of the international market for wastewater by segment

Figure 5.1 Global market for goods/services (in € billion)

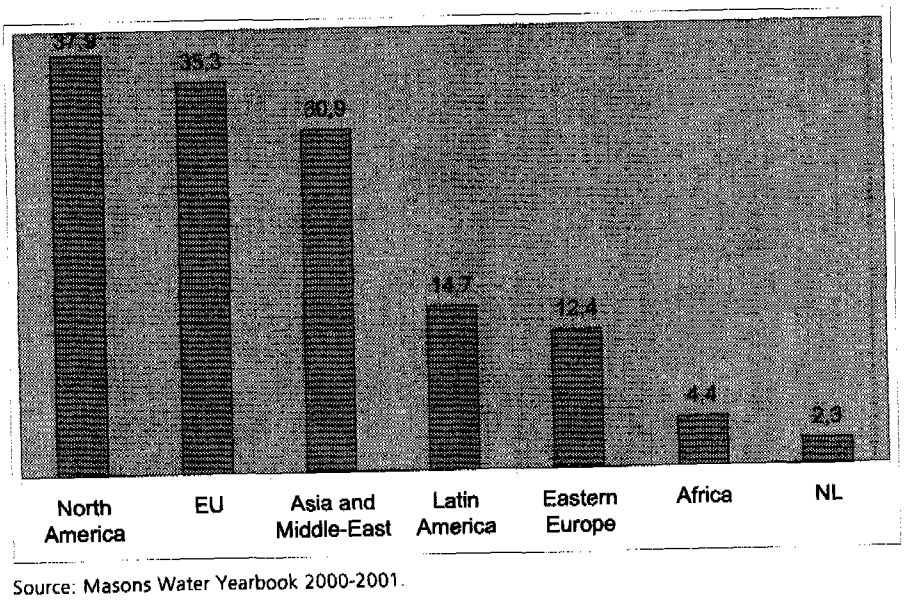


Source: Masons Water Yearbook 2000-2001.

Figure 5.1 shows the two major segments of the wastewater treatment market: domestic or municipal and industrial. The market for re-use is very promising, but still negligible in the world market as a whole.

Size of the international market for wastewater by region

Figure 5.2 Estimate of regional markets in wastewater (turnover in € billion)



Source: Masons Water Yearbook 2000-2001.

Figure 5.2 demonstrates a breakdown of global goods/services for wastewater by region. North America and the EU are the largest markets with sizes of respectively € 37,9 and 35,3 billion.

Table 5.1 Relative size and share of regions for wastewater

	Total (in € billion)	Municipal (70%) (in € billion)	Industrial (30%) (in € billion)
North America	37,9	26,5	11,4
EU	35,3	24,7	10,6
Asia and Middle-East	30,9	21,7	9,3
Latin America	14,7	10,3	4,4
Eastern Europe	12,4	8,7	3,7
Africa	4,4	3,1	1,3
Total	135,6	94,9	40,7
Netherlands	2,3	1,6	0,7

Source: Masons Water Yearbook 2000-2001.

An indication of the weight of various regions can be calculated based upon the market of water supply, on the assumption that the relative share of the world wastewater market (0,86% of the world water supply market) is constant in different regions. From that figure a division is made into a municipal (70%) and an industrial segment (30%). See table 5.1.

Strong growth potential, especially in emerging economies

The wastewater market has a strong growth potential. Massive investments are needed for treatment facilities for wastewater, especially in the emerging economies (See Table 2.7), but also in the US and the EU. Behind these figures are countries like China, India, Indonesia and Brazil with their massive and growing populations, migration to the cities and ongoing industrialization. Key factors are the growing concern for public health and conservation of our ecosystems. These concerns call for tremendous efforts to achieve effective wastewater treatment.

Wastewater treatment is, naturally, lagging behind water supply. Whereas 80% of the world population has clean drinking water, only 50% has sanitation. So most domestic wastewater still leaves the cities and villages untreated. For industry the case is even worse. For instance in China, 80% of industrial wastewater is disposed of without any treatment (Source: PWC 3/2001).

Good opportunities in industrial market

Most resources will flow towards industrial wastewater treatment, because it is still lagging behind domestic wastewater treatment in many parts of the world and also requires more advanced and costly technologies to remove heavy metals and poisonous chemicals from wastewater.

High potential for future growth: re-use

Another factor that will grow in importance over the next decades is the occurrence of water stress affecting the lives of some 3 billion people. This calls for re-use of scarce water. Although re-use requires advanced technology and good management to provide safety for the re-user, it is still some 25% cheaper than desalination (Source: Asian Water 4/2001). Agriculture (irrigation), in particular, may become an important re-user of treated wastewater, for re-use as drinking water may still be confronted with psychological problems.

Competitive market

Because industry forms an important client base in the wastewater treatment market and will still increase in importance, market conditions tend to be more geared to private sector involvement and competitive business approaches than the domestic markets. This implies that cost-efficiency, quality and cost-driven technical innovations play an important role in the wastewater treatment market. In this respect outsourcing of water-cycle management by industry (including supply, treatment and re-use) is becoming a major trend.

Environmental regulations shape the market

Demand will be predominantly shaped by public regulation as regards to acceptable levels of pollution. Rising demand will evolve step by step and country by country whenever and wherever environmental regulations are tightened. Every new regulation is a new market.

Focus on quality in developed world

The scope of the desired services differs from developed to developing countries. In the developed countries where sophisticated industries are bound by tight regulations and active public concern and where public authorities have sufficient budgets for protection of the environment, quality and high technology are the major fields of competition. Technical innovation is aimed at reaching the highest quality. Suppliers must be able to design and implement high-tech solutions for a competitive price, preferably turn key. Finance and management-capacity are of less importance, because industries and local authorities in general have no shortage of those. Nevertheless there is a trend towards the outsourcing of water management by industry in the developed world as well.

Focus on management and finance in developing world

In developing countries and emerging markets its of equal importance to bring capital and management capacity along with a technical solution. Suppliers with a broad scope from design and implementation to finance and management, have a strong competitive edge. Technical innovation is aimed at reaching a low cost solution and low-budget operations and maintenance, since the willingness and capability to pay for water treatment are low. Many new facilities financed by international donors malfunction after a while, because of lack of good operations and maintenance.

Funding problem in developing world

This means that funding of treatment facilities is a problem. Who will pay for the treatment? Drinking water can be sold; wastewater treatment has to be taxed. Investors will depend heavily on the local authorities and government. Will they be dedicated enough in collecting fees and taxes to pay off the investment?

Re-use reduces the funding problem

This may all change as a re-use market evolves. With re-use the treated wastewater gains a direct economic value, because it can be sold again. Therefore it will be very interesting to attract funding.

Best chances: industry, future high potential: re-use

So, since the water sector can be defined as a growth market as a whole, the wastewater treatment sector with a focus on industrial treatment will be the champion of that market, especially in the emerging economies. This offers excellent opportunities for suppliers that can provide high tech and safe solutions. Safety will become a factor of growing importance, especially when the market for re-use will start to develop. This will require the companies to ensure that trust-worthy management capacity accompanies the technology.

Special opportunity: rehabilitation of facilities

Many facilities in emerging economies are still relatively new and malfunctioning because of weak operations and maintenance. Efficiency can easily be improved with better management and relatively small investments, leading to high margins and short payback periods.

5.2 Dutch Supply Figures

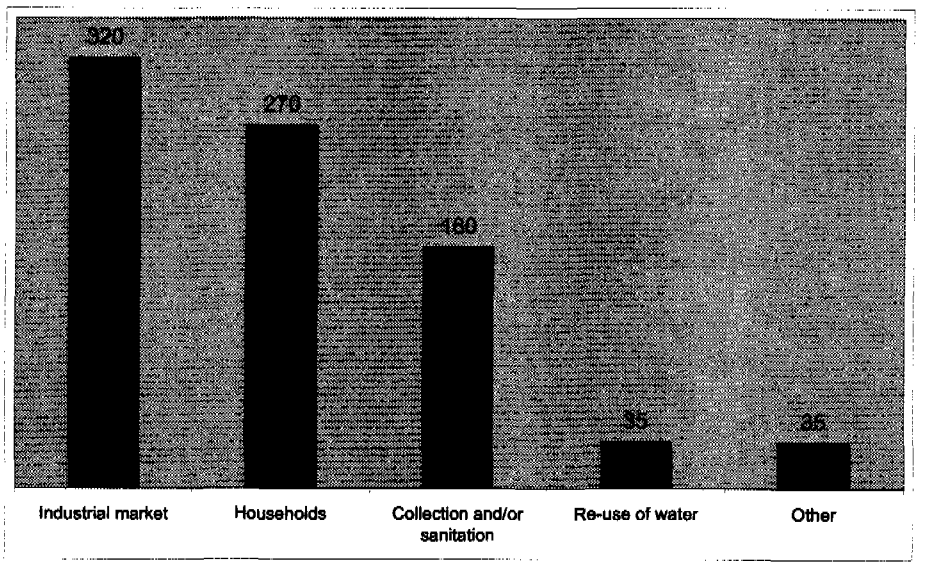
International market share

About 65% of all Dutch companies that consider wastewater to be their most important market segment in the water sector, are internationally active. In money terms the export share is 35%, thereby indicating that export often accounts for a small fraction of the total turnover of the companies.

With a total turnover of € 2,4 billion in wastewater, the Dutch companies account for a market share of 1,8%. In relation to the respective market shares for the other market segments, Dutch importance in the international playing field seems slightly lower in this area.

Breakdown of export turnover by sub segment

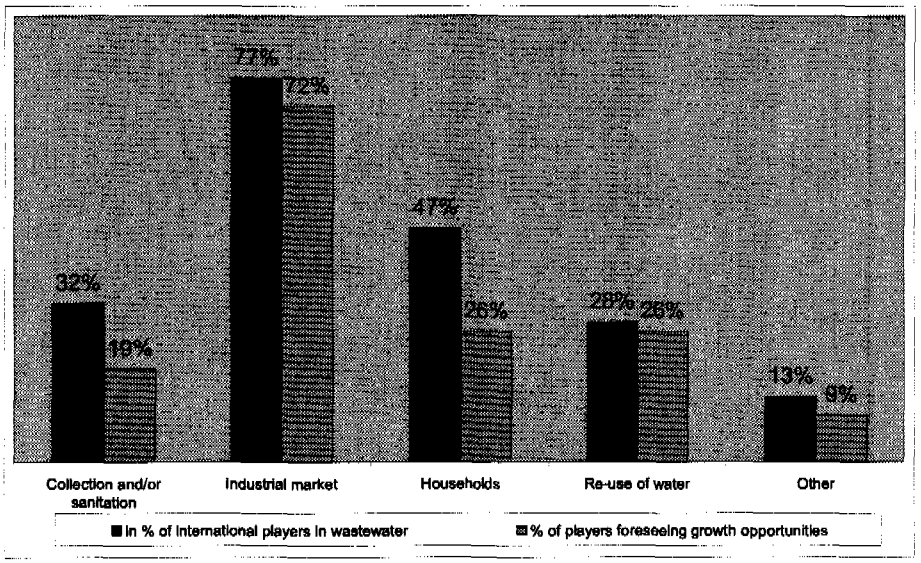
Figure 5.3 Export turnover in wastewater by sub segment (in € million) (n=53)



The following sub segments can be distinguished within the wastewater segment: collection and/or sanitation, industrial market, households, the re-use of water and a group with other activities in wastewater. Figure 5.3 shows that the industrial market is the largest sub segment, with an export turnover of € 320 million thereby accounting for 38% of the total export value. In line with the conclusion drawn in paragraph 5.1, the market for re-use is still underdeveloped.

Activity intensity in each sub segment

Figure 5.4 Percentage of players active and foreseeing opportunities by sub segment (n=53)



Of all wastewater companies 77% is active in the industrial market. See figure 5.4. Most of the active companies foresee growth opportunities in this sub segment. As a consequence, the worldwide industrial market in wastewater can be considered an important growth market for the Dutch water sector. Although households are an important sub segment with a share 32% in total exports, there are relatively few players (47%) and even fewer companies that foresee growth opportunities (26%).

Although small in size at this moment, the market for the re-use of water also seems to be a growth market. Most of the companies that are active in this sub segment (26% of all companies active in wastewater) foresee growth opportunities.

Table 5.4 Development of the competitiveness of Dutch companies in wastewater (n=20)

		1996	1997	1998
Turnover	Dutch companies	100	108	115
	Foreign competitors	100	99	100
Employment	Dutch companies	100	102	102
	Foreign competitors	100	104	102
Gross margin	Dutch companies	4,3	4,6	3,6
	Foreign competitors	5,0	1,5	2,9
Current ratio*	Dutch companies	1,3	1,5	1,4
	Foreign competitors	1,7	2,7	2,5
Quick ratio**	Dutch companies	1,1	1,2	1,2
	Foreign competitors	1,3	2,5	2,4

* current ratio is the quotient of current assets and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations (the higher the value, the better companies are able to do this)

**quick ratio is the quotient of current assets minus inventories and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations without relying on the sale of inventories (the higher the value, the better companies are able to do this)

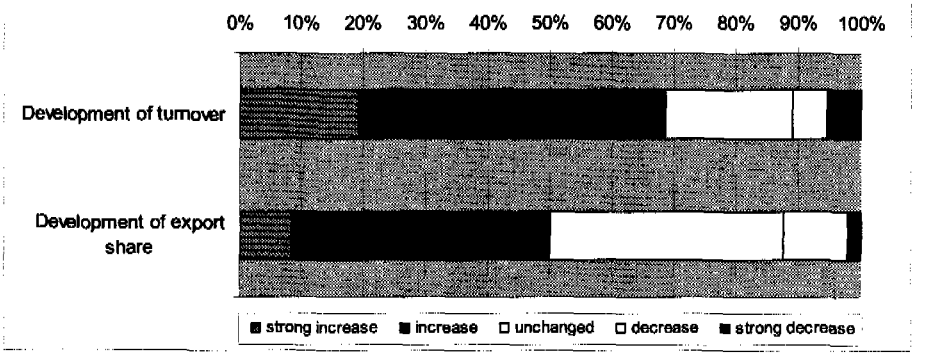
Source: Reach, Amadeus, EIM/DHV, 2001.

Based on financial data of national and international players in wastewater, an analysis has been made of the development in the international competitiveness of the Dutch companies in this market segment. In the period 1996-1998 the Dutch companies recorded a higher growth rate in turnover than their foreign competitors. As a matter of fact the latter group did not achieve any turnover growth in this period.

The gross margin seems to be under pressure, but is still higher for the Dutch companies than for their foreign competitors. The current and quick ratios, on the other hand, are less favourable for the Dutch companies, indicating that foreign competitors are better able to pay-off short-term obligations.

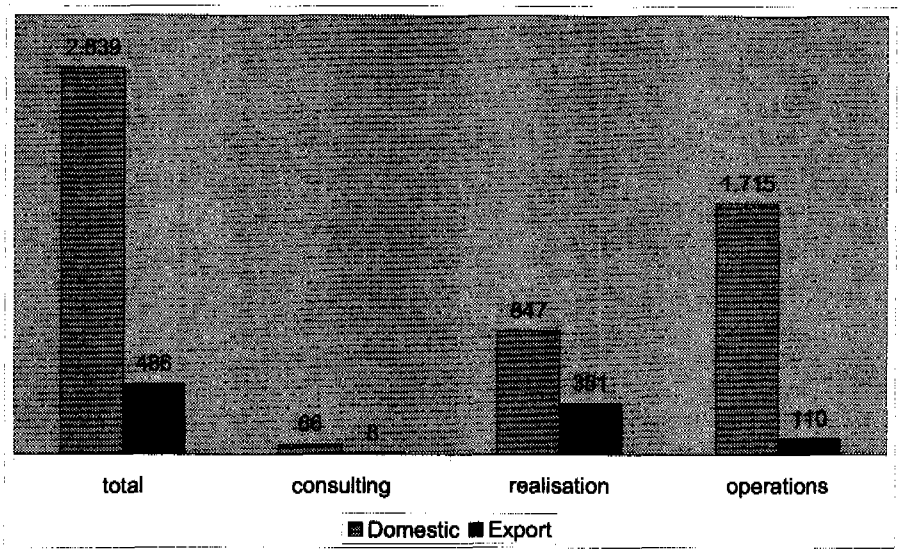
Development of turnover an export share

Figure 5.5 Development of turnover and export share in wastewater during the last three years (n=50)



In addition to the financial data, the companies were asked about the development of their turnover and their export share in the past three years. From Figure 5.5 it can be concluded that both developments were favourable in recent years. There are more companies witnessing an increase or even a strong increase in turnover than companies suffering a (strong) decrease. The higher growth rate of turnover as demonstrated by table 5.4 indicates that the development of the export shares is also relatively favourable.

Figure 5.6 Project cycle in domestic and export markets (in € million)



Legenda:
Consulting: players that focus on advise and/or design
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting
Operations: players that manage the infrastructure

Figure 5.6 shows the turnover broken down by activity area with a further specification for domestic and export turnover. Realisation is the primary domestic and export activity. Remarkable, however, is the size of the domestic component of operations and the relatively small international share of this activity.

Figure 5.7 Achievements and opportunities in the international wastewater market by type of Dutch player

Activities & growth expectations					Achievements		
Advise	Design	Procurement	Contracting	Operations	Export turnover (in € million)	Average export turnover (in € million)	Growth of export share
+	+/-	+/-	+/-		28	0,7	++
+	+/-	++		+/-	258	3,3	-
+/-	+	+	+	+/-	415	3,2	+
		+		+	83	2,3	=
		++			12	0,1	-
		+	++		54	1,9	++
					6	0,8	
	+	+		++	55	55,0	++
					4		
					914	2,9	+

Figure 5.7 shows what export turnover was realised by various types of players, what the development of their export share was over the past three years and what their expectations are in various activity areas. The type of player is characterised by its focus on activity areas. The various types of players can be distinguished by the coloured cells in each row.
The highest export turnover is realised by broadly oriented players that combine consulting with procurement and contracting (€ 415 million; 45% of total). The players covering procurement and consulting account for a total export turnover of € 258 million.

Although not all types of players reported a growth of export share over the past years, expectations are quite positive in most activity areas. In particular those players that are involved in procurement, but that are lacking contracting capabilities have lost export share. A broadening of their scope to include contracting may be a stimulus for future growth, although these players themselves do not report opportunities as such.

Various types of players report opportunities to expand their scope along the project cycle, including consultants. Contrary to the water supply market in wastewater considerable interest is being reported in enter the operations market. This may be explained by opportunities within the industrial market where parties are willing to outsource their (waste)water treatment.

Type of clients

Figure 5.8 Type of clients and perceived growth opportunities (in % of the total number of respondents) (n=53)

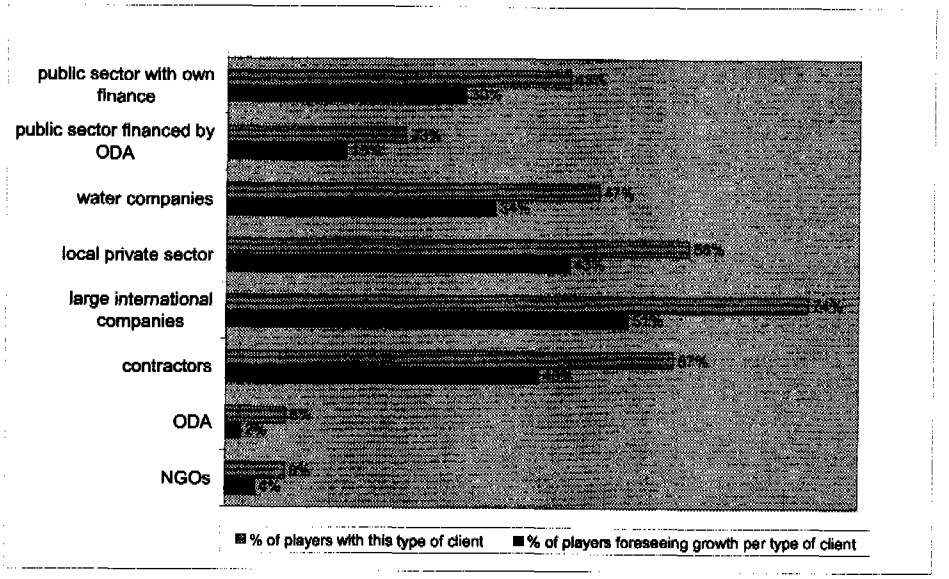


Figure 5.8 provides insights into the importance of various types of clients. Over 70% of the Dutch companies deliver at least some of their products and/or services to large international companies. Two-thirds of them or 51% of all players foresee growth opportunities for their sales to this type of client. The local private sector and internationally operating contractors also seem to be important client groups with further growth potential.

5.3 Perceived strengths, bottlenecks, threats and growth opportunities

Strengths and success factors perceived by Dutch players

The products and services of the Dutch companies in wastewater are considered very strong. The following strengths are mentioned by those companies active in wastewater:

- product characteristics (technology, expertise, wide product range, etc.) (50%)
- service characteristics (reliability, customer orientation) (20%)
- local network (20%)
- partnerships (2,5%)
- own production facilities (2,5%)
- market knowledge (2,5%)
- financial power (2,5%)

The first five strengths are also considered success factors, which lead us to the conclusion that the companies are quite satisfied about their own strengths and international performance. In addition to these success factors the following are also mentioned:

- product development (7%)
- government support (7%)
- implementation (4%)

Threats and bottlenecks perceived by Dutch players

International competition is the most important threat (mentioned by 40% of the companies), followed by the following elements:

- imitation (13%)
- lack of personnel (5%)
- regulation (5%)
- political/economic instability (5%)
- guarantees (2,5%)
- knowledge of local market (2,5%)
- finding the right partner (2,5%)
- no threats (21%)

The bottlenecks are in line with these threats:

- lack of personnel (22,5%)
- financing (17,5%)
- regulation (7,5%)
- acquisition (5%)
- finding the right partner (5%)
- competition (5%)
- price (5%)
- transport costs (5%)
- governmental policy (2,5%)
- small size (2,5%)
- recession (2,5%)
- no bottlenecks (17,5%)

Growth opportunities perceived by Dutch players

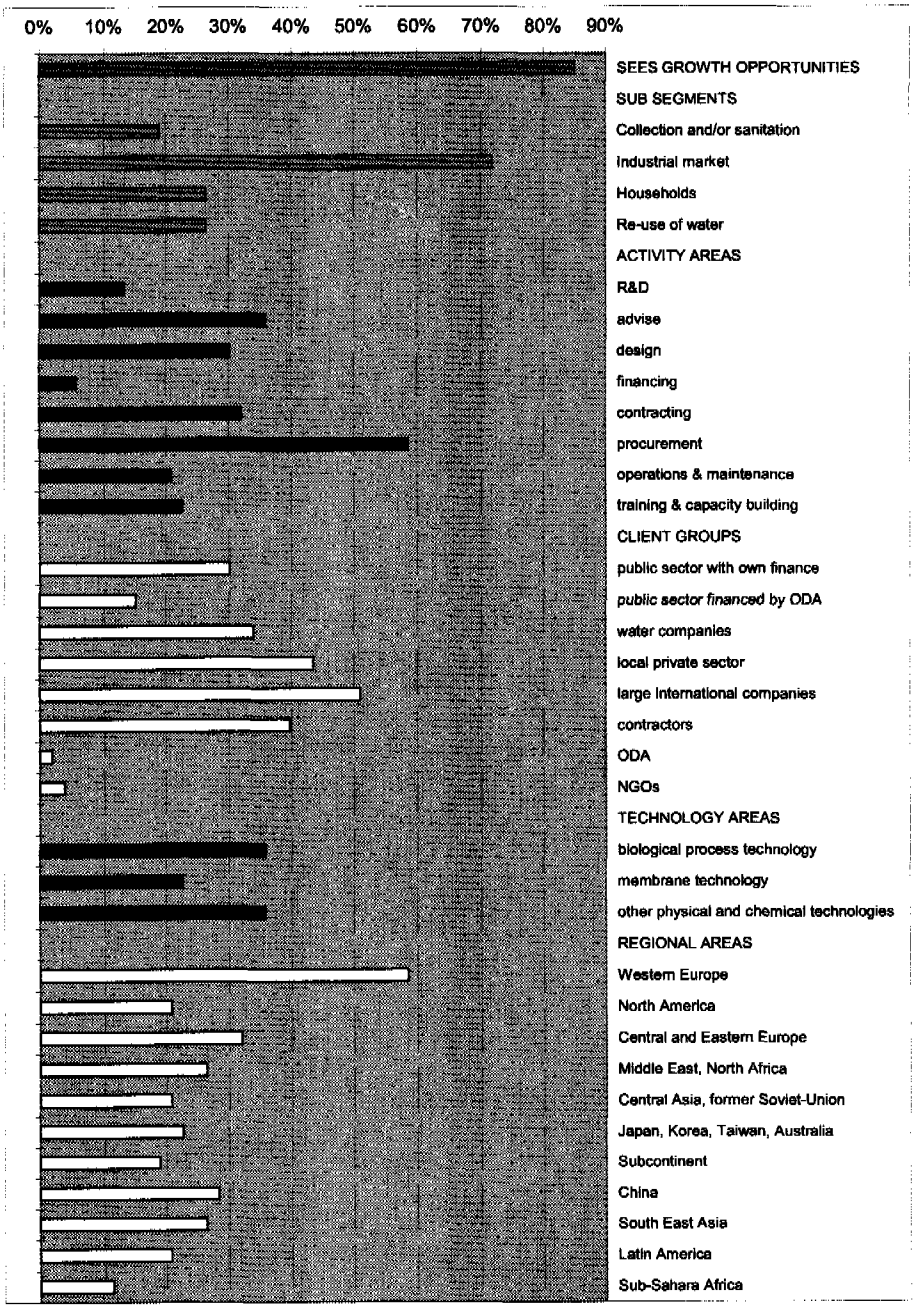
In the near future, the international position of the Dutch wastewater sector can be further strengthened. A relatively high percentage (85%) of the companies foresee growth opportunities in the international wastewater market, for 10% of the companies there are no opportunities and the remaining 5% is not (yet) aware of any opportunities.

The growth opportunities in the international wastewater market mentioned by the respondents can be categorized as follows:

- further penetration in current market(s) (39%)
- diversification (with current products/services entering new (geographical)markets (36%)
- regulations (18%)
- product development (11%)
- co-operation (6%)

Figure 5.9 offers the basis for a further analysis of the growth opportunities perceived by the respondents. More than 70% of all players that consider wastewater to be their most important market, foresee growth opportunities in the industrial market followed at a distance by households and re-use (26%). Most companies foresee growth in procurement (58%) followed by advise (36%) and contracting (32%). Most companies expect growth in the private sector (international companies, local private sector, water companies and contractors). Only 30% expects growing demand from the public sector. According to 36% of the companies, growth opportunities will occur in biological process technology and in other physical and chemical technologies. About one-fifth of the companies see growth opportunities in membrane technology. Most of the growth opportunities in wastewater are expected in Western Europe (including the Dutch market): nearly 60% of the companies perceive growth opportunities in this geographical area. Other potential growth regions are Central and Eastern Europe (mentioned by 32% of the companies), China (28%), South East Asia (26%) and the Middle East and North Africa (26%).

Figure 5.9 Opportunity table (in % of players in wastewater foreseeing growth opportunities in sub segments, client groups and specific activity, technology and regional areas, n=53)



5.4 Overall SWOT-analysis

Table 5.5 Overall SWOT-analysis for wastewater

% of players reporting growth	***% of players reporting decline***
• Export share: 50%	• Export share: 12%
• Turnover: 69%	• Turnover: 11%
Opportunities desk research	***Threats from desk research***
• Industrial treatment, re-use	• Funding problem
• Private sector, consortia	• Large private consortia
• Private operations, integrated offers	• Operation skills required
• Advanced technologies	
• Europe, Asia, N.A., L.A.	
Opportunities perceived (85% of players)	***Threats perceived***
• Industrial market & reuse	• Imitation
• Private sector, contractors	• Political, economic instability
• Procurement	• Regulations
• Biological, physical & chemical	
• Europe, Asia, Middle East	
• Penetration current markets (39%)	
• Current products, new markets (36%)	
Strengths	***Weaknesses/bottlenecks***
• Industrial treatment	• Re-use
• Clients private sector & contractors	
• Co-op foreign companies satisfactory	
• Local network	
• "Integrated procurement"	• "Integrated contracting"
• High export share realisation	• Low export share operations
• Considerable export share consulting	
• Tendency to contracting & operations	
• Technology/expertise	• Low co-op knowledge institutes, co-op unsatisfactory
• Service characteristics	• Lack of personnel
	• Export financing unsatisfactory
	• Financing bottleneck
Success factors	
• Technology/expertise	
• Co-op with knowledge institutes	
• Integrated offers including operations	
• Local network	
• Price/local production	
• Government support	

Performance

The Dutch players in wastewater are performing well and have recorded a high growth of turnover and a considerable growth in export share in recent years. Furthermore export in wastewater is relatively well developed, for export compared to domestic turnover is relatively high in consulting and realisation activities.

Strengths

As is the case in water supply also in wastewater most export turnover (60%) is realised by what may be called "integrated procurement players". They focus on a specific elements of wastewater treatment systems, for which they offer integrated services of procurement combined with consulting and/or contracting. They are relatively small in size and their strengths are based on technology and specialised services instead of on volume or financial power. They rely on well-developed local networks for marketing and sales and have achieved a strong client base in the local and international private sector and among contractors. They have a strong focus on industry, which creates excellent opportunities for future growth. Similar to water supply international operations are underdeveloped in wastewater. NUON has recently entered the international wastewater market and generates most of the turnover. In addition, NUON has taken shares in some specialised Dutch players (Norit and Paques) thereby creating a broadly oriented consortium. But also the smaller players in wastewater show a tendency to extend their scope to contracting and operations, more than in water supply, presumably because industrial wastewater treatment provides better opportunities for smaller players in this respect than urban water supply. Export turnover in realisation and consulting are quite high compared to domestic turnover and co-operation with foreign companies is satisfactory, which leads to the conclusion that wastewater players are successfully exploiting their potential in foreign markets

Opportunities

The general sentiment is strongly positive with 85% of players perceiving opportunities for growth, mostly in current markets with current products. Since this is their central expertise, most players remain focussed on procurement opportunities, but with a growing interest for contracting and operations. The geographical focus is not only on nearby regions such as Europe and Middle East, but also on Asia. Promising regions as North America and Latin America, in contrast, receive relatively less attention. The industrial market is dominant, but the promising future market for re-use is also considered a growth opportunity. The trend towards industrial outsourcing, however, will represent a challenge for the Dutch suppliers to offer complete systems including operations.

Weaknesses

Also in wastewater an important weakness is the lack of integrated suppliers including operations. On the other hand there is a tendency to fill in this gap and there are good opportunities in the industry to do so. Furthermore, there are no structural inhibitions for the developed of the domestic market for industrial outsourcing. Even in urban wastewater treatment, the innovative DBOFT[1]-tendering for the Dutch Harnasch-polder has mobilised many players. Apparently, economic incentives are sufficient to develop adequate know-how of complex markets and contracts, to extend the scope to faraway export markets and to es-

[1] DBOFT-projects cover the entire project cycle including the activities: Design Build Operate Finance Transfer (DBOFT). In respect the term DBFOT is also used.

tablish satisfactory co-operation relations with foreign companies. In doing so, successfully financing becomes a bottleneck, particularly with respect to contracting and operating activities. This weakness can be considered a fundamental problem in urban wastewater treatment. The level of satisfaction with export financing is low, which leads to the conclusion that these facilities insufficiently meet the challenges of the wastewater sector. Considering the strong focus on technology, the low and unsatisfactory co-operation with knowledge institutes needs to be improved. Special attention should be paid to the development of re-use applications, for turnover in this sub-segment is still relatively low.

Threats

Large international consortia with strong financing capacities represent a threat to the Dutch sector. These consortia are able to realise economies of scale, which cannot be reached by the Dutch players. Another threat stems from the imitation activities by low-quality suppliers, who do not have to earn back investments in R&D. Furthermore, new environmental regulations in emerging economies may not be adequately controlled by their governments, which is also beneficial for the low quality competitors. The development of private sector operations and integrated offers is a major cause of this increasing complexity of the international wastewater market. In this respect, the funding problem may represent a serious threat to the urban wastewater markets in the emerging economies, for the willingness to pay for wastewater treatment may be relatively low.

Actions

- Stimulate partnerships for integrated offers and more economies of scale
- Make export-financing facilities supportive to integrated offers including operations
- Stimulate co-operation with knowledge institutes
- Review of export financing facilities
- Consider institutional development in taxation management (possibly by Dutch ODA) to solve the funding problem in urban wastewater treatment

6 Strategic water card: water(resources)-management

6.1 Major international trends, challenges and opportunities

Large potential market
Water (resources) management includes the sub segments integrated water management, groundwater, surface water, water quantity, water quality. Large investments in works to protect land, rivers and other sources are of great importance in this market. Total market size is difficult to estimate, because the market is underdeveloped and the needs unknown in large parts of the world. Taking the relative share of the Dutch water (resources) management market as an example, which is by tradition a well developed water (resources) management system, the total world market could potentially be worth some € 69 billion of which about one quarter consists of management costs.

Major opportunity: capacity building in water management institutions
Because the challenges are complicated and require strong management capacity, a special task is to be reserved for knowledge development both in a technical and in an organisational way to cope with water stress, develop concepts for the allocation of scarce resources and the transfer of such knowledge to those countries where needs are great. In that case combined problems culminate in the water (resources) management sector and have to be dealt with in an integrated way. Measures to meet these challenges consist of implementing sound regulatory frameworks, creating better funding mechanisms and cost recovery, reallocating from low value to high value uses, reforming water management institutions, supporting technical innovation for increased water productivity and storage, stimulating international co-operation and valuing ecosystem-functions. This will provide important opportunities for consultants and knowledge institutes that will have to cooperate to reach satisfying solutions.

Good opportunities: management-supporting instruments
The major challenge lies in the protection of our water resources and ecosystems against extortion. The first step is to acquire better information about the quality and quantity of our water systems and sources. This is necessary to take the right decisions and measures based on knowledge. In the coming years considerable attention will therefore be paid to monitoring (networks, equipment) and modelling (forecasting, scenario-development, interaction water resources and society, evaluation).

High expectations for future growth: integrated water(resources)management including more specific solutions for rainwater/recharging groundwater
When water stress is expected to become apparent, it will be essential to start heavy investment programs to save and maintain our fresh water resources and ecosystems. This calls for integrated water(resources)management including more specific and commercially attractive solutions for collecting rainwater, recharging groundwater, increasing water storage and cleaning up polluted water systems. Some of the investments for these specific solutions will have to be financed by heavy water users such as agriculture and industry.

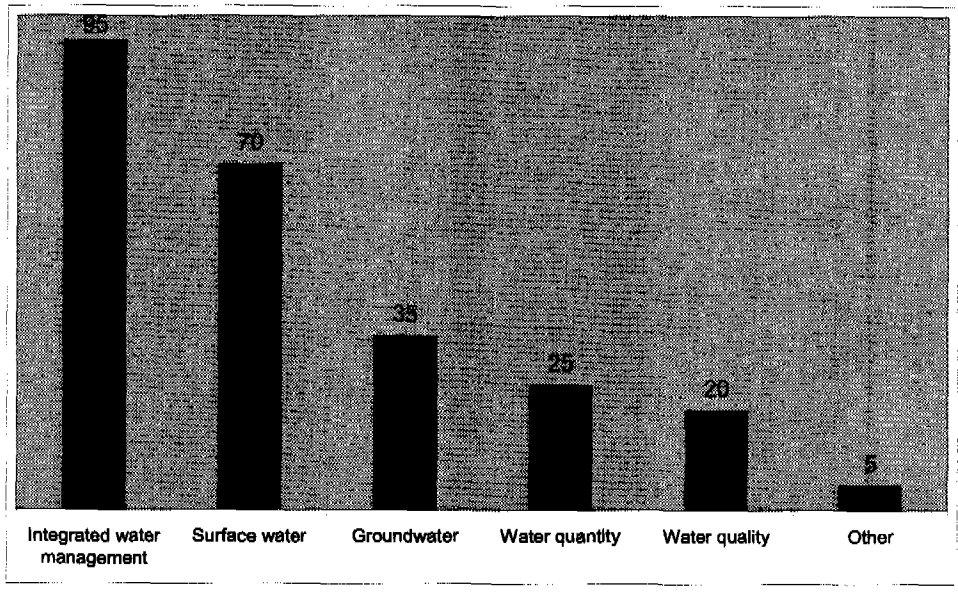
6.2 Dutch Supply Figures

International market share

The turnover of Dutch companies, which consider water(resources)management to be their most important market, equals € 1,4 billion. With this turnover water(resources)management constitutes about 12% of the Dutch water sector. The Dutch market share of the total international market of water(resources)management is estimated to be 2%, which is in line with the market shares for the other segments. More than 40% of all Dutch companies that consider this market as their most important water segment, are internationally active. Their export activities result in a 18% export share of total turnover in this market segment

Breakdown of export turnover by sub segment

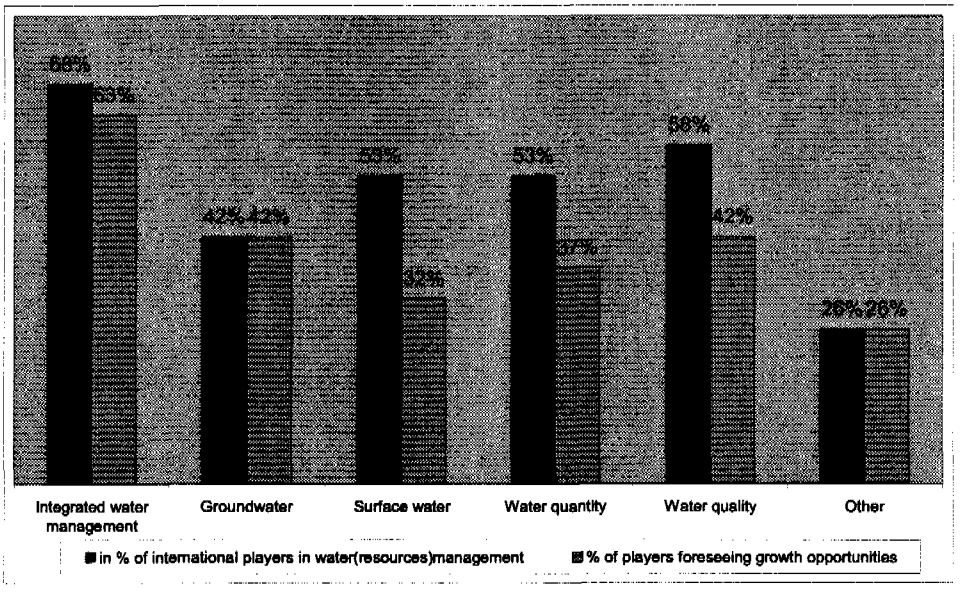
Figure 6.1 Export turnover in water(resources)management by sub segment (in € million) (n=10)



Exports are estimated at € 250 million, which are realised in five different sub segments: integrated water management, groundwater, surface water, water quantity, water quality and a group of other activities. Integrated water management is the largest sub segment with an export turnover equalling € 95 million or 38% of total export value. See Figure 6.1.

Activity intensity in each sub segment

Figure 6.2 Percentage of players active and foreseeing opportunities by sub segment (n=19)



Nearly 70% of the companies active in water(resources)management are also active in integrated water management. See Figure 6.2. A rather high percentage (63%) foresees growth opportunities in this sub segment, which makes this an important growth area. The same is true for groundwater. Although the relative market size of this sub segment is rather low (14% of export turnover) and ' only' 42% of the companies are active in this area, all these companies expect growth in groundwater.

International competitiveness

Table 6.2 Development of the competitiveness of Dutch companies in water(resources)management (n=10)

		1996	1997	1998
Turnover	Dutch companies	100	110	135
Employment	Dutch companies	100	99	133
Gross Margin	Dutch companies	3,6	4,1	5,2
Current ratio*	Dutch companies	1,4	1,4	1,3
Quick ratio**	Dutch companies	1,3	1,2	1,1

* current ratio is the quotient of current assets and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations (the higher the value, the better companies are able to do this)

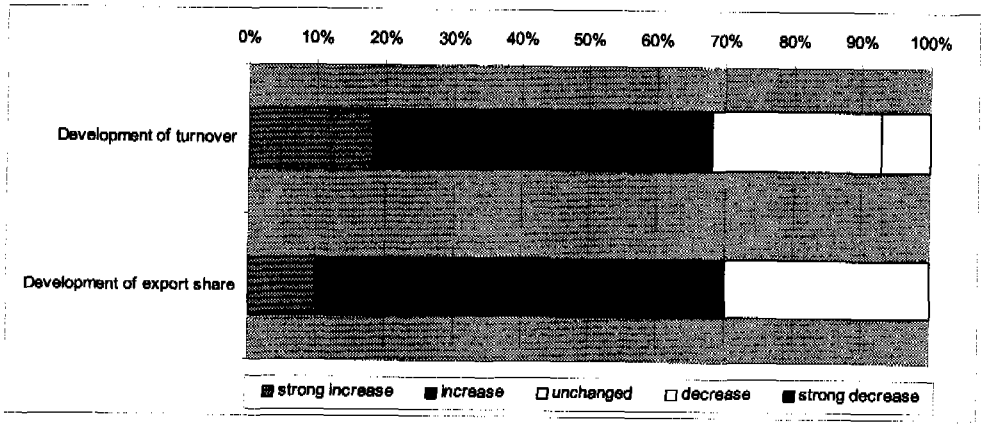
**quick ratio is the quotient of current assets minus inventories and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations without relying on the sale of inventories (the higher the value, the better companies are able to do this)

Source: Reach, Amadeus, EIM/DHV, 2001

Although it was not possible to retrieve financial figures for the foreign competitors, an indication of the development of the international competitiveness of Dutch companies can be derived from Table 6.2. If a comparison is made with the corresponding tables of wastewater and water supply, the high growth rates of turnover and employment in this sub segment are notable. During the period 1996-1998 turnover increased by 35% against a 15% increase in wastewater and a 17% increase in water supply. The growth of employment, however, is even more striking: 33% versus 2% and 14% respectively. The gross margin in this market segment is more favourable than the margin in wastewater but less favourable than the margin in water supply.

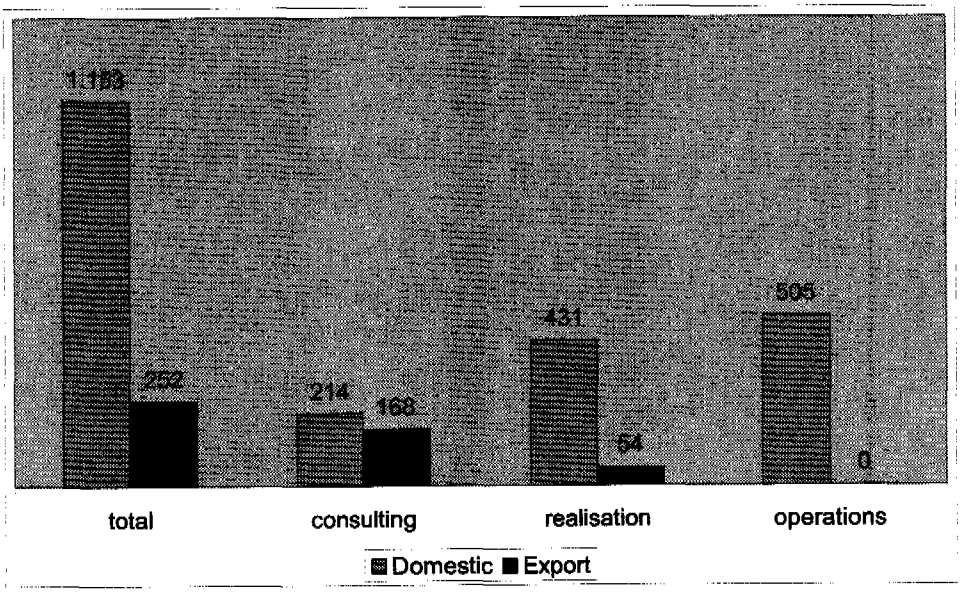
Development of turnover and export share

Figure 6.3 Development of turnover and export share in water(resources)management during the last three years (n=12)



A further indication of the development of the international competitiveness is indicated by the development of turnover and export shares in the last three years. From Figure 6.3 it appears that only a small 8% of the companies have recorded a reduction in turnover. Remarkably, no exporting company recorded a decreasing export share. Since both turnover and export shares have demonstrated a favourable development, the international competitiveness of the Dutch companies active in water(resources)management must have improved in recent years.

Figure 6.4 Project cycle in domestic and export markets (in € million)

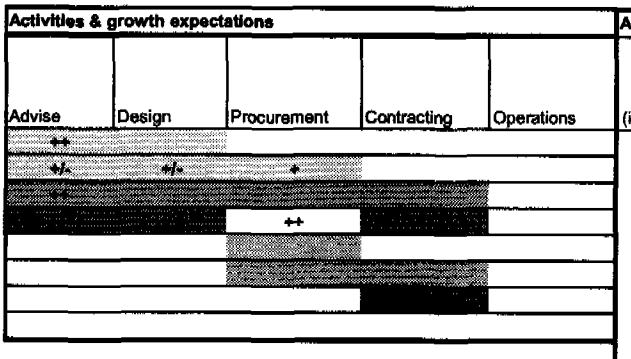


Legenda:
Consulting: players that focus on advise and/or design
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting
Operations: players that manage the infrastructure

Figure 6.4 shows the turnover broken down by activity area with a further specification of domestic and export turnover. Operations is the most important domestic activity but is not an activity in foreign markets. Remarkable, however, is the size of the export component of consultancy.

Achievements and opportunities by type of player

Figure 6.5 Achievements and opportunities in the international water(resources)market by type of Dutch player



Activities & growth expectations					Achievements		
Advise	Design	Procurement	Contracting	Operations	Export turnover (in € million)	Average export turnover (in € million)	Growth of export share
					168	3,1	+
					17	0,3	++
					21	0,9	++
					16	1,0	++
					0	0,0	
					0	0,0	
					0	0,0	
					0	0,0	
					30		
					252	2,9	+

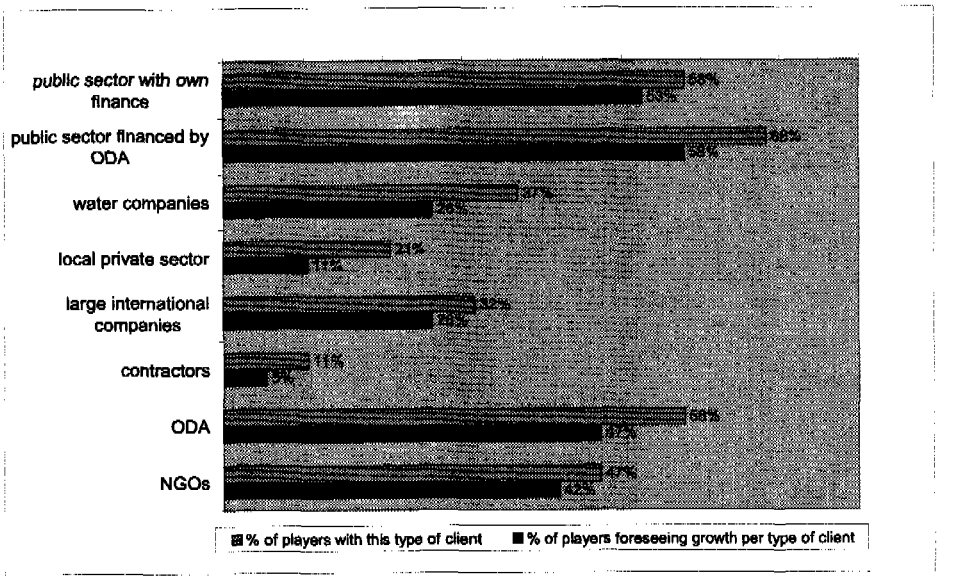
Figure 6.5 shows the export turnover realised by various types of players, the development of their export share over the past three years and their expectations in various activity areas. The type of player is characterised by its focus on activity areas. The various types of players can be distinguished by the coloured cells in each row.

All type of players reported growth of export share. Growth expectations are reported mainly for the activity areas consulting and procurement. Interest to further broadening the scope is limited.

Most export turnover is realised by consultants, accounting for 65% of total export turnover equal to € 168 million. Broadly oriented players that combine consulting with procurement and contracting activities cover only 8% of the total export turnover. Although the specialised consultants have the largest share in total export turnover, their export achievement have been less favourable than the performance of those players that combine consulting with contracting and/or procurement. This may stimulate specialised consultants to further enlarge their scope of activities. In the international water(resources)market consulting seems to be the basis, since no non-consulting players are present.

Type of clients

Figure 6.6 Type of clients and perceived growth opportunities (in % of the total number of respondents) (n=19)



The structure of demand is rather diverse. Figure 6.6 shows that the public sector is still an important client with considerable growth opportunities according to the companies. This growth potential also exists for the other large client groups, such as ODA and NGOs. The private sector is less important, although a substantial 26% of the companies active in water(resources)management foresee growth opportunities for goods and services for water companies and large international companies.

6.3 Perceived strengths, bottlenecks, threats and growth opportunities

Strengths and success factors perceived by Dutch players

The following strengths were mentioned by companies active in water(resources)management:

- product characteristics (technology, expertise, wide product range, etc.) (60%)
- strong market position (20%)
- market knowledge (20%)

Service characteristics (service, quality, reliability, etc.) in particular are considered success factors. Product characteristics seem to be necessary conditions, but service characteristics really make the difference when determining the competitiveness of the companies. In addition to service characteristics (40%) the following success factors were also mentioned:

- product characteristics (20%)
- local networks (20%)
- partnerships (20%)

Threats and bottlenecks perceived by Dutch players

International competition is the most important threat (mentioned by 40% of the companies), followed by:

- complexity of markets and contracts (40%)
- lack of personnel (20%)

The threats correspond to some extent with the following bottlenecks:

- uncertainty/lack of knowledge with respect to export markets (40%)
- lack of personnel/capacity problem (40%)
- no bottlenecks (20%)

Growth opportunities perceived by Dutch players

Nearly 90% of the companies that consider water(resources)management their most important market segment, see growth opportunities in this segment. The remaining 11% is not (yet) aware of any growth opportunities.

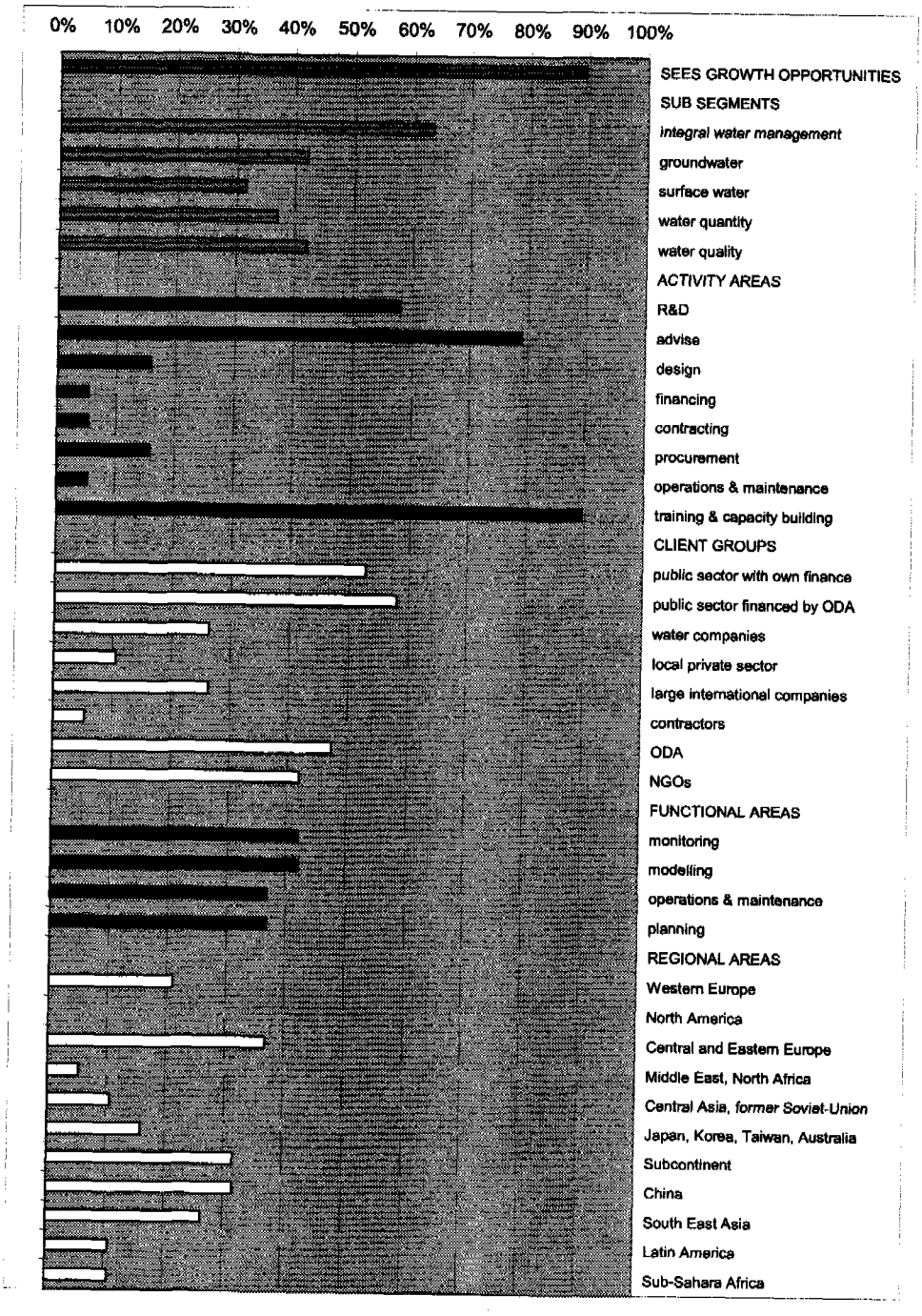
The growth opportunities in the international market for water(resources)management can be categorized as follows:

- further penetration in current market(s) (40%)
- diversification (with current products/services entering new (geographical)markets) (40%)
- knowledge transfer (20%)

Figure 6.8 offers the basis for a further analysis of the growth opportunities perceived by the respondents. More than 60% of all players that consider water(resources)management to be their most important market, foresee growth opportunities in integrated water management. Water quality and groundwater are also mentioned quite often in this respect. The service character of the market is visible in the areas in which most growth potential is expected. Nearly 80% foresee growth in advise while nearly 90% expect their turnover in training and capacity building to grow. Not surprisingly growth in these activity areas is expected for international clients in the public sector, but also for ODA and for NGOs. Growth opportunities are expected mainly in the functional areas such as monitoring and modelling (both areas are mentioned by 42% of the companies), fol-

lowed by operations & maintenance and planning (37%). Central and Eastern Europe is the most promising region for Dutch international activities in water(resources)management (mentioned by 37% of the companies). China, the Subcontinent and South East Asia are also regions with relatively high growth potential. Western Europe is in only fifth place, while companies, that are active in other segments such as wastewater and water supply, consider this the most promising region.

Figure 6.8 *Opportunity table (in % of players in water(resources)management foreseeing growth opportunities in sub segments, client groups and specific activity, functional and regional areas, n=19)*



6.4 Overall SWOT-analysis

Table 6.3 Overall SWOT-analysis for water(resources)management

% of players reporting growth	***% of players reporting decline***
• Export share: 70% • Turnover: 68%	• Export share: 0% • Turnover: 7%
Opportunities desk research	***Threats from desk research***
• Integrated W®M; groundwater; rainwater harvesting; storage; increasing water productivity • Public sector with own finance; Public/private partnerships • Training & capacity building • Integration consulting/procurement • Monitoring, institutional development • Asia, Africa, Middle East, Latin Amercia	• Decline ODA funding • Large integrated suppliers
Opportunities perceived (90% of players)	***Threats perceived***
• Integrated W®M; water quality; groundwater; • Public sector financed by ODA or with own finance • Training & capacity building; R&D; • Monitoring, modelling, operations • Central-Eastern Europe, Asia, Western Europe • Penetration current markets (40%) • Current products, new markets (40%)	• Competition • Complex markets & contracts • Lack of personnel
Strengths	***Weaknesses/bottlenecks***
• Integrated W®M; surface water • Client base public sector, ODA • Local network • High export share consulting • Technology/expertise • High co-op knowledge institutes, with high satisfaction • Service characteristics • High satisfaction export financing	• Water quality • Client base private sector • Knowledge export markets • Co-op int'l companies unsatisfactory • Low export share realisation • Few integrated suppliers • Lack of personnel
Success factors	
• Technology/expertise • Co-op with knowledge institutes • Integrated offers • Local network • Price/local production • Government support	

7 Strategic water card: irrigation and drainage

7.1 Major international trends, challenges and opportunities

Market shaped by agriculture

The market for irrigation and drainage is constituted mainly of land cultivated for agriculture. Agriculture is by far the biggest water consumer with 500 million hectares of land under irrigation and 70% of total worldwide water abstraction. In Africa and Asia agriculture even accounts for 86% of total water abstraction (Price Waterhouse Coopers: Water: a world financial issue -March 2001).

Market heavily subsidised, no service provision market

Since irrigation is heavily subsidised and managed by public agencies or farmers themselves, there is no developed market for service provision as there is for water supply and wastewater. In India alone the total of direct and indirect subsidy for irrigation amounts to € 5,5 billion per annum. Therefore the total market size can be estimated from the total investment level in water infrastructure related to agriculture, which amounts to € 39 billion per annum. 70% of the world's irrigated areas are located in Asia. Other important areas are Africa and Southern-California.

Limited growth-potential

According to World Water Vision the investment level in agricultural water infrastructure will remain stable at the current level. This means that the market for irrigation and drainage will loose importance. There are contrasting views (FAO, ICID, IWMI), though, stating that the rate of expansion of irrigated land will be some 30% over the next decades to keep pace with the growing population. This will require major investments especially in large dams and possibly groundwater recharge. Others argue that growth of food production will be based on biotechnology rather than on the expansion of cultivated and irrigated land.

Trend towards liberalisation, more competition

There is a tendency towards liberalisation, making farmers having to pay the full price for irrigation water and related services. This could result in an additional market for service provision, which may potentially double the total market size, as is the case in water supply and wastewater.

Good opportunity in efficient systems

Two factors will stimulate the demand for more efficient systems. One factor is the fact, that after liberalisation, the farmers will have to pay the full cost; until now low water prices and subsidies on energy have hampered the introduction of water and energy saving technology. The other factor is the growing scarcity of water in many irrigated areas. Efficiency can still be improved. It may vary substantially according to the technology used from 30-40% for flood irrigation to 90 % for drip irrigation. Because such large water quantities are used for agriculture even small gains in efficiency rates are valuable.

Table 7.1 Efficiency rate of irrigation

Irrigation efficiency	Efficiency rate
Average world wide	70%
Flood irrigation	30-40%
Drip irrigation	90%

Source: Asian Water 4/2001.

Focus on re-use in developed world

Re-use is starting to take shape in the developed world in areas like Southern-California and Israel where water scarcity is combined with high yield agriculture. In California currently 8% of municipal wastewater is being re-used, mainly for agriculture and landscape irrigation (Asian Water: 3/2001).

Focus on self-sufficiency in emerging markets & developing world

More than 50% of India's irrigated land is supplied by groundwater pumps. Pump irrigation crop-yields can be 2 to 3 times those of canal irrigation. Solar power technology for pumping systems is likely to provide a break-through and costs will come down from 40-60 to 8-10 US$ cents per kWh (Source: world water vision 2025). With such technologies farmers will be independent of existing infrastructure and the poor quality of services supplied thus improving their businesses and profits.

Need for recharging groundwater

Because of intensive groundwater pumping for irrigation, water levels may be falling by 2 to 3 meters a year. Because of the high crop-yields of pump irrigation (2 to 3 times more than canal-irrigation) reduction of pumping is not a feasible solution. Groundwater recharge would be the best solution in combination with incentives for efficient use, although cost-effective technology still needs to be developed. Solutions are expected from rainwater collection to recharge groundwater aquifers. This may trigger major investments to maintain sustainable agriculture.

Major challenge: Sustainable agriculture

Given the trend from subsidy to self-sufficient business and the need to prevent water-shortage, there will have to be a shift in farming-culture to maintain sustainable agriculture. Transfer of know-how and training is needed.

Best chances: recharging groundwater/efficient systems

Though the growth of irrigated land may stagnate, it is inevitable that heavy investments will have to be made in recharging of groundwater and more water-efficient systems. Falling groundwater tables combined with the popularity of pumping irrigation and moderate water-efficiency cannot be tolerated much longer while populations to be fed is still growing.

Special opportunity: small scale equipment/small business approach

Newly independent farmers will need special services and training along with small-scale equipment to create a sustainable and profitable business for themselves. This requires new products, services and methods of distribution compared to the large-scale and subsidised projects of the past. This may entail full-service concepts combining (green) advice, leasing arrangements and organisational change. Special attention should be paid to affordable solar powered equipment, which can make farmers even more self-sufficient.

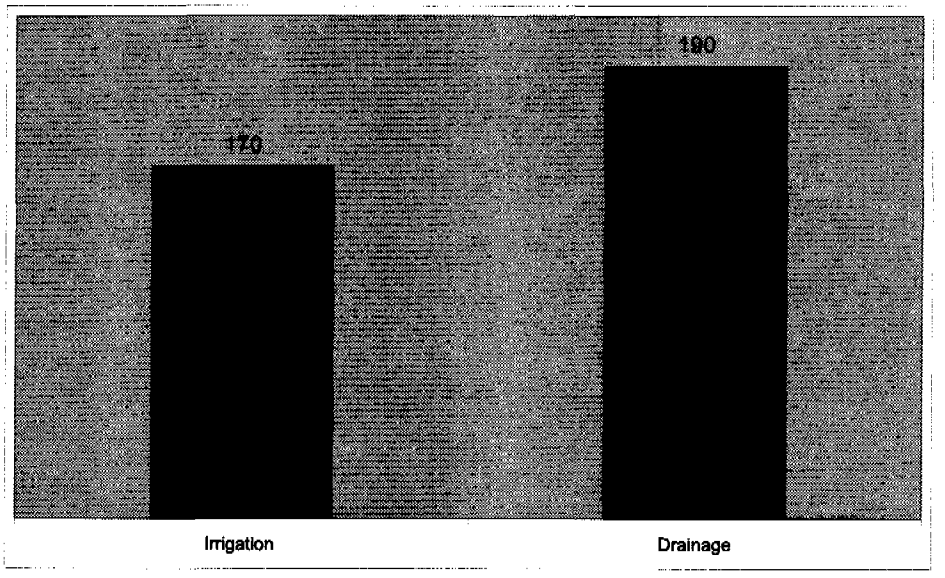
7.2 Dutch Supply Figures

International market share

The turnover of Dutch companies that consider irrigation and drainage their most important market, equals € 800 million. In this turnover irrigation and drainage constitutes about 7% of the Dutch water sector. The Dutch market share of the total international market of irrigation and drainage is estimated at 2%.

Breakdown of export turnover by market segment

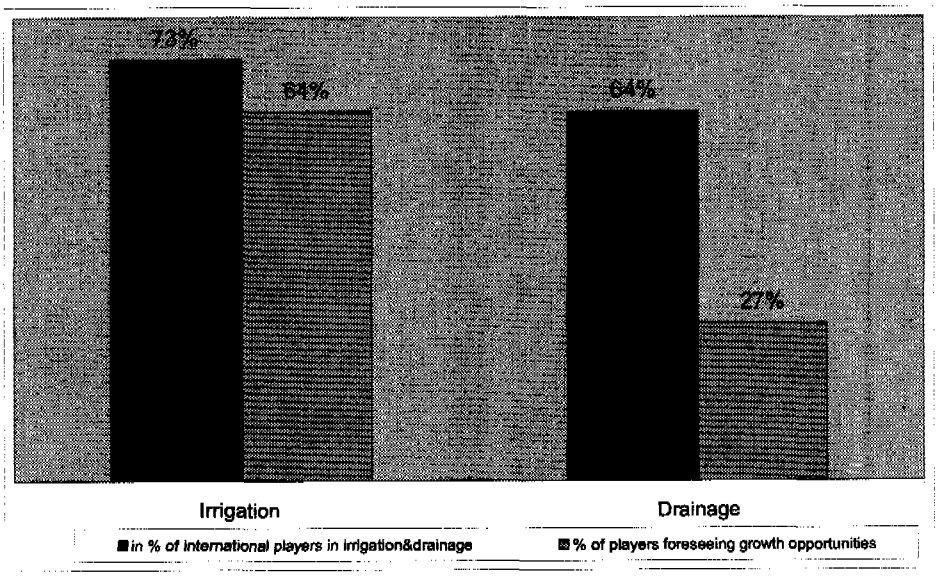
Figure 7.1 Export turnover broken down by irrigation and drainage (in € million) (n=6)



The share of exporting companies as a percentage of all companies in irrigation and drainage is relatively high (63%). The export value of these companies in this market segment amounts to about € 360 million or 45% of total turnover. About € 170 million is realised in irrigation and € 190 million in drainage.

Activity intensity in each sub segment

Figure 7.2 Percentage of players active and foreseeing opportunities by sub segment (n=11)



Most companies are active in both markets, but the highest growth potential in foreign markets is expected in irrigation. Nearly two-third of all companies active in this segment foresee growth opportunities in irrigation, while only 27% see international growth opportunities in drainage.

Table 7.2 Development of the competitiveness of Dutch companies in irrigation and drainage (n=6)

		1996	1997	1998
Turnover	Dutch companies	100	104	109
Employment	Dutch companies	100	104	106
Gross margin	Dutch companies	3,2	4,0	3,8
Current ratio*	Dutch companies	1,5	1,4	1,4
Quick ratio**	Dutch companies	1,1	1,1	1,2

* current ratio is the quotient of current assets and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations (the higher the value, the better companies are able to do this)

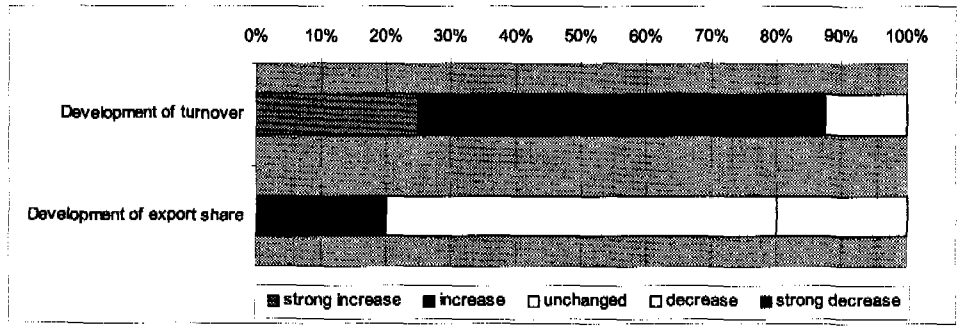
**quick ratio is the quotient of current assets minus inventories and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations without relying on the sale of inventories (the higher the value, the better companies are able to do this)

Source: Reach, Amadeus, EIM/DHV, 2001

Although it was not possible to retrieve financial figures for the foreign competitors and the number of observations is relatively low, an indication of the development of the international competitiveness of Dutch companies can be derived from Table 7.2. If a comparison is made with the other market segments of the water sector, the relatively low growth rates of turnover and employment in this sub segment are notable. From 1996-1998 turnover increased by 9% against a 35% increase in water(resources)management, a 15% increase in wastewater and a 17% increase in water supply. The gross margin in this market segment is about the same as in wastewater but less favourable than the margin in water supply and more or less on the average of the Dutch water sector. The same is true for the current and quick ratios.

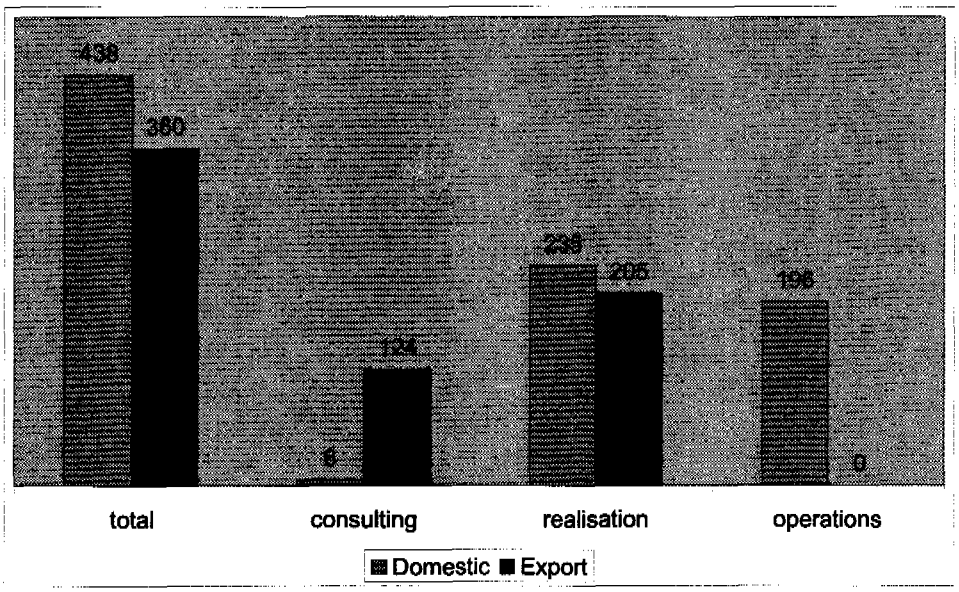
Development of turnover and export share

Figure 7.3 Development of turnover and export share in irrigation and drainage during the last three years (n=5)



A further indication of the development of the international competitiveness is demonstrated by the development of turnover and of the export share in the last three years. From Figure 7.3 it appears that 12% of the companies have recorded a decrease in turnover and a rather large group (63%) has recorded an increase of turnover. Turnover has increased for most companies but the growth rate has been modest, which is in line with the developments presented in table 7.2. At the same time, the export share has remained unchanged in this period. Based on these data, the international competitiveness of the Dutch companies active in irrigation and drainage does not seem to have improved in recent years.

Figure 7.4 Project cycle in domestic and export markets (in € million)



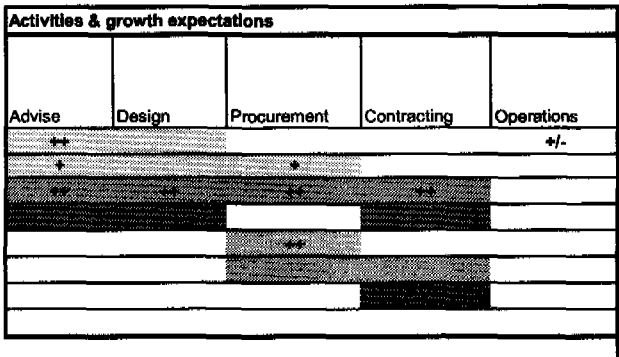
Legenda:

Consulting: players that focus on advise and/or design
Realisation: players in procurement or contracting or combinations of procurement, contracting and consulting
Operations: players that manage the infrastructure

Figure 7.4 shows the turnover broken down by activity area with a further specification of domestic and export turnover. Realisation and operations are the most important domestic activities. Realisation is also the most important international activity, while no export turnover is realised in operations. Remarkable, however, is the size of the export of consultancy in comparison with an extremely low domestic turnover.

Achievements and opportunities by type of player

Figure 7.5 Achievements and opportunities in the international market for irrigation and drainage by type of Dutch player (n=10)



Activities & growth expectations					Achievements		
Advise	Design	Procurement	Contracting	Operations	Export turnover (in € million)	Average export turnover (in € million)	Growth of export share
				+/-	124	3,4	-
					65	1,3	-
					22	0,7	=
					111	5,4	
					3	0,2	++
					4	0,5	
					0	0,0	
					0	0,0	
					31		
					360	2,3	=

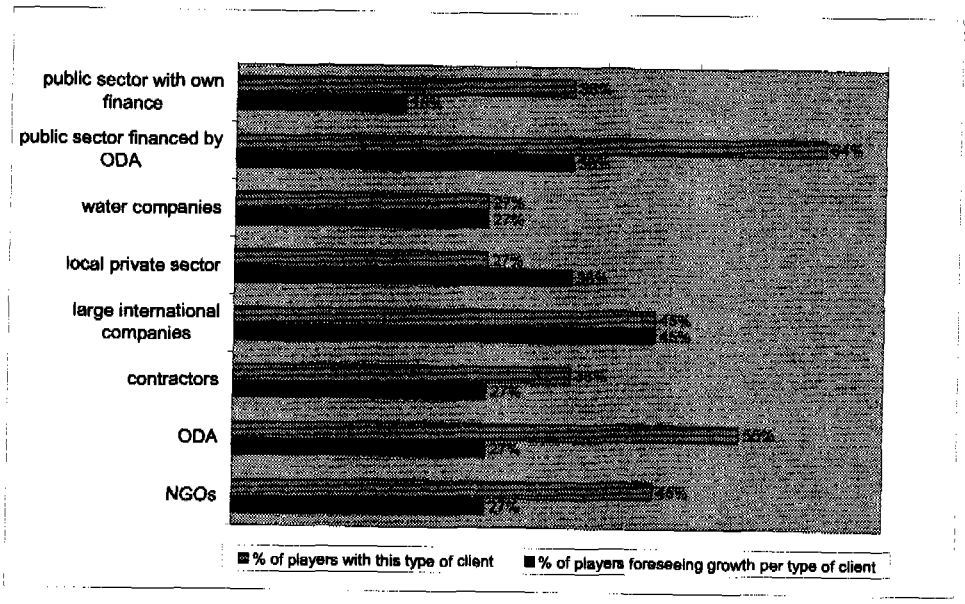
Figure 7.5 shows what export turnover is realised by various types of players, what the development of their export share has been over the past three years and what their expectations are in various activity areas. The type of player is characterised by its focus on activity areas. The various types of players can be distinguished by the coloured cells in each row.

Hardly any of the various types of players reported growth of export share. This confirms the findings of the desk research that the international market is stagnating. Only the specialised procurement players reported growth; this could be the exception to the rule, but their share in export turnover is rather low in the segment.

About 35% of export turnover is realised by consultants, who foresee growth opportunities in advise rather than in design. Another 30% of export turnover is accounted for by players that combine consulting with contracting. Broadly oriented players that combine consulting with procurement and contracting still account for a modest share of the export turnover, but they see good opportunities along the whole line of their activities. Broadening the scope may prove to be a good strategy indeed in a stagnating market.

Type of clients

Figure 7.6 Type of clients and perceived growth opportunities (in % of the total number of respondents) (n=11)



Dutch players in irrigation and drainage supply their products and services to a wide range of clients. See Figure 7.6. The public sector financed by ODA and ODA themselves is mentioned most frequently in this respect. Both client groups, however, will become less important since most companies are expecting growth of the products and services, which are destined for large international companies (45%). Demand from other private parties is also expected to increase. All companies that are active for water companies, foresee further growth for this client group. In addition, and remarkably enough, more players foresee growth opportunities in the local private sector than there are currently active for this client group (36% and 27% respectively).

7.3 Perceived strengths, bottlenecks, threats and growth opportunities

Strengths and success factors perceived by Dutch players
Only product characteristics (technology, expertise, wide product range, etc.) are mentioned by the companies that are active in irrigation and drainage. The strong products are also considered the most important success factors. In addition, the opportunities in irrigation and drainage will only occur if the trend towards a sustainable environment also leads to changes in the behaviour of governmental and non-governmental organisations.

Threats and bottlenecks perceived by Dutch players
International competition is the most important threat together with the increasing commercialisation in developing countries endangering the water access for poor people. In addition, the changing world climate and regulation are mentioned. The bottlenecks mentioned deal only with internal problems such as a lack of personnel and a lack of financial resources.

Growth opportunities perceived by Dutch players
Most companies (82%) that consider irrigation and drainage their most important market segment, see growth opportunities in this segment. The remaining 18% does not see any growth opportunities.

The growth opportunities in the international irrigation and drainage market mentioned by the respondents can be categorized as following:

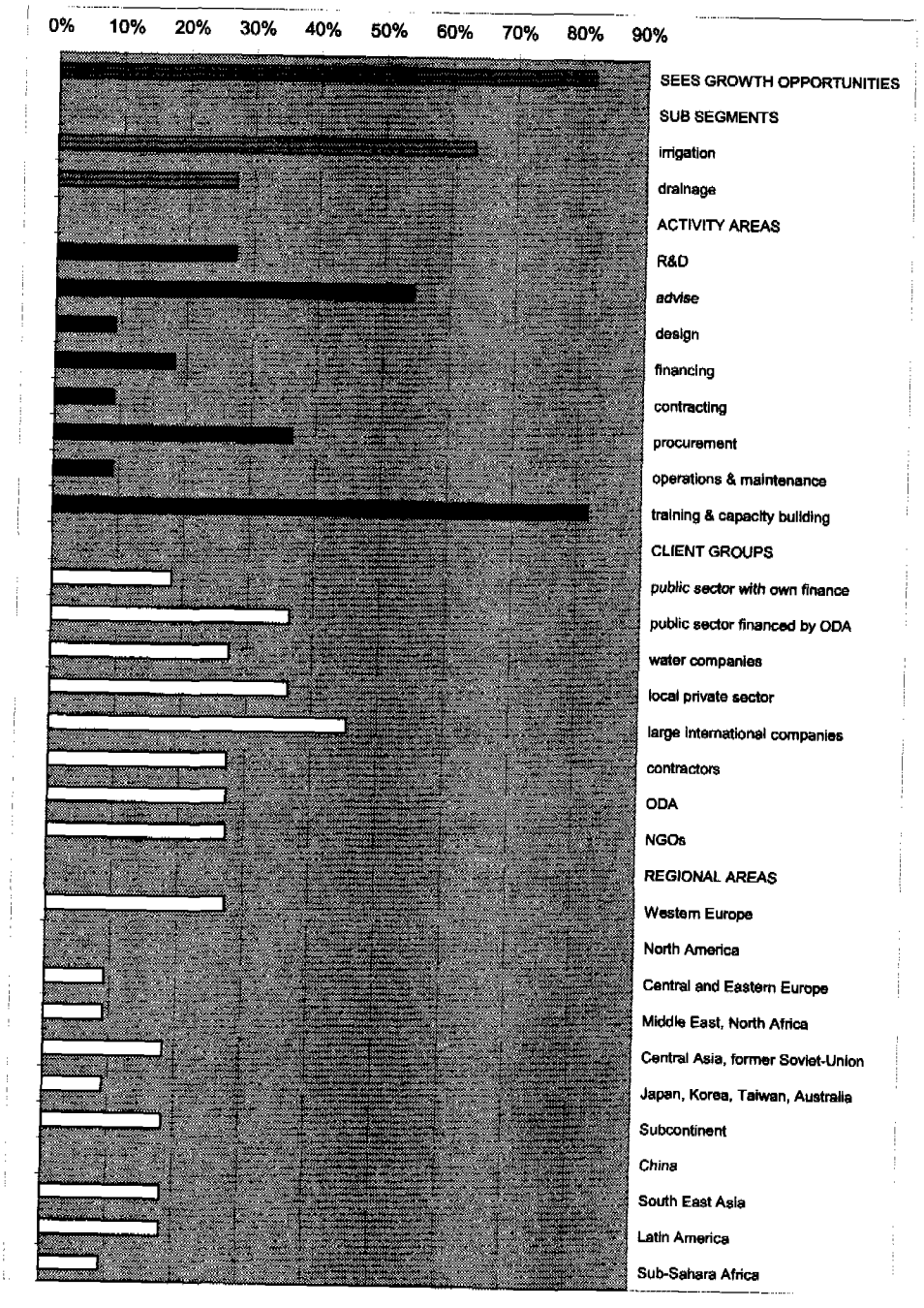
- privatisation leading to higher agricultural production and as a consequence to a further improvement of the water supply, irrigation and drainage system
- the support for new water saving technologies in relation to the increasing awareness of the water scarcity problem
- penetration in current markets.

Figure 7.7 shows that most growth opportunities are perceived in the knowledge areas such as advise (mentioned by 55% of all players active in the international irrigation and drainage market) and training and capacity building (82%). The private sector is expected to become more important as a client group with large international companies mentioned by 45% of all players followed by the local private sector (36%). Growth opportunities are foreseen in the following technology areas:

- agricultural technology for improving the irrigation and drainage systems in developing countries
- drip irrigation which is a low cost but efficient technology and therefore accessible for poor farmers in developing regions
- better methods for water inventory and infiltration

Western Europe is the most promising region for Dutch international activities in irrigation and drainage (mentioned by 27% of the companies). Latin America, Central Asia, South East Asia and the Subcontinent are also frequently mentioned as geographical areas with growth potential. These areas are all mentioned to a lesser extent than is the case for other market segments, thereby indicating the relatively unfavourable development of the international market for irrigation and drainage.

Figure 7.7 Opportunity table (in % of players in irrigation and drainage foreseeing growth opportunities in *sub segments, client groups* and specific activity, functional and regional areas, n=11)



7.4 Overall SWOT-analyses

Table 7.3 Overall SWOT-analysis for irrigation and drainage

% of players reporting growth	***% of players reporting decline***
• Export share: 20% • Turnover: 88%	• Export share: 20% • Turnover: 12%
Opportunities desk research	***Threats from desk research***
• Efficient systems; rainwater harvesting • Private farmers; small business • Integration: consulting/procurement/finance • Asia, N.A., Africa	• Stagnating investment volume • Privatisation; abolition of subsidies • Integrated suppliers
Opportunities perceived (82% of players)	***Threats perceived***
• Efficient systems, storage, rainwater • Private sector; private farmers • Training, cap. building; procurement • Drip-irrigation, storage, infiltration • W.Eur, L.A., Asia • Penetration current markets	• Competition low wage countries • Privatisation
Strengths	***Weaknesses/bottlenecks***
• Drainage • Client base int'l private sector • Local network • Market knowledge • Export share consulting & realisation • Technology/expertise • High satisfaction export financing	• Large client base public sector & ODA • Small client base local private sector • Co-op int'l companies unsatisfactory • Co-op Dutch companies unsatisfactory • Few integrated suppliers • Low co-op knowledge institutes; low satisfaction
Success factors	
• Technology/expertise • Co-op with research/education • Integrated offers • Local partnerships • Market knowledge	

8 Strategic water card: water construction

8.1 Major international trends, challenges and opportunities

On a worldwide scale there is a considerable demand for water construction activities for the development of new infrastructure, particularly in coastal regions of the world. This demand is directly related to the growth of the world economy, population growth and the globalisation of world trade patterns. World demand for water construction, however, is determined mainly by the development of world trade. The more trade in goods, the greater the transport volumes, the larger the vessels and the more dredging and other water construction activities that are necessary. Larger units, ongoing automation and ever increasing knowledge turn the water construction sector into a 'high tech'-industry. Water construction activity is further stimulated by the growing need for deeper harbours with related port- and industrial sites that enable the handling of large container vessels. In addition, demand for land reclamation in highly populated areas is increasing. All these developments result in favourable prospects for the international market.

The international market for water construction activities is limited to a relatively small number of large global players on the supply side and by a relatively small number of players on the demand side. The most important client in the Dutch market is Rijkswaterstaat and also in foreign markets public authorities are often the clients. The international trend, however, is that more and more projects are privately financed. This is particularly the case in Argentina and India. In contrast with this liberalization tendency, some markets are still closed for foreign operators, such as the US-dredging market. This is also the case for China, Japan and Korea. Co-operation with local partners is often required for large international projects.

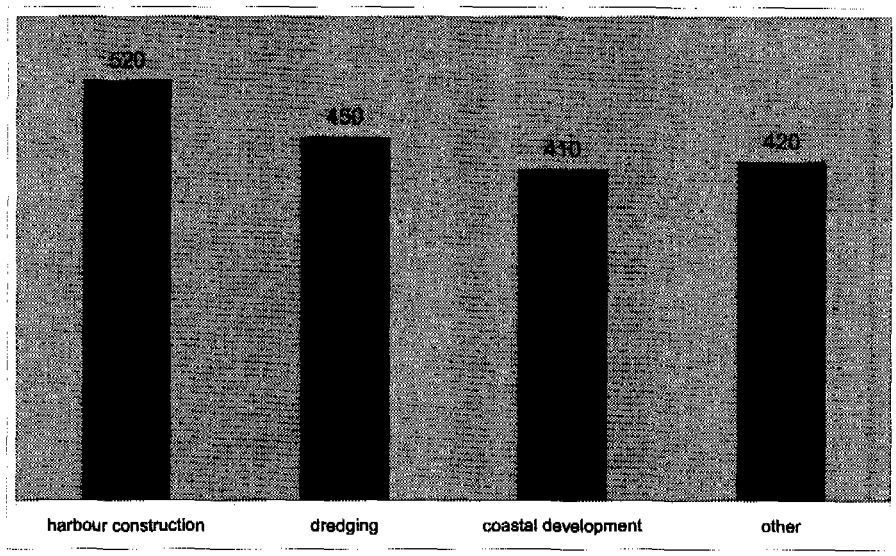
8.2 Dutch Supply Figures

International market share

Although the international market is very important for the Dutch players also the Dutch domestic market remains quite important. New technologies are developed and tested in the Netherlands. This is possible because considerable knowledge, skills and educational facilities are concentrated in the Netherlands. These aspects allow Dutch companies to play a leading role in international industry. The international market share of the Dutch water construction segment is estimated at 35%. In terms of turnover and in terms of export value, water construction is the largest market segment of the Dutch water sector. The total turnover equals € 3,5 billion and total exports € 1,8 billion.

Breakdown of export turnover by market segment

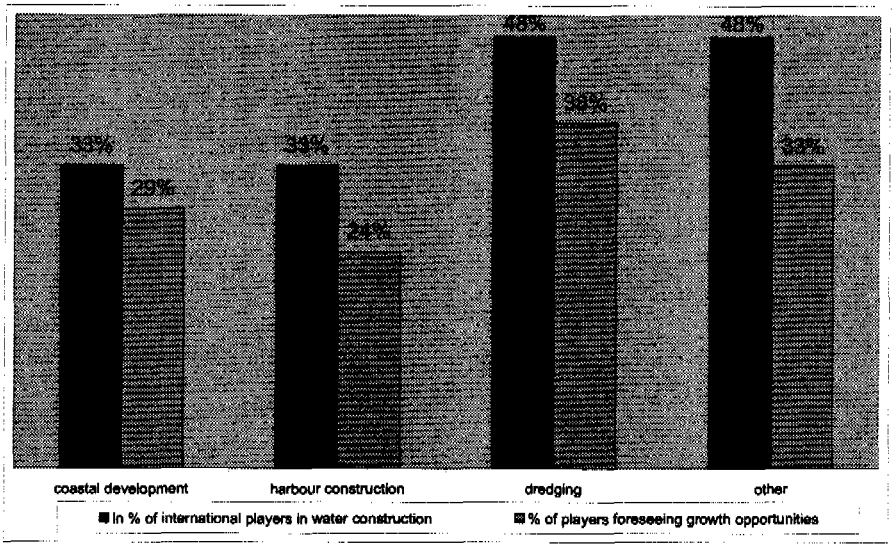
Figure 8.1 Export turnover broken down by sub segment (in € million) (n=15)



The export value is distributed almost equally over four sub segments: coastal development, harbour construction, dredging and other water construction activities. See Figure 8.1.

Activity intensity in each sub segment

Figure 8.2 Percentage of players active and foreseeing opportunities by sub segment (n=15)



Most players are active in dredging. This sub segment is mentioned by 56% of the companies that consider water construction their most important market in the water sector. 70% of these companies or 38% of all companies expect growth opportunities in this sub segment. The other sub segments present similar pictures.

Table 8.2 Development of the competitiveness of Dutch companies in water construction (n=11)

		1996	1997	1998
Turnover	Dutch companies	100	141	144
Employment	Dutch companies	100	108	116
Gross Margin	Dutch companies	3,4	4,8	5,3
Current ratio*	Dutch companies	1,5	1,5	1,4
Quick ratio**	Dutch companies	1,3	1,3	1,2

* current ratio is the quotient of current assets and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations (the higher the value, the better companies are able to do this)

**quick ratio is the quotient of current assets minus inventories and current liabilities. It indicates to what extent the companies are able to pay-off short-term obligations without relying on the sale of inventories (the higher the value, the better companies are able to do this)

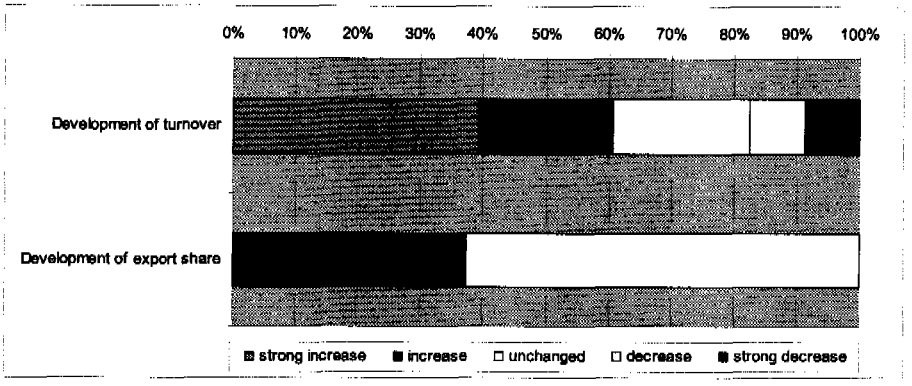
Source: Reach, Amadeus, EIM/DHV, 2001.

Although it was not possible to retrieve financial figures for the foreign competitors, an indication of the development of the international competitiveness of the Dutch water constructing companies can be derived from the following table 8.2.

In comparison with the other market segments, the high growth rate of turnover in this sub segment is notable. From 1996-1998 turnover increased by 44% against 35% in water supply, a 15% increase in wastewater and a 17% increase in water supply. The growth of employment, however, is more in line with the average development in the other segments. The gross margin in this market segment is more favourable than the margin in wastewater but less favourable than the margin in water supply.

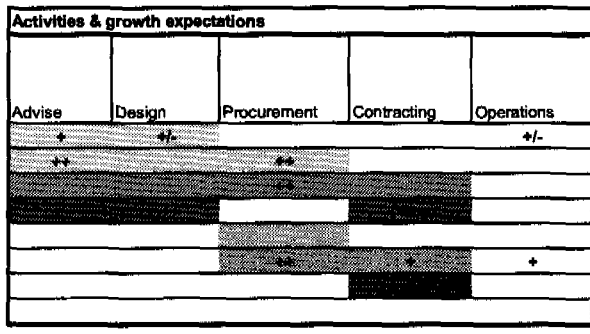
Development of turnover and export share

Figure 8.3 Development of turnover and export share in water construction during the last three years (n=17)



The strong growth of turnover during the 1996-1998 period has also been continued in the last three years. From figure 8.3 it appears that 40% of the companies in water construction have recorded a strong increase in turnover and another 20% an increase. At the same time the export shares have improved. Nearly 40% recorded a higher export share during this period, whereas this share remained unchanged for the rest of the companies.
From Figure 8.3 and the development of turnover as shown in table 8.2 it can be concluded that the water constructors have performed quite well, both in domestic and foreign markets.

Figure 8.4 Achievements and opportunities in the international market for water construction by type of Dutch player (n=21)



Activities & growth expectations					Achievements		
Advise	Design	Procurement	Contracting	Operations	Export turnover (in € million)	Average export turnover (in € million)	Growth of export share
+	+/-			+/-	16	1,5	+
++		++			4	0,3	=
					17	2,0	++
					518	30,9	++
					0	0,0	=
		++	+	+	23	2,7	
					1.222	146,8	
					0	0,0	
					0		
					1800	19,9	+

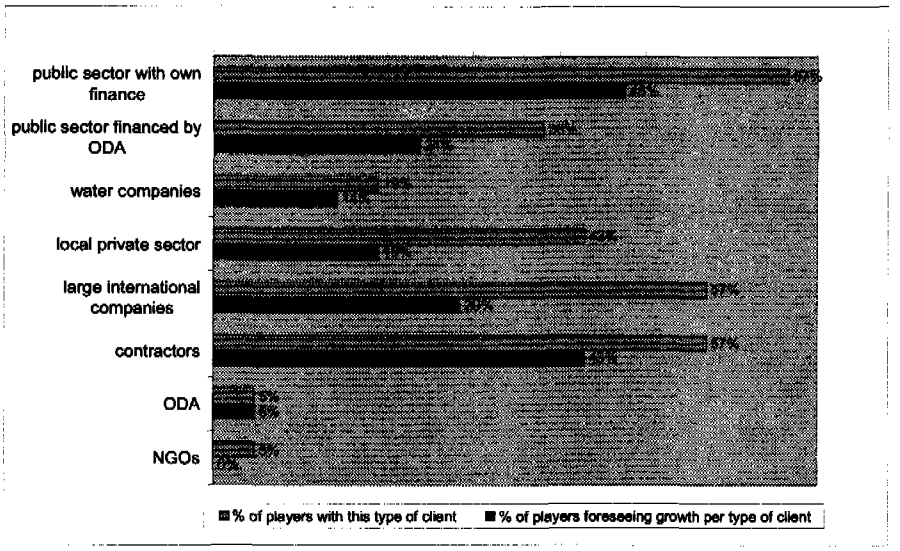
Figure 8.4 shows what export turnover has been realised by various types of players, what the development of their export share has been over the past three years and what their expectations are in various activity areas. The type of player is characterised by its focus on activity areas. The various types of players can be distinguished by the coloured cells in each row.

A few large contractors that account for 68% of total export turnover dominate the market. Players that combine contracting with consulting account for an other 28%. Together they control 96% of the Dutch export in this market and see their best growth opportunities again in contracting.

Other types of players are much smaller in size and export share. Consulting and procurement players are under developed in relation to the large contractors that are often their major clients in large projects.

Type of clients

Table 8.5 Type of clients and perceived growth opportunities (in % of the total number of respondents) (n=21)



The companies, that consider water construction their most important market in the water sector, supply their products and services to various parties but especially to the public sector with own finance (mentioned by 67% of the companies), to large international companies and to contractors (57%). According to most companies the public sector and contractors in particular are also interesting to realise further growth. See figure 8.5.

8.3 Perceived strengths, bottlenecks, threats and growth opportunities

Strengths and success factors perceived by Dutch players

The following strengths are mentioned:

- product characteristics (technology, expertise, capacity, wide product range, etc.) (68%)
- service characteristics (reliability, customer orientation) (16%)
- local network (16%)

The strengths are also considered success factors, which lead us to the conclusion that the companies are quite satisfied with their international performance.

Threats and bottlenecks perceived by Dutch players

International competition is the most important threat (mentioned by 60% of the companies), followed by the following elements:

- political/economic instability (13%)
- knowledge of local market (7%)
- no threats (20%)

Water construction companies are confronted with the following bottlenecks:

- lack of personnel/capacity (42%)
- financing (25%)
- complexity of markets and contracts (16%)
- no bottlenecks (16%)

Growth opportunities perceived by Dutch players

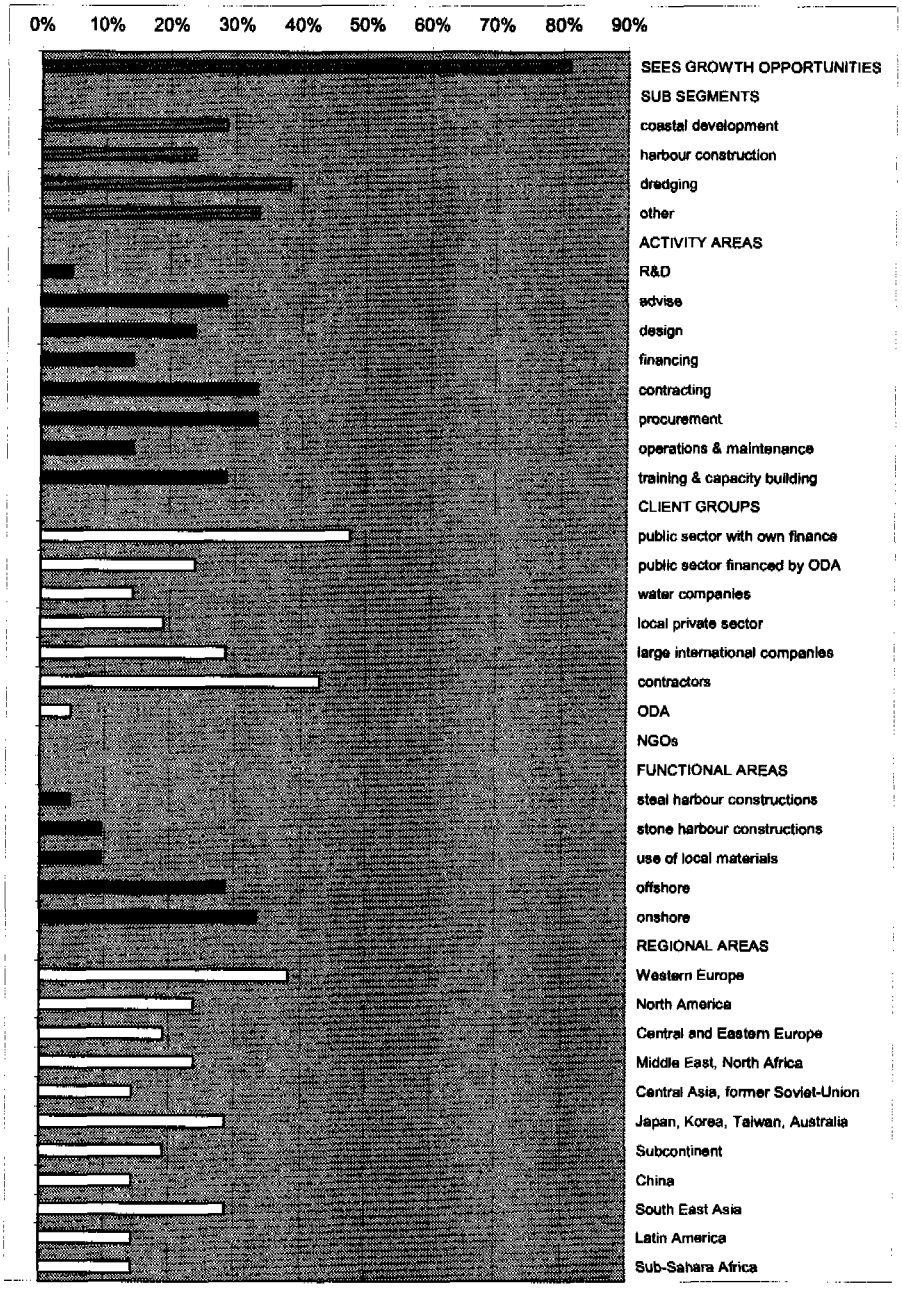
More than 80% of the water constructors see growth opportunities in this segment. The remaining 19% is not (yet) aware of any growth opportunities.

The growth opportunities in the international water construction market mentioned by the respondents can be categorized as follows:

- further penetration in current market(s) (mentioned by 75% of the companies)
- diversification (with current products/services entering new (geographical)markets (16%)
- foreign production facilities (8%)

Figure 8.6 offers the basis for a further analysis of the growth opportunities perceived by the respondents. Most growth opportunities in the international market are expected in dredging (mentioned by 38% of the players in water construction). Contracting and procurement are the activity areas mentioned most frequently with respect to growth opportunities. Greatest demand is expected from the public sector with own finance and from contractors. Growth opportunities are expected onshore and offshore (mentioned by 33% and 28% of the companies respectively). Western Europe is the most promising region for Dutch international activities in water construction (mentioned by nearly 40% of the companies). The more developed regions in Asia also have a relatively high growth potential.

Figure 8.6 Opportunity table (in % of players in water construction foreseeing growth opportunities in sub segments, client groups and specific activity, functional and regional areas, n=21



8.4 Overall SWOT-analysis

Table 8.3 Overall SWOT-analysis for water construction

% of players reporting growth	***% of players reporting decline***
• Export share: 38%	• Export share: 0%
• Turnover: 60%	• Turnover: 28%
Opportunities desk research	***Threats from desk research***
• Coastal development; land reclamation; harbour construction	
• Local private sector	• Local private developers
• Asia	• Closed markets (China, Japan, Korea)
Opportunities perceived (81% of players)	***Threats perceived***
• Dredging; coastal development; harbour construction	• Competition
• Public sector; contractors	• Political instability, war
• Contracting; procurement; training	• Slow down world trade
• Western Europe, Asia, North America	
• Penetration current markets	
• Current products; new markets	
Strengths	***Weaknesses/bottlenecks***
• Harbour construction, dredging	
• Client base public sector, contractors, international private sector	• Client base local private sector
• Local network	• Complex markets & contracts
• Co-op (int'l) companies satisfactory	
• Contracting	• Few integrated suppliers
• High export share of realisation	• Low export share of consulting
• Expertise	• Capacity
• Co-op knowledge inst. satisfactory	• Low co-op knowledge institutes
	• Financing
	• Export financing unsatisfactory
Success factors	
• Expertise	
• Co-operation with research/educational institutes	
• Integrated offers	
• Local partnerships	
• Market knowledge	
• Financing	

Performance

The Dutch players in water construction are performing well. Many of them have recorded a high growth of turnover in recent years and their export shares also developed well. The international position of the Dutch players was already strong and seems to have been further strengthened in recent years.

Strengths

The international market for water construction is dominated by a few large companies, of which some are based in the Netherlands. These large Dutch players are specialized in contracting, an activity area which explains the strong international position of the Netherlands. The Dutch contractors possess very specialized knowledge and expertise and are perfectly capable to manage large and often very difficult projects. Perhaps parties in other market segments such as water supply and wastewater could learn from the experience with large and complex projects.

The possession of local networks and satisfying co-operation with international companies are two prerequisites for successful contracting activities. These items are strong points of the Dutch players as well as a strong client base in the international public sector. A large number of Dutch players in water construction are suppliers of products and services of the large contractors and international private companies. Because of their specific knowledge and expertise they can be considered preferred suppliers of the large contractors.

Opportunities

The international Dutch players in water construction are very positive about their international growth opportunities. These opportunities will take place in the various sub segments of water construction, but especially in coastal development, land reclamation and in harbour construction. Demand for water construction activities is especially expected from the Far East in the coming years. In some countries the local private sector is becoming more important as a client group. Their expertise with large and complex projects in foreign markets may offer opportunities for contractors in other segments of the international water sector, for instance in water supply.

Weaknesses

The Dutch international players, however, do not seem to have a strong foothold in the local private sector of the demanding countries. Perhaps caused by the fact that many clients require the Dutch players to work with local suppliers of goods and services as far as possible, only a few integrated suppliers (covering the activity areas contracting, consulting and procurement). In addition, financing and the high complexity of markets and contracts seem to be problematic in this market segment as well as the inflexibility of the fleet capacity.

Threats

The strong international position of the Dutch players will be threatened when the Dutch parties would loose their current competitive advantages (specific expertise and know-how). In that case local demanders and especially private sector parties are likely to prefer the cheaper services and products from local private developers. Therefore, much attention and efforts should be addressed to R&D and co-operation with knowledge institutes in this respect. The co-operation degree with these institutes is relatively low at this moment. The dependence of many Dutch players in water construction on only a few Dutch international clients, could also be considered a threat. It is important for them to spread the risks of their activities by entering other markets or by offering more activities, such as offering consultancy services in addition to their realisation activities.

Actions

- Stimulate partnerships for more integrated offers
- Stimulate co-operation with knowledge institutes
- Extend the scope to other market segments
- Review and improve financing facilities

9 International opportunities for the Dutch water sector: conclusions and recommendations

9.1 Introduction

In this chapter the international opportunities for the Dutch water sector are further elaborated. In order to do so, three workshops were held in which there was a more detailed focus on some topics derived from the survey and the desk research. The workshops were used to formulate the actions in more detail and to group them around the most important conclusions of the SWOT-analyses of the various market segments. The first workshop focused on defining best opportunities and critical success factors for exporting companies. In the second workshop the focus was on specific problems and solutions for co-operation in integrated projects, i.e. DBOFT-projects and the third workshop was devoted to possible spin-offs from international consulting assignments to suppliers of goods and services. The outcome of the three workshops is given in some more detail in Annex 2. This chapter starts in 9.2 with some conclusions and recommendations following from the SWOT-analyses of the various market segments and from the outcome of the workshops.

From paragraph 9.3 on, actions to strengthen the international competitiveness of the Dutch water sector are formulated. These actions are structured around product/market-combinations (PMCs), which follow from the specific SWOT-analyses for each market segment. Specific actions are formulated for each PMC. With respect to these actions, however, it should be noted that these should be further elaborated for certain countries or regions.

9.2 Conclusions and recommendations

The Dutch presence in the foreign water sector can be increased by co-operation

The Dutch government aims to promote Dutch expertise and strengthen the Dutch presence in the foreign water sector, while contributing to global sustainable development. Therefore the international market share of the Dutch water sector (currently around 2%) should be increased. There is a potential of capacity and expertise to benefit from the increasing world demand, but for real growth of market share specific actions are needed to overcome the structural weaknesses of the sector. Amongst other things this implies joint efforts for creating scale and integrated solutions. This means that Dutch players should find beneficial forms of co-operation in order to become more competitive on a world scale instead of competing for each other's modest market shares.

Main trends: integration, private sector participation, increased complexity & scale

The world water market shows an enormous potential for growth, massive investments are needed to supply growing populations and industries, while still preventing water scarcity and maintaining the ecosystems. This creates a co-ordination problem and a funding problem of equally enormous dimensions. The management capacity and conventional funding sources of the public sector and ODA are deemed insufficient. Therefore participation of other parties is sought, from both private and public parties, to provide management capacity, know how and funding. All this leads to an increasing complexity of markets, projects and contracts and to a larger scale of projects to earn back increased development and transaction costs. Integration evolves as the major challenge: for public and private parties and funding mechanisms, of urban, industrial and agricultural users, of consulting, realisation, operating and funding and of present and future needs.

Opportunities

Growth sectors are urban and, to an even greater extent, industrial water supply & wastewater treatment to support growing populations and economies and water (resources) management to organise integration and maintain sources. In a general sense the main opportunity is to be found in large scale integrated projects, which solve technical, operational and/or financial problems in one strike and which have sufficient scale to earn back high development and transaction costs. This can occur in many different forms and varieties as regards to integration, according to the specific needs of different market segments. The irrigation & drainage market shows less promise for growth, but here also integration and privatisation offer opportunities.

Strength: technology & expertise based on "high quality domestic market"

Throughout all market segments strength is based on technology/expertise, a good local network and reputation or proven experience. The Dutch water sector clearly builds on quality and good relations and not on "hit and run". This position is based on the high-quality standards prevalent in the Dutch home market. Strength is closely related to expertise developed in the home market: high developed water management, large harbours, land reclamation and protection, water services to a sophisticated food and process industry and well developed drainage and irrigation systems (greenhouses). Strong activity areas vary largely per market-segment: procurement in water supply and wastewater, consulting in water (resources) management and irrigation & drainage and contracting in water construction.

Weaknesses: lack of scale, private sector participation and integration

There is a strange paradox: although the Dutch expertise is highly acknowledged in many fields, only in water construction this has resulted in a major share of the world market. In other sectors we are transferring a lot of know how, by capacity building and twinning projects, but we are failing to win the larger projects. In water construction large competitive players had a chance to develop because of innovative tendering of large projects by the Dutch government. Such players are missing in the other market segments, because public players not capable or willing to export and manage foreign risks dominate these segments. Now that the world market calls for large private players, which are capable of providing integrated solutions of sufficient scale, that tackle technical, operational as well as financial problems, the Dutch sector has no answer. There is only one private operator capable and willing to export. The result is a water sector, which consists mainly of smaller and specialised parties, with a limited capability to develop sufficient scale and integration. Insufficient economies of scale are generated to cope with the increasing complexity and scales of the world market.

Recommendations concentrate on major challenges for the Dutch water sector: co-operation, integration, financing, knowledge and private sector development

The major challenges in the Dutch water sector are the five elements co-operation, integration, financing, knowledge and private sector development. These elements are crucial for the strengthening of the international position of the Dutch water sector. In order to achieve results in each of these areas it is not only a matter of meeting the requirements of the players in the Dutch water sector. It is also the right attitude and willingness of all relevant parties to take their responsibility and to co-operate with each other. Support is especially necessary for the small and medium sized enterprises (SMEs) in developing know how and skills to meet these challenges and complexities. Most SMEs have the potential and are also willing to increase their export turnover by co-operating, but they simply lack the necessary information, scale and means. In addition, private players that are able to win larger international projects should be encouraged to apply for these projects. The recommendations formulated focus on stimulating private sector development, co-operation and integration, on the provision of new financial facilities and on the creation and dissemination of knowledge about new markets, financing facilities, complex contracts, etc. The recommendations are relevant for all Dutch players in the water sector. Due to the high relevance of these topics for SMEs, however, the recommendations are particularly relevant for this group.
Execution: task forces should be established co-ordinated by NWP with representatives of all relevant parties for the execution of individual recommendations. Special attention should be given to influencing the formulation of the new Dutch Government Act (Regeerakkoord) after the elections this year.

Recommendation: investigate private sector participation options for the Dutch water sector

The Dutch political climate adheres to public ownership of water infrastructure. Therefore we are lacking large private players willing and capable to export and win large international projects. Many options exist for the Dutch water sector combining public ownership with more involvement of private players in management, while maintaining high quality standards and security levels. These options deserve better and more in-depth research after their benefits to the Dutch water sector as regards to reducing costs and improving international competitiveness.

Recommendation: innovative tendering in domestic market, export finance and ODA

Dutch public parties may be more eager to apply for integrated projects of a relatively large scale. This may reduce costs for the public players and at the same stimulate innovation, integration, co-operation and scale for private suppliers. Public parties may follow the example of Harnaschpolder or of Rijkswaterstaat in relation to water construction in this respect.

Recommendation: review of export financing instruments

The existing instruments should be reviewed as regards to the requirements of the water market and possibilities to stimulate co-operation and integration. Specific instruments are needed to:

- cover high preparation and transaction costs for large (integrated) projects;
- reduce long term investment risks for large (integrated) projects for various parties involved (public as well as private).

Recommendation: pilot-project

More specifically a pilot-project should be formulated in for instance Eastern Europe in co-operation with the receiving government for an integrated project to be supported by Dutch export financing and/or development aid (for instance the PSO-programme) and to be tendered among Dutch players. Dutch players may associate with local players to reduce costs and stimulate local development.

Recommendation: strategic use of water(resources)management

Consulting players and institutions in water(resources)management and co-operation agreements in this field could pay more attention to stimulating integrated offers from the Dutch water sector and to involve more parties in activity areas of realisation and operations.

Recommendation: improve co-operation with knowledge institutes

The results indicate a strong relationship between export performance and co-operation with knowledge institutes. At the same time, co-operation with these institutes is considered unsatisfactory in most market segments and should be improved, since this co-operation is of crucial importance for maintaining competitive advantages in technology and expertise.

Recommendation: enlarge focus to regions across the Atlantic

The focus of the Dutch players is predominantly on Europe, Asia and Middle East. The important markets across the Atlantic (North America, Latin America) receive less attention although these markets also have a considerable size and offer growth opportunities in most segments. The fact that these markets have, to some extent developed into privatised and more competitive water markets may be a major cause.

Recommendation: support networking activities in the Dutch water sector

The importance of networking events was stressed in the workshops and the survey. Companies that are willing to perform better on export markets should have the opportunity – better than at this moment – to meet each other. This could be arranged through the organisation of workshops about specific themes, which have been mentioned bottlenecks in this study. In this respect the following themes can be mentioned:

- complex contracts and markets;
- country specific information;
- pro's and contra's of local production facilities;
- etc.

Facilitating networking activities will not only result in some practical tips about these themes, but also in better knowledge and understanding of each other's activities. This forms the basis for more co-operations in projects and for a further integration of Dutch activities. NWP may play a leading role in the organisation of such events, perhaps in co-operation with EVD and/or the chambers of commerce.

Recommendation: stimulate export clustering

In a further step also export clustering should be stimulated. Clusters are defined as networks of different types of companies, which create certain products or services by co-operating and exchanging knowledge with each other. The Dutch Ministry of Economic Affairs have gained experience with facilitating and stimulating innovative clustering activities in for example the multimedia cluster by using existing instruments. The focus in innovative clustering is on the development of new products or services. The proposed integrative approach for the Dutch water sector, however, can also be considered an innovative activity that can only be realised by co-operating and by exchanging knowledge. As a result, the Dutch Ministry of Economic Affairs could play an important role as a facilitator of clustering activities in the Dutch water sector, but cannot be expected to take the lead. The lead should be with a special task force co-ordinated by NWP.

Recommendation: tailor-made elaborated product-market combinations

Profiling the Dutch water sector is more than just drawing up a report with facts and figures about the sector. For the effective profiling of the sector more knowledge is necessary about specific market conditions or country specific needs before a concrete and proactive plan can be compiled for certain (geographical) markets. In other words, tailor-made plans are necessary in order to come to an effective market approach. For such plans the knowledge and skills of various parties involved (NWP, companies, embassies, EVD and chambers of commerce) should be exploited. The best way to come to an effective profiling and promotion of the Dutch water sector is by concentrating on certain promising product/market-combinations (PMCs), which follow from the specific SWOT-analyses for each market segment. In the following paragraphs some of these PMCs are further elaborated including the formulation of specific actions. For a country wise profiling and promotion of the Dutch water sector, however, the PMCs should be further elaborated for certain countries or regions. The SWOT-analyses made in this report are based on the opinions of the players in the Dutch water sector as well as on the outcome of desk research. Country specific needs, and specific market conditions, however, have not been studied. These will be the central issue of country studies to be executed after the completion of this study. In order to come to more detailed actions for a PMC in a certain country or region the entire spectrum of information is required, including country needs, specific market conditions and project characteristics.

9.3 PMC: large international projects in urban water supply

The Dutch water sector is almost completely absent from the international market for large urban water supply projects. As a consequence, the sector is missing a major growth market. The Dutch players lack sufficient scale to enter this market. The PMC formulated here is intended to take this hurdle and to create more scale.

Opportunity	**Strength/ weakness**	**Threats**	**Actions**
Urban WS: > € 50 million	-	Large international consortia	
client groups			
Public sector	+	Political instability Unprofessional client	
Activity areas			
Advice	-		
Design	+		
Procurement	++		
Contracting	+/-	Attraction other markets	
Operations	-	Regulation Dutch sector	Hire operator
Finance	+		
best regions			
Asia, North America, Latin America	-	Span of control	Broadening scope

Critical factors	**Strengths**	**Necessary actions**
Know how:		
Complex contracts	-	Innovative tendering by Dutch government
Technology	++	Maintain high quality standards Dutch water sector
Life-cycle costs	-	Create cost database, Learn from other sectors
Risk-management	-	
Co-op knowledge institutes	-	Task-force
Effective partnerships	+/-	Training/coaching Strategic use export financing instruments
Creating scale & power	-	Task forces, division of tasks
High development and transaction costs	-	Seed money, development fund
Risk reduction	+/-	Review export financing instruments
Professional client	+/-	Capacity building
Regulatory framework	+/-	Synergy with development aid

9.4 PMC: integrated offers in water(resources)management

Procurement and contracting are underdeveloped in water(resources)management. In addition, funding problems can be expected in the future creating a serious threat for Dutch players in this market segment. This PMC is intended to reap benefits from the strong international position of the Dutch consultants and public institutions and to use their expertise to obtain access to new financial sources including private financial sources. By integrating consulting, financing and procurement/contracting a higher turnover in realisation can be expected.

Opportunity	**Strength/ weakness**	**Threats**	**Actions**
Integrated offers	-	Large integrated suppliers	Stimulate integrated partnerships
client groups			
Public sector	+	Lack of funding	Taxation advise
activity areas			
Consulting	+		
Procurement	+		
Contracting	-		Learn from other segments
Financing	+/-		Create alternatives for ODA incl. private sources
Operations/training	-		Create lasting relationships
best regions			
Asia, Middle East, Latin-America, Africa	+/-		Select large government entities

Critical factors	**Strength**	**Actions**
Know how:		
Institutional development	++	From consultant to manager
Complex contracts	-	Innovative tendering by Dutch ODA/government
Public-private partnerships	+	Learn from other sectors
Total project-cycle	+/-	Stimulate know how exchange
Life-cycle costs / management	+/-	Alliance with Dutch public sector
Tax management	-	Alliance with Dutch public sector
Partnerships	-	Strategic use of export financing Improve co-op with foreign companies
Local network	+	Local partnerships
Service	+	Local partnerships
Financing	-	Review export financing instruments

9.5 PMC: Integrated procurement by small procurement players

The majority of the Dutch players belong to this category. Members of this group are successful in what they are doing. Their central focus is on the production of hardware that they extend with consulting and/or contracting services and perhaps sometimes also with training. In order to keep their competitive advantages (technological know-how and expertise) they should continuously try to improve and innovate their products and services. In addition, they should look for new geographical markets. Not only technological expertise is crucial for them to survive but also the possession of market knowledge and local networks. For some of them production in low wage countries has already or will become a necessary condition for their survival on the international playing field.

Opportunity	**Strength/ weakness**	**Threats**	**Actions**
Integrated procurement	++	Increasing scale of projects	
client groups			
Water companies	+	Privatisation	
Int'l & local private sector	+		
activity areas			
Design	+		
Procurement	+		
Contracting	+/-		
Maintenance	+		
best regions			
Middle East, Asia, North America, Latin America	+/-		Broadening regional scope

Critical factors	**Strength**	**Actions**
Know how:		
Complex markets	-	*Stimulate exchange of market knowledge*
Technology	+	Maintain high quality standards Dutch water sector
Local production	-	Workshop local production
Co-op. with other companies	+	
Co-op. with knowledge inst.	-	Stimulate co-operation with knowledge inst.
Local network	+	Government support (missions, embassies)
Service	+	
Financing	-	Review export financing instruments

9.6 PMC: full service for private parties in irrigation

The Dutch consultants and knowledge institutions (Wageningen University) have extensive know how about all aspects of irrigation and tropical agriculture, but they depend heavily on ODA and public sector demand. Privatisation is an important trend in irrigation, resulting in a shift in demand from the public sector to the private sector. An opportunity is to manage this process and to support these newly privatised parties by offering a full range of services, which includes service support, the delivery of equipment, financial arrangements and training.

Opportunity	**Strength/ weakness**	**Threats**	**Specific actions**
Full service private farmers	-	Market disturbance by subsidies	
client groups			
Privatised farmers	-		
activity areas			
Consulting	++		
Procurement	+/-		
Contracting	+		
Financing	+		Involve commercial banks
Maintenance	+/-		Establish local service organisation
best regions			
Asia, Africa, Middle East, Latin America	+/-		

Critical factors	**Strength**	**Necessary actions**
Know how:		
Training	++	
Small business support	+	Innovative tendering by Dutch ODA/government
Service	+	From consultant to manager
Operational lease	+	Involve financial sector
Agricultural productivity	++	Alliance with Dutch public sector
Efficient irrigation	+	Involve equipment suppliers
Partnerships	-	Strategic use of export financing Improve co-op capabilities
Local network	+	
Service	+	Establish local partnerships for service
Financing	-	Combine commercial financing with ODA

9.7 PMC: urban wastewater and its re-use

Urban wastewater has to cope with a major funding problem to finance sewerage system and treatment facilities. However, if treated wastewater can be re-used for other purposes economic value is created, and as a result also the funding for the treatment. Offering complete and innovative solutions including the water chain approach may present an opportunity for the Dutch players by creating a new market and solving the funding problem at the same time.

Opportunity	**Strength/ weakness**	**Threats**	**Actions**
Re-use urban wastewater for irrigation	-	Lack of environmental concern	Co-ordination with ODA-programs
client groups			
Public sector & farmers	+/-		
activity areas			
Advise	-		
Design	+		
Procurement	++		
Contracting	+/-		
Operations	-	Regulation Dutch sector	Hire operator
Finance	+		
best regions			
Asia, Middle East, Latin America, Africa	-	Span of control	Broadening scope

Critical factors	**Strengths**	**Actions**
know how:		
Agriculture/Irrigation	+	Combine wastewater with irrigation or create other innovative solutions/apply water chain approach
Complex contracts	-	Innovative tendering by Dutch government
Advanced treatment	++	Maintain high quality standards Dutch water sector
Life-cycle costs	-	Alliance with Dutch public operators
Risk-management	-	Learn from other sectors
Co-op knowledge institutes	-	Task-force
Effective partnerships	+/-	Training/coaching Strategic use export financing instruments
High development and transaction costs	-	Seed money, development fund
Risk reduction	+/-	Review export financing instruments
Professional clients	+/-	Capacity building
Regulatory framework	+/-	Synergy with ODA

Annex I Methodology

Extensive desk research was carried out to assess the trends and developments in the international water sector. Mason's Water Yearbook 2000-2001 is an important source in this respect together with the World Water Vision 2025 and the UNFPA.

For the quantification and qualification of the Dutch water sector 210 companies and other players were interviewed by telephone and 20 companies filled out a written questionnaire. For the telephone interviews a dataset was built from various sources:

- the membership list of Netherlands Water Partnership
- a list of companies in the publication 'Waterbranche, 2000-2001' by Nijgh Periodieken
- the Aquatech Catalogue of Amsterdam 2000
- the membership list of the Association of Suppliers of Environmental Equipment and Technology, the Netherlands (VLM)
- the membership list of Aqua Nederland
- the membership list of the VBKO (Dutch trade organisation for water construction companies)
- the membership list of NEDECO

Based on these lists the number of companies and institutions that are at least partly active in the Dutch water sector was estimated at 820. With a total response of 230, 28% of all these parties were contacted. This high share leads to reliable figures for the sector.

Data of 167 companies were available to assess the financial figure for the water sector. When making this assessment a special procedure was followed, combining the survey results with figures taken from other sources such as figures concerning the water companies taken from CBS, figures concerning the water construction sector taken from the annual report of the VBKO and figures concerning the large internationally operating consultants taken from NEDECO and from the studies 'Raadgevende ingenieursbureus in de veranderende watersector' and 'Ingenieursbureaus, succesvolle veranderingsstrategieën'.

The following groups were dealt with separately in the assessment:

- large internationally operating consultants
- water companies
- water construction companies
- NGOs
- NWP member companies with the exception of NGOs and water companies
- other companies

When looking at the breakdown of total turnover over the market segments it is necessary to realise that the respondents were asked to divide their turnover over the segments. For water construction, the result is that the total turnover in this sector exceeds the turnover estimated by the VBKO.

In order to learn more about the various export markets, the respondents were asked for their most important export market and answered questions about this market only. The methodology followed has resulted in the fact that for some export markets the number of observations is too low for any hard figures. Instead estimates are provided for these export markets.

Annex II Outcome of the workshops

Workshop 1: exporting companies

Participants were selected from 4 exporting companies, an exporting consultant, a chamber of commerce and the export promotion agency from the State Department of Economic Affairs. The workshop started by investigating the relationships of companies related to export transactions, in The Netherlands as well as in the export markets. Table shows an overview of those relationships.

Table II.1 Overview of the most important export relationships and their valuation

Export relationships	Netherlands		Export markets	
	importance	valuation	importance	valuation
Subcontractor / supplier	•	+	•	+
Main contractor / main supplier		+	•	=
Equal partner		-		-
Consultant		+	•	+
Agent		++	•	=
Trade organization		-		-
Chamber of commerce		+	•	--
Export promotion agency (EVD)		+		=
Embassy	•	-	•	-
Government		+	•	-
Knowledge institute		-		-

It appears that, in The Netherlands, relationships with intermediaries like the chamber of commerce, trade organisations and EVD, play a relatively limited role, with exception of the foreign embassy. It must be noted though that contacting the embassy may be obligatory for administrative formalities. Equal partnerships are also underdeveloped compared to contracting relationships. Consulting services are most sought for in the export markets.

It appears that the relationships are focussed on the export market with local parties. This applies to both contracting relationships and relationships with intermediaries and consultants. The home base in the Netherlands is used mainly for finding sub-contractors and contacting the foreign or Dutch embassy. Apparently the contact frequency has no direct relation with the valuation of the quality of the relationship as next table shows.

Dutch chambers of commerce and the EVD are not frequently contacted for export transactions, but the valuation is above average. The Dutch government also receives a positive rating. The low rating of equal partnerships obviously holds a mirror in front of the same parties that issued the rating. Trade organisations, knowledge institutes and the embassies are valued below average when it comes to export transactions. This may seem unfair since it is obviously not always their first priority to support (individual) export transaction. Still, it may be worthwhile investigating the abilities and restraints of these parties more closely with an eye to their possible role and value in the exporting network.

The next step was to define and formulate specific opportunities and actions as regards improving performance on the export markets. All mentioned opportunities and actions were grouped and prioritised by individual voting as follows:

- Integrated offer (partnerships)
- Local production
- Current product, new markets

- Penetration of current markets
- Knowledge transfer
- Innovation
- Joint promotion
- Free-ride
- *Legislation*

The critical success factors for establishing successful partnerships for integrated offers were *formulated as follows:*

- Mutual trust;
- Transparency as regards ambitions, interests and roles;
- Careful co-ordination of partnering process;
- Equal balance of power between participants.

In addition participants stressed the importance of networking events where potential parties can meet. Companies that are willing to perform better on export markets should have the opportunity – better than at this moment – to meet each other.

Workshop 2: the under representation of the Dutch water sector in the international market for large DBOFT-projects

The most important objective of the workshop was to find and elaborate the causes of the under representation of the Dutch water sector in the international market for large DBOFT-projects. The objective of the workshop was in line with the findings of the survey that actions should be directed towards the stimulation of partnerships and to a lesser extent also towards the solving of financial obstacles. The participants in the workshop came from companies, the banking sector and trade organisations.

In the workshop the following reasons for the under representation of the Dutch water sector were mentioned (ranked in order of importance):

- (Unfavourable) objectives of the Dutch operators
- (Unfavourable) Dutch legislation and political climate
- (Lack of) Knowledge and expertise
- (Other) strategic priorities of Dutch companies
- (Lack of) government support
- (Lack of) financial and risk reduction facilities
- (Lack of) good co-operation
- (Relatively low level of) competitiveness

1. *(Unfavourable) objectives and scale of the Dutch operators.*

This item addresses the lack of scale and ability and/or willingness of most Dutch operators to invest in foreign projects.

2. *(Unfavourable) Dutch legislation and political climate.*

New (proposed) legislation for the Dutch water-sector will limit domestic water-provision to publicly owned operators. Even the option of separating public ownership from private management has expressly been rejected by the Dutch government. This policy is restraining the development of Dutch private operators, which could expand into foreign markets and is jeopardising the development of the first large private operator to evolve from the Dutch water sector, NUON.

3. *(Lack of) Knowledge and expertise.*

The Dutch water sector has limited experience in a private sector approach to water services and limited experience in international projects that include operations. The problem comprises the lack of hands-on experience as well as the missing track record and project-references.

4. *(Other) strategic priorities of Dutch companies.*

Apparently, the strategic priority of Dutch players in the water sector is directed to other type of projects, which do not involve DBOFT-approaches.

5. *(Lack of) government support.*

This addresses the lack of acknowledgement by the government of the needs and potential of the Dutch water sector in foreign markets, especially in emerging markets and developing countries. More synergy could be created between the expertise and potential of the Dutch water-sector and foreign aid objectives. (Synergy here is not to be confused with "tied aid").

6. *(Lack of) financial and risk reduction facilities*

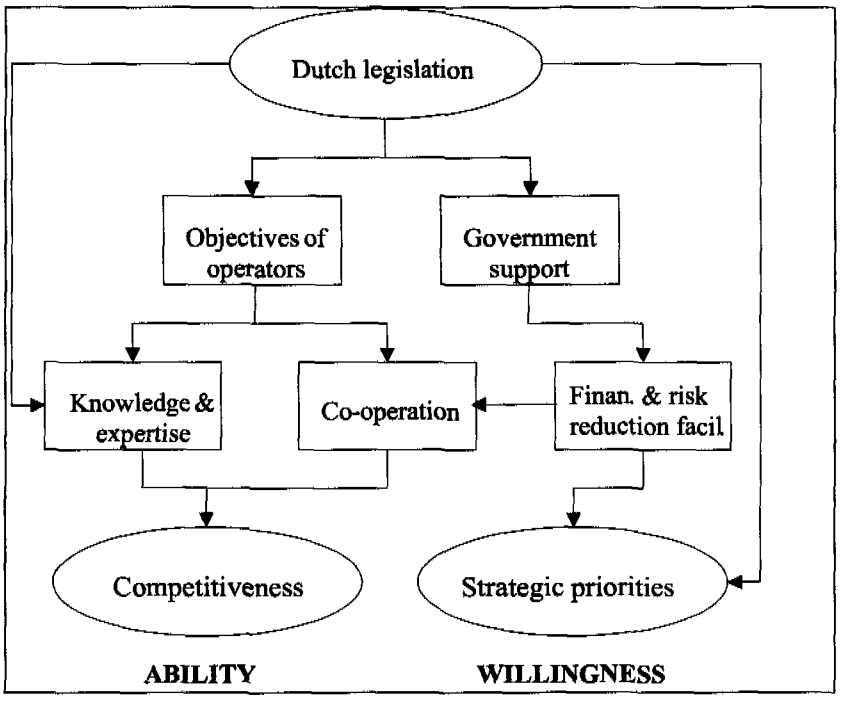
This item indicates the absence of specific financial and risk reduction facilities for the water sector as well as the lack of knowledge about the financial and risk reduction facilities that do exist.

7. *(Lack of) co-operation*
This has to do with the problems that Dutch players seem to encounter in establishing consortia that cover the whole DBOFT-cycle.

8. *(Relatively low level of) competitiveness*
At this moment the Dutch sector cannot compete with the French, UK, German parties and US when it comes to integrated projects. Foreign players dominate the current tender for a large wastewater treatment DBOFT-project in Harnaschpolder.

In the workshop the causal relationships between these factors were investigated. In figure II.1 these relationships are visualised. It was asked to what extent the various factors were influenced by each other. The respondents had the opportunity for each factor to divide the causality over the other factors. Where there was a lack of any causal relationships, the respondents had the opportunity to address the full causality to the factor itself. Dutch legislation & political climate, for instance, appeared to be the factor with the lowest degree of causality with other factors. It was concluded that this factor stands alone and cannot be easily influenced by the other factors. In the case of the objectives of operators, however, a strong causal relationship appeared with Dutch legislation.

Figure II.1 Causalities between the factors mentioned as causes of the under presentation of the Dutch water sector in international DBOFT-projects



In the figure only the major causal links between the factors are presented. It appears that the relatively autonomous factor 'Dutch legislation' strongly influences the objectives of the operators. This, in turn, explains the lack of knowledge and expertise and the lack of co-operation in the international DBOFT-market. The lack of co-operation is also influenced by the lack of sufficient financial and risk reduction facilities. The lack of knowledge & expertise and the lack of co-operation are the most important factors explaining the relatively low level of competitiveness of the Dutch water sector in this market. These elements, in particular,

influence the ability of the Dutch water sector to enhance its international position in this market. In the workshop it appeared that not only the ability of the Dutch companies is important but also their willingness to enhance their international competitiveness. Dutch companies attach a relatively low priority to the DBOFT-market if the obstacles are too high and other market opportunities are easier to attain. According to the figure, the relatively low strategic priorities attached to the international DBOFT-market can be explained largely by the lack of financial and risk reduction facilities and by Dutch legislation.

Workshop 3: spin-off of international consulting activities

The main objective of the third workshop was to find the causes of the fact that the international activities of Dutch consultants rarely lead to a follow-up for Dutch suppliers of equipment and systems. In addition to consultants, representatives from intermediate organisations, knowledge institutes and trade organisations participated in the workshop. The causes mentioned have been categorised and prioritised as following:

- supplier related causes often dealing with the lack of knowledge of markets and other strategic priorities;
- different interests dealing with the different perspectives of suppliers and consultants, different ways of achieving businesses, etc.
- information problem, for instance the lack of information about each others activities and about a lack of communication between the suppliers and consultants;
- supply side, including the highly fragmented character of the Dutch supply side
- consultancy related causes, such as their desire to co-operate with experienced parties.

Consultants seem to be aware of the fact that more and more parties are shifting towards the realisation activities in the project cycle (contracting and the delivery of products and consultancy services). As a consequence, there is a growing need for them to offer equipment and co-operate with the suppliers of equipment. At the same time, suppliers of hardware are also shifting more and more towards the realisation activities and are offering consultancy services to a growing extent. This shift of both parties towards the realisation activities could imply opportunities for a further strengthening of the Dutch water sector if Dutch suppliers are more willing and able to form partnerships with consultants and the other way around.

Benefiting from the increasing role of consultants

The most important conclusion of the workshop is that, although having different perspectives, consultants are aware of the fact that more and more parties are shifting towards the realisation activities in the project cycle (contracting and the delivery of products and consultancy services). As a consequence, there is a growing need for them to offer equipment and co-operate with the suppliers of equipment. At the same time, suppliers of hardware are also shifting more and more towards realisation activities and are offering consultancy services to a growing extent. This shift of both parties towards the realisation activities could imply opportunities for a further strengthening of the Dutch water sector if Dutch suppliers are more willing and able to form partnerships with consultants and the other way around. In this context, the workshop has resulted in the following actions:

- Informing consultants and equipment suppliers about each other's activities and about the concrete possibilities of joining forces. This could include making win-wins more transparent, creating a team spirit, stimulating an open attitude and strategic thinking. NWP and the chambers of commerce could facilitate this, for instance by organising workshops about these examples and/or about themes which have the specific interest of both parties;
- Informing all parties about planned projects, foreign missions, and tenders and about the contractors, the status of the tender projects, etc. Such information could be provided on the NWP website;
- Facilitate the circulation of knowledge between consultants and suppliers, for instance by creating a web community;
- Encourage consultants to become involved in the training of suppliers (for example in the Foundation for Water courses).