# *Tables*

**Table S1: Caractéristique du Projet Préliminaire du Système d'Approvisionnement en Eau de Petite Taille**

| Item | Unit | N'Fifikh | Taskourt | | |
|---|---|---|---|---|---|
| Village | | Tlet Ziaida | Dar Akimakh | Tamatoust | Tiguemi Oumrhar |
| Commune | | Ziaida | Assif El Mal | Mzouda | Mzouda |
| Population | person | | | | |
| 1994 | | 824 | 575 | 549 | 539 |
| 2000 | | 1120 | 760 | (292) | 552 |
| 2020 | | 1300 | 900 | 700 | 700 |
| Consumption | | | | | |
| Daily | $m^3$/day | 26 | 18 | 14 | 14 |
| Annual | $m^3$/year | 9,490 | 6,570 | 5,110 | 5,110 |
| Water Source | | N'Fifikh River | Seguia Tadraouit | Seguia Tamatoust | Seguia Taourdast |
| Reservoir Volume | $m^3$ | 26 | 18 | 14 | 14 |
| Number of Stand Pipes | nos | 4 | 3 | 3 | 3 |
| Project Cost | mil DH | 1.80 | 1.20 | 0.90 | 0.90 |

# Table S2: Caractéristiques Principales de No.5 N'Fifikh

| Description | | | Remark |
|---|---|---|---|
| **A. Dam** | | | |
| **1 General** | | | |
| Province | | Ben Slimane | |
| River | | Oued Daliya | |
| Coordinate of dam site | Xl1 | 345,640 | Location: direct distance 25km from Ben Slimane |
| | Yl1 | 311,800 | |
| | Xr2 | 345,700 | |
| | Yr2 | 312,200 | |
| **2 Hydrology** | | | |
| Catchment area | km2 | 323.00 | |
| Annual mean rainfall | mm | 323.00 | |
| Annual mean run-off | Mm3 | 13.32 | |
| **3 Reservoir** | | | |
| Gross storage | m3 | 19,200,000.00 | |
| Effective storage | m3 | 17,700,000.00 | |
| Dead storage | m3 | 1,500,000.00 | 30,000m3/yr. x 50yrs |
| Reservoir surface area | ha | 173.60 | |
| Elevation of flood water level (FWL) | m | 248.64 | Hd=3.64m |
| Elevation of normal water level (NWL) | m | 245.00 | |
| Elevation of low water level (LWL) | m | 225.50 | |
| **4 Dam Body** | | | |
| Geology of foundation | | Alternation of sandstone & Pelitic stone (Devonian to Carboniferous) | |
| Type of dam | | Center-cored rock fill | |
| Elevation of dam crest | EL | 251.50 | Freeboard above FWL 2.86 |
| Elevation of dam foundation | EL | 204.00 | above NWL 6.50 |
| Height from proposed foundation | m | 47.50 | |
| Length of dam crest | m | 325.00 | |
| Upstream slope | | 1:2.50 | |
| Downstream slope | | 1:2.00 | |
| Width of dam crest | m | 6.00 | |
| Seismic intensity | | 0.10 | (100yr.acceleration=42gal) |
| Embankment quantity (total) | m3 | 678,400.00 | |
| Core | m3 | 142,500.00 | |
| Filter & drain + Gravel, rock | m3 | 515,600.00 | |
| Rip rap | m3 | 20,300.00 | |
| **5 Spillway** | | | |
| Location | | Right bank | |
| Geology of foundation | | Sandstone & Pelitic stone of CL-CM | |
| Design inflow discharge (10,000yr) | m3/s | 1,800.00 | |
| Design outflow discharge(10,000yr) | m3/s | 1,668.00 | |
| Type of weir | | Non gated side channal | |
| Weir length /width | | 120m x 25m | |
| Design overflow depth | m | 3.64 | |
| Type of stilling basin | | Hydraulic jump type | |
| **6 Intake/Outlet** | | | |
| Type | | Inclined conduit | |
| | | D600mm slide gate x 2 | |
| Intake location | | Left bank | |
| Capacity | m3/s | 1.61 | |
| Outlet pipe | | D1000mm x 270m | |
| Discharge control valve | | D1000mmJFG | |
| Raw water facilities | | D300mm pipe and D300 sluice valve | |
| **7 Diversion** | | | |
| Type | | Cofferdam/Culvert | |
| Design inflow discharge(20yr/50yr) | m3/s | 250.0/380.0 | |
| Design outflow discharge(20yr/50yr) | m3/s | 236.1/271.0 | |
| Cofferdam crest elevation | m | 226.50 | |
| Upstream water level(20yr/50yr) | m | 221.1/226.2 | |
| Culvert location | | Left abutment | |
| Culvert section/length | | 5m x 5m / 300m | |
| **8 Dam Construction Cost** | | | |
| 1.Direct cost | | | |
| 1.1 Diversion works | MDH | 18.07 | |
| 1.2 Foundation excavation | MDH | 7.65 | |
| 1.3 Foundation treatment | MDH | 3.56 | |
| 1.4 Dam embankment | MDH | 11.56 | |
| 1.5 Spill way | MDH | 70.49 | |
| 1.6 Intake works | MDH | 3.66 | |
| 1.7 Gate and pipe | MDH | 8.56 | |
| 1.8Overhed and profit of contractor | MDH | 19.60 | |
| Sub-total | MDH | 143.15 | |
| 2.Physical contingency | MDH | 14.32 | |
| 3.Price contingency | MDH | 36.20 | |
| Total | MDH | 193.67 | |
| 4.Value added tax(14%) | MDH | 27.11 | |
| Ground total | MDH | 220.70 | 325 DH/m3 |
| **B. Irrigation** | | | |
| **9 Service Area** | | | |
| Service area (Net) | ha | 1,000.00 | |
| **10 Irrigation Construction Cost** | | | |
| 1.Direct cost | | | |
| 1.1 Main canal | MDH | 12.82 | |
| 1.2 Structures | MDH | 21.29 | |
| 1.3Overhed and profit of contractor | MDH | 2.39 | |
| Sub-total | MDH | 36.50 | |
| 2.Physical contingency | MDH | 3.65 | |
| 3.Price contingency | MDH | 9.23 | |
| Total | MDH | 49.38 | |
| 4.Value added tax(14%) | MDH | 6.91 | |
| Ground total | MDH | 56.30 | 56,300 DH/ha |

# Table S3: Caractéristiques Principales de No.9 Taskourt

| Description | | | Remark |
|---|---|---|---|
| **A. Dam** | | | |
| **1 General** | | | |
| Province | | Marrakech | |
| River | | Oued Al Mal | |
| Coordinate of dam site | Xl1 | 206,800.00 | Location: sidi Bou Othmane |
| | Yl1 | 69,900.00 | |
| | Xr2 | 206,900.00 | |
| | Yr2 | 69,600.00 | |
| **2 Hydrology** | | | |
| Catchment area | km2 | 419.00 | |
| Annual mean rainfall | mm | 366.00 | |
| Annual mean run-off | Mm3 | 44.65 | |
| **3 Reservoir** | | | |
| Gross storage | m3 | 25,100,000.00 | |
| Effective storage | m3 | 19,100,000.00 | |
| Dead storage | m3 | 6,000,000.00 | 120,000m3/yr. x 50yrs |
| Reservoir surface area | ha | 124.73 | |
| Elevation of flood water level (FWL) | m | 998.95 | Hd=3.95m |
| Elevation of normal water level (NWL) | m | 995.00 | |
| Elevation of low water level (LWL) | m | 973.00 | |
| **4 Dam Body** | | | |
| Geology of foundation | | Schist | (Ordovician) |
| Type of dam | | Concrete gravity by RCC | |
| Elevation of dam crest | EL | 1,000.50 | Freeboard above FWL 1.55 |
| Elevation of dam foundation | EL | 927.00 | above NWL 5.50 |
| Height from proposed foundation | m | 73.50 | |
| Length of dam crest | m | 225.00 | |
| Upstream slope | | 1:0.20 | |
| Downstream slope | | 1:0.84 | |
| Width of dam crest | m | 5.00 | |
| Seismic intensity | | 0.12 | (100yr.acceleration=102gal) |
| Dam concrete quantity (total) | m3 | 415,000.00 | |
| Conventional concrete | m3 | 100,300.00 | |
| RCC concrete | m3 | 314,700.00 | |
| **5 Spillway** | | | |
| Location | | Center of dam body | |
| Geology of foundation | | Schist | |
| Design inflow discharge(1,000yr/10,000yr) | m3/s | 1,700/2,300 | |
| Design outflow discharge(1,000yr/10,000yr) | m3/s | 1,569/2,138 | |
| Type of weir | | Non gate straight crest | |
| Weir length and width | | 100m x 80m | |
| Design overflow depth(1,000yr/10,000yr) | m | 3.95/4.85 | |
| Type of stilling basin | | Hydraulic jump type | |
| **6 Intake/Outlet** | | | |
| Type | | Intake tower | |
| | | W2.5XH3.0m slide gate x 2 | |
| Intake location | | Right side of dam body | |
| Capacity | m3/s | 6.76 | |
| Outlet pipe | | D2000mm x 125 m | |
| Discharge control valve | | D2000mm JFG | |
| Raw water facilities | | D300mm pipe and D300 sluice valve | |
| **7 Diversion** | | | |
| Type | | Cofferdam/Buried culvert | |
| Design inflow discharge(10yr/20yr) | m3/s | 400.0/600.0 | |
| Design outflow discharge(10yr/20yr) | m3/s | 339.7/474.2 | |
| Cofferdam crest elevation | m | 962.50 | |
| Upstream water level(10yr/20yr) | m | 955.4/962.3 | |
| Culvert location | | Right side of river | |
| Culvert section/length | | 7.2m x 7.2m/270m | |
| **8 Dam Construction Cost** | | | |
| 1.Direct cost | | | |
| 1.1 Diversion works | MDH | 5.21 | |
| 1.2 Foundation excavation | MDH | 17.22 | |
| 1.3 Foundation treatment | MDH | 9.69 | |
| 1.4 Dam embankment | MDH | 175.85 | |
| 1.5 Spill way | MDH | 2.05 | |
| 1.6 Intake works | MDH | 2.41 | |
| 1.7 Gate and pipe | MDH | 12.40 | |
| 1.8Overhed and profit of contractor | MDH | 50.55 | |
| Sub-total | MDH | 275.38 | |
| 2.Physical contingency | MDH | 27.54 | |
| 3.Price contingency | MDH | 69.63 | |
| Total | MDH | 372.55 | |
| 4.Value added tax(14%) | MDH | 52.16 | |
| Ground total | MDH | 424.60 | 1023 DH/m3 |
| **B. Irrigation** | | | |
| **9 Service Area** | | | |
| Service area (Net) | ha | 4,500 | |
| **10 Irrigation Construction Cost** | | | |
| 1.Direct cost | | | |
| 1.1 Main canal | MDH | 38.55 | |
| 1.2 Structures | MDH | 84.54 | |
| 1.3Overhed and profit of contractor | MDH | 8.62 | |
| Sub-total | MDH | 131.71 | |
| 2.Physical contingency | MDH | 13.17 | |
| 3.Price contingency | MDH | 33.32 | |
| Total | MDH | 178.20 | |
| 4.Value added tax(14%) | MDH | 24.94 | |
| Ground total | MDH | 203.10 | 45,100 DH/ha |

# Table S4: Caractéristiques Principales de No.10 Timkit

| Description | | | | Remark |
|---|---|---|---|---|
| **A. Dam** | | | | |
| **1 General** | | | | |
| Province | | Errachidia | | |
| River | | Assif N'ifer | | |
| Coordinate of dam site | Xr1 | 507,335.00 | Location: Tinjdid | |
| | Yr1 | 515,200.00 | | |
| | Xl2 | 507,550.00 | | |
| | Yl2 | 515,500.00 | | |
| **2 Hydrology** | | | | |
| Catchment area | km2 | 572.00 | | |
| Annual mean rainfall | mm | 186.00 | | |
| Annual mean run-off | Mm3 | 10.11 | | |
| **3 Reservoir** | | | | |
| Gross storage | m3 | 27,500,000.00 | | |
| Flood storage | m3 | 20,000,000.00 | | |
| Effective storage | m3 | 3,500,000.00 | | |
| Dead storage | m3 | 4,000,000.00 | 200,000m3/yr. x 20yrs | |
| Reservoir surface area | ha | 172.50 | | |
| Elevation of flood water level (FWL) | m | 1,258.12 | Hd=2.32m | |
| Elevation of surcharge water level (SWL) | m | 1,255.80 | | |
| Elevation of normal water level (NWL) | m | 1,245.00 | | |
| Elevation of low water level (LWL) | m | 1,240.30 | | |
| **4 Dam Body** | | | | |
| Geology of foundation | | Limestone | (Lower Jurassic) | |
| Type of dam | | Concrete gravity by RCC | | |
| Elevation of dam crest | EL | 1,259.50 | Freeboard above FWL | 1.38 |
| Elevation of dam foundation | EL | 1,195.00 | above NWL | 14.50 |
| Height from proposed foundation | m | 64.50 | | |
| Length of dam crest | m | 210.00 | | |
| Upstream slope | | 1:0.20 | | |
| Downstream slope | | 1:0.86 | | |
| Width of dam crest | m | 5.00 | | |
| Seismic intensity | | 0.10 | (100yr.acceleration=88gal) | |
| Dam concrete quantity (total) | m3 | 227,600.00 | | |
| Conventional concrete | m3 | 44,900.00 | | |
| RCC concrete | m3 | 182,700.00 | | |
| **5 Spillway** | | | | |
| Location | | Center of dam body | | |
| Geology of foundation | | Limestone | | |
| Design inflow discharge(1,000yr/10,000yr) | m3/s | 2,000/2,800 | | |
| Design outflow discharge(1,000yr/10,000yr) | m3/s | 426/826 | | |
| Type of weir | | Non gate straight crest | | |
| Weir length | m | 60.00 | | |
| Design overflow depth(1,000yr/10,000yr) | m | 2.32/3.61 | | |
| Type of stilling basin | | Hydraulic jump type | | |
| **6 Intake/Outlet** | | | | |
| Type | | Intake tower | | |
| | | D400mm slide gate x 1 | | |
| Intake location | | Right side of dam body | | |
| Capacity | m3/s | 0.45 | | |
| Outlet pipe | | D600 mm x 60 m | | |
| Discharge control valve | | D300mmJFG | | |
| Flood control gate | | 4m x 4m slide gate and pressure conduit | | |
| Raw water facilities | | D400mm pipe and D400 sluice valve | | |
| Sediment flush pipe | | D800mm | | |
| **7 Diversion** | | | | |
| Type | | Cofferdam/Buried culvert | | |
| Design inflow discharge(10yr/20yr) | m3/s | 300.0/500.0 | | |
| Design outflow discharge | m3/s | 300.0/348.4 | | |
| Cofferdam crest elevation | m | 1,230.50 | | |
| Upstream water level | m | 1,217.8/1,230.2 | | |
| Culvert location | | Left side of river | | |
| Culvert section/length | | 6.0mm x 6.00mm/200m | | |
| **8 Dam Construction Cost** | | | | |
| 1.Direct cost | | | | |
| 1.1 Diversion works | MDH | 3.32 | | |
| 1.2 Foundation excavation | MDH | 10.50 | | |
| 1.3 Foundation treatment | MDH | 17.67 | | |
| 1.4 Dam embankment | MDH | 85.70 | | |
| 1.5 Spill way | MDH | 0.99 | | |
| 1.6 Intake works | MDH | 0.59 | | |
| 1.7 Gate and pipe | MDH | 3.44 | | |
| 1.8 Sabo dam works | MDH | 18.86 | | |
| 1.9 Overhead and profit of contractor | MDH | 21.31 | | |
| Sub-total | MDH | 162.38 | | |
| 2.Physical contingency | MDH | 16.24 | | |
| 3.Price contingency | MDH | 41.06 | | |
| Total | MDH | 219.68 | | |
| 4.Value added tax(14%) | MDH | 30.75 | | |
| Ground total | MDH | 250.30 | 1,100 DH/m3 | |
| **B. Irrigation** | | | | |
| **9 Service Area** | | | | |
| Service area (Net) | ha | 3,060 | | |
| **10 Irrigation Construction Cost** | | | | |
| 1.Direct cost | | | | |
| 1.1 Main canal | MDH | 15.89 | | |
| 1.2 Structures | MDH | 89.07 | | |
| 1.3Overhed and profit of contractor | MDH | 7.35 | | |
| Sub-total | MDH | 112.31 | | |
| 2.Physical contingency | MDH | 11.23 | | |
| 3.Price contingency | MDH | 28.41 | | |
| Total | MDH | 151.95 | | |
| 4.Value added tax(14%) | MDH | 21.27 | | |
| Ground total | MDH | 173.20 | 56,600 DH/ha | |

# Table S5: Caractéristiques Principales de No.17 Azghar

| Description | | | | Remark |
|---|---|---|---|---|
| **A. Dam** | | | | |
| **1 General** | | | | |
| Province | | Sefrou | | |
| River | | Oued Zloul | | |
| Coordinate of dam site | Xr1 | 598,750.00 | Location: Sefrou | |
| | Yr1 | 3,573,500.00 | | |
| | Xl2 | 599,103.00 | | |
| | Yl2 | 3,570,500.00 | | |
| **2 Hydrology** | | | | |
| Catchment area | km2 | 263.00 | | |
| Annual mean rainfall | mm | 447.00 | | |
| Annual mean run-off | Mm3 | 53.21 | | |
| **3 Reservoir** | | | | |
| Gross storage | m3 | 11,700,000.00 | | |
| Effective storage | m3 | 5,200,000.00 | | |
| Dead storage | m3 | 6,500,000.00 | 130,000m3/yr. x 50yrs | |
| Reservoir surface area | ha | 118.27 | | |
| Elevation of flood water level (FWL) | m | 856.89 | Hd=2.89m | |
| Elevation of normal water level (NWL) | m | 854.00 | | |
| Elevation of low water level (LWL) | m | 848.50 | | |
| **4 Dam Body** | | | | |
| Geology of foundation | | Marl | (Lower Liassic) | |
| Type of dam | | Center-cored rock fill | | |
| Elevation of dam crest | EL | 859.50 | Freeboard above FWL | 2.61 |
| Elevation of dam foundation | EL | 817.00 | above NWL | 5.50 |
| Height from proposed foundation | m | 42.50 | | |
| Length of dam crest | m | 325.00 | | |
| Upstream slope | | 1:2.80 | | |
| Downstream slope | | 1:2.40 | | |
| Width of dam crest | m | 6.00 | | |
| Seismic intensity | | 0.12 | (100yr.acceleration=66gal) | |
| Embankment quantity (total) | m3 | 769,800.00 | | |
| Core | m3 | 130,900.00 | | |
| Filter & drain + Gravel, rock | m3 | 615,800.00 | | |
| Rip rap | m3 | 23,100.00 | | |
| **5 Spillway** | | | | |
| Location | | Right bank | | |
| Geology of foundation | | Marl of CM-CH | | |
| Design inflow discharge(10,000yr) | m3/s | 700.00 | | |
| Design outflow discharge(10,000yr) | m3/s | 592.00 | | |
| Type of weir | | Non gated side channel | | |
| Weir length and width | | 60m x 15m | | |
| Design overflow depth(10,000yr) | m | 2.89 | | |
| Type of stilling basin | | Hydraulic jump with roller bucket | | |
| **6 Intake/Outlet** | | | | |
| Type | | Composite type inclined tower | | |
| | | D1000mmslide gate x 1 | | |
| Intake location | | Left bank | | |
| Capacity | m3/s | 2.60 | | |
| Outlet pipe | | D1000 mm x 480 m | | |
| Discharge control valve | | D1000mm Sleeve valve | | |
| Raw water facilities | | D300mm pipe and D300 sluice valve | | |
| Sediment flush pipe | | D800mm | | |
| **7 Diversion** | | | | |
| Type | | Cofferdam/Culvert | | |
| Design inflow discharge(20yr/50yr) | m3/s | 250.0/300.0 | | |
| Design outflow discharge(20yr/50yr) | m3/s | 212.6/221.6 | | |
| Cofferdam crest elevation | m | 835.00 | | |
| Upstream water level(20yr/50yr) | m | 831.5/834.7 | | |
| Culvert location | | Right side of Riverbed | | |
| Culvert section/length | | 5m x 5m / 240m | | |
| **8 Dam Construction Cost** | | | | |
| 1.Direct cost | | | | |
| 1.1 Diversion works | MDH | 19.36 | | |
| 1.2 Foundation excavation | MDH | 9.59 | | |
| 1.3 Foundation treatment | MDH | 5.42 | | |
| 1.4 Dam embankment | MDH | 16.03 | | |
| 1.5 Spill way | MDH | 35.29 | | |
| 1.6 Intake works | MDH | 1.21 | | |
| 1.7 Gate and pipe | MDH | 12.42 | | |
| 1.8Overhed and profit of contractor | MDH | 13.18 | | |
| Sub-total | MDH | 112.50 | | |
| 2.Physical contingency | MDH | 11.25 | | |
| 3.Price contingency | MDH | 28.45 | | |
| Total | MDH | 152.20 | | |
| 4.Value added tax(14%) | MDH | 21.30 | | |
| Ground total | MDH | 173.40 | 225 DH/m3 | |
| **B. Irrigation** | | | | |
| **9 Service Area** | | | | |
| Service area (Net) | ha | 2,000 | | |
| **10 Irrigation Construction Cost** | | | | |
| 1.Direct cost | | | | |
| 1.1 Main canal | MDH | 12.22 | | |
| 1.2 Structures | MDH | 56.32 | | |
| 1.3Overhed and profit of contractor | MDH | 4.80 | | |
| Sub-total | MDH | 73.34 | | |
| 2.Physical contingency | MDH | 7.33 | | |
| 3.Price contingency | MDH | 18.55 | | |
| Total | MDH | 99.22 | | |
| 4.Value added tax(14%) | MDH | 13.89 | | |
| Ground total | MDH | 113.10 | 56,600 DH/ha | |

# Table S6: Coûts du Projet (1/2)

| | Cost Item | Foreign Currency | Local Currency | Total |
|---|---|---|---|---|
| **N'fifikh (Upstream)** | | | | |
| 1. | Construction cost | | | |
| 1.1 | Dam and appurtenant facilities | 93.0 | 50.1 | 143.1 |
| 1.2 | Irrigation facilities | 18.3 | 18.2 | 36.5 |
| 1.3 | Water supply system | 0.0 | 1.4 | 1.4 |
| 2. | Resettlement cost | 0.0 | 3.3 | 3.3 |
| 3. | Engineering services cost | 8.2 | 4.5 | 12.7 |
| 4. | Administration cost | 0.0 | 9.2 | 9.2 |
| 5. | Physical contingency | 12.0 | 8.7 | 20.7 |
| | Sub-total of (1.- 5.) | 131.5 | 95.4 | 226.9 |
| 6. | Price Contingency | 25.7 | 18.6 | 44.3 |
| | Sub-total of (1.- 6.) | 157.2 | 114.0 | 271.2 |
| 7. | Value Added Tax | 0.0 | 38.9 | 38.9 |
| | Total of (1.- 7.) | 157.2 | 152.9 | 310.1 |
| **Taskourt** | | | | |
| 1. | Construction cost | | | |
| 1.1 | Dam and appurtenant facilities | 179.0 | 96.4 | 275.4 |
| 1.2 | Irrigation facilities | 65.9 | 65.8 | 131.7 |
| 1.3 | Water supply system | 0.0 | 2.4 | 2.4 |
| 2. | Resettlement cost | 0.0 | 28.5 | 28.5 |
| 3. | Engineering services cost | 18.6 | 10.1 | 28.7 |
| 4. | Administration cost | 0.0 | 21.9 | 21.9 |
| 5. | Physical contingency | 26.4 | 22.5 | 48.9 |
| | Sub-total of (1.- 5.) | 289.9 | 247.6 | 537.5 |
| 6. | Price Contingency | 55.8 | 45.2 | 101.0 |
| | Sub-total of (1.- 6.) | 345.7 | 292.8 | 638.5 |
| 7. | Value Added Tax | 0.0 | 91.6 | 91.6 |
| | Total of (1.- 7.) | 345.7 | 384.4 | 730.1 |
| **Timkit** | | | | |
| 1. | Construction cost | | | |
| 1.1 | Dam and appurtenant facilities | 105.5 | 56.8 | 162.3 |
| 1.2 | Irrigation facilities | 56.2 | 56.1 | 112.3 |
| 2. | Resettlement cost | 0.0 | 6.4 | 6.4 |
| 3. | Engineering services cost | 12.5 | 6.7 | 19.2 |
| 4. | Administration cost | 0.0 | 14.0 | 14.0 |
| 5. | Physical contingency | 17.4 | 14.0 | 31.4 |
| | Sub-total of (1.- 5.) | 191.6 | 154.0 | 345.6 |
| 6. | Price Contingency | 43.2 | 34.3 | 77.5 |
| | Sub-total of (1.- 6.) | 234.8 | 188.3 | 423.1 |
| 7. | Value Added Tax | 0.0 | 60.8 | 60.8 |
| | Total of (1.- 7.) | 234.8 | 249.1 | 483.9 |
| **Azghar** | | | | |
| 1. | Construction cost | | | |
| 1.1 | Dam and appurtenant facilities | 73.1 | 39.4 | 112.5 |
| 1.2 | Irrigation facilities | 36.7 | 36.6 | 73.3 |
| 2. | Resettlement cost | 0.0 | 5.1 | 5.1 |
| 3. | Engineering services cost | 8.5 | 4.5 | 13.0 |
| 4. | Administration cost | 0.0 | 9.5 | 9.5 |
| 5. | Physical contingency | 11.8 | 9.5 | 21.3 |
| | Sub-total of (1.- 5.) | 130.1 | 104.6 | 234.7 |
| 6. | Price Contingency | 25.9 | 20.4 | 46.3 |
| | Sub-total of (1.- 6.) | 156.0 | 125.0 | 281.0 |
| 7. | Value Added Tax | 0.0 | 40.4 | 40.4 |
| | Total of (1.- 7.) | 156.0 | 165.4 | 321.4 |

## Table S6: Coûts du Projet (2/2)

| ost | Item | Foreign Currency | Local Currency | Total |
|---|---|---|---|---|
| **TOTAL** | | | | |
| 1. | Construction cost | | | |
| 1.1 | Dam and appurtenant facilities | 450.6 | 242.7 | 693.3 |
| 1.2 | Irrigation facilities | 177.1 | 176.7 | 353.8 |
| 1.3 | Water supply system | 0.0 | 3.8 | 3.8 |
| 2. | Resettlement cost | 0.0 | 43.3 | 43.3 |
| 3. | Engineering services cost | 47.8 | 25.8 | 73.6 |
| 4. | Administration cost | 0.0 | 54.6 | 54.6 |
| 5. | Physical contingency | 67.6 | 54.7 | 122.3 |
| | Sub-total of (1.- 5.) | 743.1 | 601.6 | 1,344.7 |
| 6. | Price Contingency | 150.6 | 118.5 | 269.1 |
| | Sub-total of (1.- 6.) | 893.7 | 720.1 | 1,613.8 |
| 7. | Value Added Tax | 0.0 | 231.7 | 231.7 |
| | Total of (1.- 7.) | 893.7 | 951.8 | 1,845.5 |

Note: 1. Price level: as of April 2000, US$1.0 = 10.68 DH, J. Yen100 = 9.90 DH

2. Both foreign and local currency portions are expressed in million Dirhams.

3. Engineering service fee is estimated as 7 % of total construction cost

4. Administration cost is estimated as 5 % of construction cost and resettlement cost.

5. Physical contingency: 10% of all items

6. Price contingency: 3% per annum for all items

7. Value added tax: 20% for engineering services and 14% for all other items

## Table S7: Calendrier de Décaissement Annuel (1/3)

**(Financial Price, million DH)**

### N'Fifikh

| | Cost Item | Total | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F.C. | L.C. | Total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total |
| 1. | Construction cost | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dam and appurtenant faciliti | 93.0 | 50.1 | 143.1 | - | - | - | - | - | - | - | - | - | - | - | - | 22.3 | 12.0 | 34.3 | 47.4 | 25.6 | 73.0 | 23.3 | 12.5 | 35.8 | - | - | - |
| | Irrigation facilities | 18.3 | 18.2 | 36.5 | - | - | - | - | - | - | - | - | - | - | - | - | 3.7 | 3.6 | 7.3 | 9.2 | 9.1 | 18.3 | 5.4 | 5.5 | 10.9 | - | - | - |
| | Water supply facilities | - | 1.4 | 1.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.4 | 1.4 | - | - | - |
| | Sub-total of 1 | 111.3 | 69.7 | 181.0 | - | - | - | - | - | - | - | - | - | - | - | - | 26.0 | 15.6 | 41.6 | 56.6 | 34.7 | 91.3 | 28.7 | 19.4 | 48.1 | - | - | - |
| 2. | Resettlement cost | - | 3.3 | 3.3 | - | - | - | - | - | - | - | - | - | - | 1.7 | 1.7 | - | 1.6 | 1.6 | - | - | - | - | - | - | - | - | - |
| 3. | Engineering services cost | 8.2 | 4.5 | 12.7 | - | - | - | - | - | - | - | - | - | - | - | - | 1.9 | 1.0 | 2.9 | 4.1 | 2.3 | 6.4 | 2.2 | 1.2 | 3.4 | - | - | - |
| 4. | Administration cost | - | 9.2 | 9.2 | - | - | - | - | - | - | - | - | - | - | 0.1 | 0.1 | - | 2.2 | 2.2 | - | 4.6 | 4.6 | - | 2.3 | 2.3 | - | - | - |
| 5. | Physical contingency | 12.0 | 8.7 | 20.7 | - | - | - | - | - | - | - | - | - | - | 0.2 | 0.2 | 2.8 | 2.0 | 4.8 | 6.1 | 4.2 | 10.3 | 3.1 | 2.3 | 5.4 | - | - | - |
| | Sub-total of (1.- 5.) | 131.5 | 95.4 | 226.9 | - | - | - | - | - | - | - | - | - | - | 2.0 | 2.0 | 30.7 | 22.4 | 53.1 | 66.8 | 45.8 | 112.6 | 34.0 | 25.2 | 59.2 | - | - | - |
| 6. | Price contingency | 25.7 | 18.6 | 44.3 | - | - | - | - | - | - | - | - | - | - | 0.3 | 0.3 | 4.9 | 3.6 | 8.5 | 13.0 | 8.9 | 21.9 | 7.8 | 5.8 | 13.6 | - | - | - |
| | Sub-total of (1.- 6.) | 157.2 | 114.0 | 271.2 | - | - | - | - | - | - | - | - | - | - | 2.3 | 2.3 | 35.6 | 26.0 | 61.6 | 79.8 | 54.7 | 134.5 | 41.8 | 31.0 | 72.8 | - | - | - |
| 7. | Value Added Tax | - | 38.9 | 38.9 | - | - | - | - | - | - | - | - | - | - | 0.3 | 0.3 | - | 8.8 | 8.8 | - | 19.3 | 19.3 | - | 10.5 | 10.5 | - | - | - |
| | Total of (1.- 7.) | 157.2 | 152.9 | 310.1 | - | - | - | - | - | - | - | - | - | - | 2.6 | 2.6 | 35.6 | 34.8 | 70.4 | 79.8 | 74.0 | 153.8 | 41.8 | 41.5 | 83.3 | - | - | - |

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.
2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

### Taskourt

| | Cost Item | Total | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F.C. | L.C. | Total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total |
| 1. | Construction cost | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dam and appurtenant faciliti | 179.0 | 96.4 | 275.4 | - | - | - | - | - | - | - | - | - | 19.7 | 10.6 | 30.3 | 41.2 | 22.2 | 63.4 | 59.1 | 31.8 | 90.9 | 59.0 | 31.8 | 90.8 | - | - | - |
| | Irrigation facilities | 65.9 | 65.8 | 131.7 | - | - | - | - | - | - | - | - | - | - | - | - | 13.2 | 13.2 | 26.4 | 33.0 | 32.9 | 65.9 | 19.7 | 19.7 | 39.4 | - | - | - |
| | Water supply facilities | - | 2.4 | 2.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.4 | 2.4 | - | - | - |
| | Sub-total of 1.2 | 244.9 | 164.6 | 409.5 | - | - | - | - | - | - | - | - | - | 19.7 | 10.6 | 30.3 | 54.4 | 35.4 | 89.8 | 92.1 | 64.7 | 156.8 | 78.7 | 53.9 | 132.6 | - | - | - |
| 2. | Resettlement cost | - | 28.5 | 28.5 | - | - | - | - | - | - | - | 14.3 | 14.3 | - | 14.2 | 14.2 | - | - | - | - | - | - | - | - | - | - | - | - |
| 3. | Engineering services cost | 18.6 | 10.1 | 28.7 | - | - | - | - | - | - | - | - | - | 1.4 | 0.7 | 2.1 | 4.1 | 2.2 | 6.3 | 7.1 | 3.9 | 11.0 | 6.0 | 3.3 | 9.3 | - | - | - |
| 4. | Administration cost | - | 21.9 | 21.9 | - | - | - | - | - | - | - | 0.7 | 0.7 | - | 2.2 | 2.2 | - | 4.5 | 4.5 | - | 7.8 | 7.8 | - | 6.7 | 6.7 | - | - | - |
| 5. | Physical contingency | 26.4 | 22.5 | 48.9 | - | - | - | - | - | - | - | 1.5 | 1.5 | 2.1 | 2.8 | 4.9 | 5.9 | 4.2 | 10.1 | 9.9 | 7.6 | 17.5 | 8.5 | 6.4 | 14.9 | - | - | - |
| | Sub-total of (1.- 5.) | 289.9 | 247.6 | 537.5 | - | - | - | - | - | - | - | 16.5 | 16.5 | 23.2 | 30.5 | 53.7 | 64.4 | 46.3 | 110.7 | 109.1 | 84.0 | 193.1 | 93.2 | 70.3 | 163.5 | - | - | - |
| 6. | Price contingency | 55.8 | 45.2 | 101.0 | - | - | - | - | - | - | - | 1.5 | 1.5 | 2.9 | 3.8 | 6.7 | 10.3 | 7.4 | 17.7 | 21.2 | 16.3 | 37.5 | 21.4 | 16.2 | 37.6 | - | - | - |
| | Sub-total of (1.- 6.) | 345.7 | 292.8 | 638.5 | - | - | - | - | - | - | - | 18.0 | 18.0 | 26.1 | 34.3 | 60.4 | 74.7 | 53.7 | 128.4 | 130.3 | 100.3 | 230.6 | 114.6 | 86.5 | 201.1 | - | - | - |
| 7. | Value Added Tax | - | 91.6 | 91.6 | - | - | - | - | - | - | - | 2.5 | 2.5 | - | 8.6 | 8.6 | - | 18.4 | 18.4 | - | 33.2 | 33.2 | - | 28.9 | 28.9 | - | - | - |
| | Total of (1.- 7.) | 345.7 | 384.4 | 730.1 | - | - | - | - | - | - | - | 20.5 | 20.5 | 26.1 | 42.9 | 69.0 | 74.7 | 72.1 | 146.8 | 130.3 | 133.5 | 263.8 | 114.6 | 115.4 | 230.0 | - | - | - |

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.
2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

## Table S7: Calendrier de Décaissement Annuel (2/3)

**(Financial Price, million DH)**

### Timkit

| | Cost Item | Total | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F.C. | L.C. | Total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total |
| 1. | Construction cost | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dam and appurtenant faciliti | 105.5 | 56.8 | 162.3 | - | - | - | - | - | - | - | - | - | - | - | - | 17.9 | 9.7 | 27.6 | 23.2 | 12.5 | 35.7 | 34.8 | 18.7 | 53.5 | 29.6 | 15.9 | 45.5 |
| | Irrigation facilities | 56.2 | 56.1 | 112.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 11.2 | 11.2 | 22.4 | 28.1 | 28.1 | 56.2 | 16.9 | 16.8 | 33.7 |
| | Sub-total of 1.3 | 161.7 | 112.9 | 274.6 | - | - | - | - | - | - | - | - | - | - | - | - | 17.9 | 9.7 | 27.6 | 34.4 | 23.7 | 58.1 | 62.9 | 46.8 | 109.7 | 46.5 | 32.7 | 79.2 |
| 2. | Resettlement cost | - | 6.4 | 6.4 | - | - | - | - | - | - | - | - | - | - | 3.2 | 3.2 | - | 3.2 | 3.2 | - | - | - | - | - | - | - | - | - |
| 3. | Engineering services cost | 12.5 | 6.7 | 19.2 | - | - | - | - | - | - | - | - | - | - | - | - | 1.3 | 0.7 | 2.0 | 2.6 | 1.4 | 4.0 | 5.0 | 2.7 | 7.7 | 3.6 | 1.9 | 5.5 |
| 4. | Administration cost | - | 14.0 | 14.0 | - | - | - | - | - | - | - | - | - | - | 0.2 | 0.2 | - | 1.5 | 1.5 | - | 2.9 | 2.9 | - | 5.5 | 5.5 | - | 3.9 | 3.9 |
| 5. | Physical contingency | 17.4 | 14.0 | 31.4 | - | - | - | - | - | - | - | - | - | - | 0.3 | 0.3 | 1.9 | 1.5 | 3.4 | 3.7 | 2.8 | 6.5 | 6.8 | 5.5 | 12.3 | 5.0 | 3.9 | 8.9 |
| | Sub-total of (1.- 5.) | 191.6 | 154.0 | 345.6 | - | - | - | - | - | - | - | - | - | - | 3.7 | 3.7 | 21.1 | 16.6 | 37.7 | 40.7 | 30.8 | 71.5 | 74.7 | 60.5 | 135.2 | 55.1 | 42.4 | 97.5 |
| 6. | Price contingency | 43.2 | 34.3 | 77.5 | - | - | - | - | - | - | - | - | - | - | 0.5 | 0.5 | 3.4 | 2.6 | 6.0 | 7.9 | 6.0 | 13.9 | 17.2 | 13.9 | 31.1 | 14.7 | 11.3 | 26.0 |
| | Sub-total of (1.- 6.) | 234.8 | 188.3 | 423.1 | - | - | - | - | - | - | - | - | - | - | 4.2 | 4.2 | 24.5 | 19.2 | 43.7 | 48.6 | 36.8 | 85.4 | 91.9 | 74.4 | 166.3 | 69.8 | 53.7 | 123.5 |
| 7. | Value Added Tax | - | 60.8 | 60.8 | - | - | - | - | - | - | - | - | - | - | 0.6 | 0.6 | - | 6.3 | 6.3 | - | 12.3 | 12.3 | - | 23.9 | 23.9 | - | 17.7 | 17.7 |
| | Total of (1.- 7.) | 234.8 | 249.1 | 483.9 | - | - | - | - | - | - | - | - | - | - | 4.8 | 4.8 | 24.5 | 25.5 | 50.0 | 48.6 | 49.1 | 97.7 | 91.9 | 98.3 | 190.2 | 69.8 | 71.4 | 141.2 |

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.
2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

### Azghar

| | Cost Item | Total | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F.C. | L.C. | Total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total |
| 1. | Construction cost | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dam and appurtenant faciliti | 73.1 | 39.4 | 112.5 | - | - | - | - | - | - | - | - | - | - | - | - | 17.5 | 9.5 | 27.0 | 27.8 | 15.0 | 42.8 | 27.8 | 14.9 | 42.7 | - | - | - |
| | Irrigation facilities | 36.7 | 36.6 | 73.3 | - | - | - | - | - | - | - | - | - | - | - | - | 7.3 | 7.3 | 14.6 | 18.4 | 18.3 | 36.7 | 11.0 | 11.0 | 22.0 | - | - | - |
| | Sub-total of 1.4 | 109.8 | 76.0 | 185.8 | - | - | - | - | - | - | - | - | - | - | - | - | 24.8 | 16.8 | 41.6 | 46.2 | 33.3 | 79.5 | 38.8 | 25.9 | 64.7 | - | - | - |
| 2. | Resettlement cost | - | 5.1 | 5.1 | - | - | - | - | - | - | - | - | - | - | 2.6 | 2.6 | - | 2.5 | 2.5 | - | - | - | - | - | - | - | - | - |
| 3. | Engineering services cost | 8.5 | 4.5 | 13.0 | - | - | - | - | - | - | - | - | - | - | - | - | 1.9 | 1.0 | 2.9 | 3.6 | 1.9 | 5.5 | 3.0 | 1.6 | 4.6 | - | - | - |
| 4. | Administration cost | - | 9.5 | 9.5 | - | - | - | - | - | - | - | - | - | - | 0.1 | 0.1 | - | 2.2 | 2.2 | - | 4.0 | 4.0 | - | 3.2 | 3.2 | - | - | - |
| 5. | Physical contingency | 11.8 | 9.5 | 21.3 | - | - | - | - | - | - | - | - | - | - | 0.3 | 0.3 | 2.7 | 2.3 | 5.0 | 5.0 | 3.9 | 8.9 | 4.1 | 3.0 | 7.1 | - | - | - |
| | Sub-total of (1.- 5.) | 130.1 | 104.6 | 234.7 | - | - | - | - | - | - | - | - | - | - | 3.0 | 3.0 | 29.4 | 24.8 | 54.2 | 54.8 | 43.1 | 97.9 | 45.9 | 33.7 | 79.6 | - | - | - |
| 6. | Price contingency | 25.9 | 20.4 | 46.3 | - | - | - | - | - | - | - | - | - | - | 0.4 | 0.4 | 4.7 | 3.9 | 8.6 | 10.6 | 8.4 | 19.0 | 10.6 | 7.7 | 18.3 | - | - | - |
| | Sub-total of (1.- 6.) | 156.0 | 125.0 | 281.0 | - | - | - | - | - | - | - | - | - | - | 3.4 | 3.4 | 34.1 | 28.7 | 62.8 | 65.4 | 51.5 | 116.9 | 56.5 | 41.4 | 97.9 | - | - | - |
| 7. | Value Added Tax | - | 40.4 | 40.4 | - | - | - | - | - | - | - | - | - | - | 0.5 | 0.5 | - | 9.0 | 9.0 | - | 16.8 | 16.8 | - | 14.1 | 14.1 | - | - | - |
| | Total of (1.- 7.) | 156.0 | 165.4 | 321.4 | - | - | - | - | - | - | - | - | - | - | 3.9 | 3.9 | 34.1 | 37.7 | 71.8 | 65.4 | 68.3 | 133.7 | 56.5 | 55.5 | 112.0 | - | - | - |

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.
2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

## Table S7: Calendrier de Décaissement Annuel (3/3)

**(Financial Price, million DH)**

**Overall Plan**

| | Cost Item | Total | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F.C. | L.C. | Total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total | F.C. | L.C. | Sub-total |
| 1. | Construction cost | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dam and appurtenant faciliti | 450.6 | 242.7 | 693.3 | - | - | - | - | - | - | - | - | - | 19.7 | 10.6 | 30.3 | 98.9 | 53.4 | 152.3 | 157.5 | 84.9 | 242.4 | 144.9 | 77.9 | 222.8 | 29.6 | 15.9 | 45.5 |
| | Irrigation facilities | 177.1 | 176.7 | 353.8 | - | - | - | - | - | - | - | - | - | - | - | - | 24.2 | 24.1 | 48.3 | 71.8 | 71.5 | 143.3 | 64.2 | 64.3 | 128.5 | 16.9 | 16.8 | 33.7 |
| | Water supply facilities | - | 3.8 | 3.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.8 | 3.8 | - | - | - |
| | Sub-total of 1 | 627.7 | 423.2 | 1,050.9 | - | - | - | - | - | - | - | - | - | 19.7 | 10.6 | 30.3 | 123.1 | 77.5 | 200.6 | 229.3 | 156.4 | 385.7 | 209.1 | 146.0 | 355.1 | 46.5 | 32.7 | 79.2 |
| 2. | Resettlement cost | - | 43.3 | 43.3 | - | - | - | - | - | - | - | 14.3 | 14.3 | - | 21.7 | 21.7 | - | 7.3 | 7.3 | - | - | - | - | - | - | - | - | - |
| 3. | Engineering services cost | 47.8 | 25.8 | 73.6 | - | - | - | - | - | - | - | - | - | 1.4 | 0.7 | 2.1 | 9.2 | 4.9 | 14.1 | 17.4 | 9.5 | 26.9 | 16.2 | 8.8 | 25.0 | 3.6 | 1.9 | 5.5 |
| 4. | Administration cost | - | 54.6 | 54.6 | - | - | - | - | - | - | - | 0.7 | 0.7 | - | 2.6 | 2.6 | - | 10.4 | 10.4 | - | 19.3 | 19.3 | - | 17.7 | 17.7 | - | 3.9 | 3.9 |
| 5. | Physical contingency | 67.6 | 54.7 | 122.3 | - | - | - | - | - | - | - | 1.5 | 1.5 | 2.1 | 3.6 | 5.7 | 13.3 | 10.0 | 23.3 | 24.7 | 18.5 | 43.2 | 22.5 | 17.2 | 39.7 | 5.0 | 3.9 | 8.9 |
| | Sub-total of (1.- 5.) | 743.1 | 601.6 | 1,344.7 | - | - | - | - | - | - | - | 16.5 | 16.5 | 23.2 | 39.2 | 62.4 | 145.6 | 110.1 | 255.7 | 271.4 | 203.7 | 475.1 | 247.8 | 189.7 | 437.5 | 55.1 | 42.4 | 97.5 |
| 6. | Price contingency | 150.6 | 118.5 | 269.1 | - | - | - | - | - | - | - | 1.5 | 1.5 | 2.9 | 5.0 | 7.9 | 23.3 | 17.5 | 40.8 | 52.7 | 39.6 | 92.3 | 57.0 | 43.6 | 100.6 | 14.7 | 11.3 | 26.0 |
| | Sub-total of (1.- 6.) | 893.7 | 720.1 | 1,613.8 | - | - | - | - | - | - | - | 18.0 | 18.0 | 26.1 | 44.2 | 70.3 | 168.9 | 127.6 | 296.5 | 324.1 | 243.3 | 567.4 | 304.8 | 233.3 | 538.1 | 69.8 | 53.7 | 123.5 |
| 7. | Value Added Tax | - | 231.7 | 231.7 | - | - | - | - | - | - | - | 2.5 | 2.5 | - | 10.0 | 10.0 | - | 42.5 | 42.5 | - | 81.6 | 81.6 | - | 77.4 | 77.4 | - | 17.7 | 17.7 |
| | Total of (1.- 7.) | 893.7 | 951.8 | 1,845.5 | - | - | - | - | - | - | - | 20.5 | 20.5 | 26.1 | 54.2 | 80.3 | 168.9 | 170.1 | 339.0 | 324.1 | 324.9 | 649.0 | 304.8 | 310.7 | 615.5 | 69.8 | 71.4 | 141.2 |

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.

2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

**Table S8: Rapport financier de marge brute d'autofinancement de financement pour la mise en place des projets (1/5)**

**N'Fifikh** **Unit: Million DH**

| Year in order | Year | Capital Cost F.C. | Capital Cost L.C. | Capital Cost Total (a) | Foreign Loan Accumulated 75% of (a) | A part of capital cost allocated by the Government | Cash Outflow O & M cost Dam | Cash Outflow O & M cost Irrigation | Cash Outflow O & M cost Water sup. | Cash Outflow Replace-ment cost | Cash Outflow Repayment of Loan Interest | Cash Outflow Repayment of Loan Capital | Cash Outflow Total (b) | Cash Inflow Irrigation water | Cash Inflow Water supply | Cash Inflow Government subsidy | Cash Inflow Total (c) | Balance (c) - (b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | | | | | | | | | | - | | - | | | - | - | - |
| 2 | 2002 | | | | | | | | | | - | | - | | | - | - | - |
| 3 | 2003 | | | | | | | | | | - | | - | | | - | - | - |
| 4 | 2004 | | 2.6 | 2.6 | - | 2.6 | | | | | - | | - | | | - | - | - |
| 5 | 2005 | 35.6 | 34.8 | 70.4 | 54.7 | 15.7 | | | | | - | | - | | | - | - | - |
| 6 | 2006 | 79.8 | 74.0 | 153.8 | 170.1 | 38.4 | | | | | 1.2 | | 1.2 | | | 1.2 | 1.2 | - |
| 7 | 2007 | 41.8 | 41.5 | 83.3 | 232.5 | 20.9 | | | | | 3.7 | | 3.7 | | | 3.7 | 3.7 | - |
| 8 | 2008 | | | | 232.5 | | 1.0 | 0.5 | 0.1 | | 5.1 | | 6.7 | 0.9 | 0.1 | 5.7 | 6.7 | - |
| 9 | 2009 | | | | 232.5 | | 1.0 | 0.7 | 0.1 | | 5.1 | | 6.9 | 1.3 | 0.1 | 5.5 | 6.9 | - |
| 10 | 2010 | | | | 232.5 | | 1.1 | 0.9 | 0.1 | | 5.1 | | 7.2 | 1.6 | 0.1 | 5.5 | 7.2 | - |
| 11 | 2011 | | | | 232.5 | | 1.1 | 0.9 | 0.1 | | 5.1 | | 7.2 | 1.6 | 0.1 | 5.5 | 7.2 | - |
| 12 | 2012 | | | | 232.5 | | 1.1 | 1.0 | 0.1 | | 5.1 | | 7.3 | 1.7 | 0.1 | 5.5 | 7.3 | - |
| 13 | 2013 | | | | 232.5 | | 1.2 | 1.0 | 0.1 | | 5.1 | | 7.4 | 1.7 | 0.2 | 5.6 | 7.4 | - |
| 14 | 2014 | | | | 232.5 | | 1.2 | 1.1 | 0.1 | | 5.1 | | 7.5 | 1.8 | 0.2 | 5.6 | 7.5 | - |
| 15 | 2015 | | | | 220.8 | | 1.2 | 1.3 | 0.1 | | 5.1 | 11.7 | 19.4 | 2.0 | 0.2 | 17.3 | 19.4 | - |
| 16 | 2016 | | | | 209.1 | | 1.3 | 1.3 | 0.1 | | 4.9 | 11.7 | 19.3 | 2.0 | 0.2 | 17.1 | 19.3 | - |
| 17 | 2017 | | | | 197.4 | | 1.3 | 1.3 | 0.1 | | 4.6 | 11.7 | 19.0 | 2.0 | 0.2 | 16.8 | 19.0 | - |
| 18 | 2018 | | | | 185.7 | | 1.3 | 1.4 | 0.2 | | 4.3 | 11.7 | 18.9 | 2.0 | 0.2 | 16.8 | 18.9 | - |
| 19 | 2019 | | | | 174.0 | | 1.4 | 1.4 | 0.2 | | 4.1 | 11.7 | 18.8 | 2.0 | 0.2 | 16.6 | 18.8 | - |
| 20 | 2020 | | | | 162.3 | | 1.4 | 1.5 | 0.2 | | 3.8 | 11.7 | 18.6 | 2.0 | 0.2 | 16.5 | 18.6 | - |
| 21 | 2021 | | | | 150.6 | | 1.5 | 1.5 | 0.2 | | 3.6 | 11.7 | 18.5 | 2.0 | 0.2 | 16.3 | 18.5 | - |
| 22 | 2022 | | | | 138.9 | | 1.5 | 1.5 | 0.2 | | 3.3 | 11.7 | 18.2 | 2.0 | 0.2 | 16.1 | 18.2 | - |
| 23 | 2023 | | | | 127.2 | | 1.6 | 1.6 | 0.2 | | 3.1 | 11.7 | 18.2 | 2.0 | 0.2 | 16.0 | 18.2 | - |
| 24 | 2024 | | | | 115.5 | | 1.6 | 1.6 | 0.2 | | 2.8 | 11.7 | 17.9 | 2.0 | 0.2 | 15.7 | 17.9 | - |
| 25 | 2025 | | | | 103.8 | | 1.6 | 1.7 | 0.2 | | 2.5 | 11.7 | 17.7 | 2.0 | 0.2 | 15.6 | 17.7 | - |
| 26 | 2026 | | | | 92.1 | | 1.7 | 1.7 | 0.2 | | 2.3 | 11.7 | 17.6 | 2.0 | 0.2 | 15.4 | 17.6 | - |
| 27 | 2027 | | | | 80.4 | | 1.7 | 1.8 | 0.2 | | 2.0 | 11.7 | 17.4 | 2.0 | 0.2 | 15.3 | 17.4 | - |
| 28 | 2028 | | | | 68.7 | | 1.8 | 1.8 | 0.2 | | 1.8 | 11.7 | 17.3 | 2.0 | 0.2 | 15.1 | 17.3 | - |
| 29 | 2029 | | | | 57.0 | | 1.9 | 1.9 | 0.2 | | 1.5 | 11.7 | 17.2 | 2.0 | 0.2 | 15.1 | 17.2 | - |
| 30 | 2030 | | | | 45.3 | | 1.9 | 1.9 | 0.2 | | 1.3 | 11.7 | 17.0 | 2.0 | 0.2 | 14.8 | 17.0 | - |
| 31 | 2031 | | | | 33.6 | | 2.0 | 2.0 | 0.2 | | 1.0 | 11.7 | 16.9 | 2.0 | 0.2 | 14.7 | 16.9 | - |
| 32 | 2032 | | | | 21.9 | | 2.0 | 2.1 | 0.2 | | 0.7 | 11.7 | 16.7 | 2.0 | 0.2 | 14.6 | 16.7 | - |
| 33 | 2033 | | | | 10.2 | | 2.1 | 2.1 | 0.2 | 31.5 | 0.5 | 11.7 | 48.1 | 2.0 | 0.2 | 45.9 | 48.1 | - |
| 34 | 2034 | | | | - | | 2.2 | 2.2 | 0.2 | | 0.2 | 10.2 | 15.0 | 2.0 | 0.2 | 12.9 | 15.0 | - |
| 35 | 2035 | | | | - | | 2.2 | 2.3 | 0.3 | | | | 4.8 | 2.0 | 0.2 | 2.6 | 4.8 | - |
| 36 | 2036 | | | | - | | 2.3 | 2.3 | 0.3 | | | | 4.9 | 2.0 | 0.2 | 2.7 | 4.9 | - |
| 37 | 2037 | | | | - | | 2.4 | 2.4 | 0.3 | | | | 5.1 | 2.0 | 0.2 | 2.9 | 5.1 | - |

Note: 1) F.C. means foreign currency components and L.C. means local currency components.
2) 75% of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.
3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.
4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.
5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities.
6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

**Table S8: Rapport financier de marge brute d'autofinancement de financement pour la mise en place des projets (2/5)**

**Taskourt** **Unit: Million DH**

| Year in order | Year | Capital Cost F.C. | Capital Cost L.C. | Capital Cost Total (a) | Foreign Loan Accumulated 75% of (a) | A part of capital cost allocated by the Government | Cash Outflow: O & M cost Dam | O & M cost Irrigation | O & M cost Water sup. | Replace-ment cost | Repayment of Loan Interest | Repayment of Loan Capital | Total (b) | Cash Inflow: Irrigation water | Water supply | Government subsidy | Total (c) | Balance (c) - (b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | | | | | | | | | | - | | - | | | - | - | - |
| 2 | 2002 | | | | | | | | | | - | | - | | | - | - | - |
| 3 | 2003 | | 20.5 | 20.5 | - | 20.5 | | | | | - | | - | | | - | - | - |
| 4 | 2004 | 26.1 | 42.9 | 69.0 | 40.1 | 28.9 | | | | | - | | - | | | - | - | - |
| 5 | 2005 | 74.7 | 72.1 | 146.8 | 162.6 | 24.3 | | | | | 0.9 | | 0.9 | | | 0.9 | 0.9 | - |
| 6 | 2006 | 130.3 | 133.5 | 263.8 | 375.0 | 51.4 | | | | | 3.6 | | 3.6 | | | 3.6 | 3.6 | - |
| 7 | 2007 | 114.6 | 115.4 | 230.0 | 547.5 | 57.5 | | | | | 8.3 | | 8.3 | | | 8.3 | 8.3 | - |
| 8 | 2008 | | | | 547.5 | - | 1.9 | 1.9 | 0.2 | | 12.0 | | 16.0 | 3.8 | 0.3 | 12.0 | 16.0 | - |
| 9 | 2009 | | | | 547.5 | | 2.0 | 2.7 | 0.2 | | 12.0 | | 16.9 | 5.0 | 0.3 | 11.7 | 16.9 | - |
| 10 | 2010 | | | | 547.5 | | 2.0 | 3.2 | 0.2 | | 12.0 | | 17.4 | 5.9 | 0.3 | 11.3 | 17.4 | - |
| 11 | 2011 | | | | 547.5 | | 2.1 | 3.7 | 0.2 | | 12.0 | | 18.0 | 6.6 | 0.3 | 11.2 | 18.0 | - |
| 12 | 2012 | | | | 547.5 | | 2.2 | 4.1 | 0.2 | | 12.0 | | 18.5 | 7.1 | 0.3 | 11.2 | 18.5 | - |
| 13 | 2013 | | | | 547.5 | | 2.2 | 4.3 | 0.2 | | 12.0 | | 18.7 | 7.1 | 0.3 | 11.4 | 18.7 | - |
| 14 | 2014 | | | | 520.1 | | 2.3 | 4.4 | 0.2 | | 12.0 | 27.4 | 46.3 | 7.1 | 0.3 | 39.0 | 46.3 | - |
| 15 | 2015 | | | | 492.7 | | 2.4 | 4.5 | 0.2 | | 11.4 | 27.4 | 45.9 | 7.1 | 0.3 | 38.6 | 45.9 | - |
| 16 | 2016 | | | | 465.3 | | 2.4 | 4.6 | 0.2 | | 10.8 | 27.4 | 45.4 | 7.1 | 0.3 | 38.1 | 45.4 | - |
| 17 | 2017 | | | | 437.9 | | 2.5 | 4.8 | 0.2 | | 10.2 | 27.4 | 45.1 | 7.1 | 0.3 | 37.8 | 45.1 | - |
| 18 | 2018 | | | | 410.5 | | 2.6 | 4.9 | 0.3 | | 9.6 | 27.4 | 44.8 | 7.1 | 0.3 | 37.5 | 44.8 | - |
| 19 | 2019 | | | | 383.1 | | 2.7 | 5.1 | 0.3 | | 9.0 | 27.4 | 44.5 | 7.1 | 0.3 | 37.2 | 44.5 | - |
| 20 | 2020 | | | | 355.7 | | 2.7 | 5.2 | 0.3 | | 8.4 | 27.4 | 44.0 | 7.1 | 0.3 | 36.7 | 44.0 | - |
| 21 | 2021 | | | | 328.3 | | 2.8 | 5.4 | 0.3 | | 7.8 | 27.4 | 43.7 | 7.1 | 0.3 | 36.3 | 43.7 | - |
| 22 | 2022 | | | | 300.9 | | 2.9 | 5.6 | 0.3 | | 7.2 | 27.4 | 43.4 | 7.1 | 0.3 | 36.0 | 43.4 | - |
| 23 | 2023 | | | | 273.5 | | 3.0 | 5.7 | 0.3 | | 6.6 | 27.4 | 43.0 | 7.1 | 0.3 | 35.6 | 43.0 | - |
| 24 | 2024 | | | | 246.1 | | 3.1 | 5.9 | 0.3 | | 6.0 | 27.4 | 42.7 | 7.1 | 0.3 | 35.3 | 42.7 | - |
| 25 | 2025 | | | | 218.7 | | 3.2 | 6.1 | 0.3 | | 5.4 | 27.4 | 42.4 | 7.1 | 0.3 | 35.0 | 42.4 | - |
| 26 | 2026 | | | | 191.3 | | 3.3 | 6.2 | 0.3 | | 4.8 | 27.4 | 42.0 | 7.1 | 0.3 | 34.6 | 42.0 | - |
| 27 | 2027 | | | | 163.9 | | 3.4 | 6.4 | 0.3 | | 4.2 | 27.4 | 41.7 | 7.1 | 0.3 | 34.3 | 41.7 | - |
| 28 | 2028 | | | | 136.5 | | 3.5 | 6.6 | 0.3 | | 3.6 | 27.4 | 41.4 | 7.1 | 0.3 | 34.0 | 41.4 | - |
| 29 | 2029 | | | | 109.1 | | 3.6 | 6.8 | 0.4 | | 3.0 | 27.4 | 41.2 | 7.1 | 0.3 | 33.8 | 41.2 | - |
| 30 | 2030 | | | | 81.7 | | 3.7 | 7.0 | 0.4 | | 2.4 | 27.4 | 40.9 | 7.1 | 0.3 | 33.5 | 40.9 | - |
| 31 | 2031 | | | | 54.3 | | 3.8 | 7.2 | 0.4 | | 1.8 | 27.4 | 40.6 | 7.1 | 0.3 | 33.2 | 40.6 | - |
| 32 | 2032 | | | | 26.9 | | 3.9 | 7.5 | 0.4 | | 1.2 | 27.4 | 40.4 | 7.1 | 0.3 | 33.0 | 40.4 | - |
| 33 | 2033 | | | | - | | 4.0 | 7.7 | 0.4 | 78.6 | 0.6 | 26.9 | 118.2 | 7.1 | 0.3 | 110.8 | 118.2 | - |
| 34 | 2034 | | | | - | | 4.1 | 7.9 | 0.4 | | | | 12.4 | 7.1 | 0.3 | 5.0 | 12.4 | - |
| 35 | 2035 | | | | - | | 4.3 | 8.2 | 0.4 | | | | 12.9 | 7.1 | 0.3 | 5.5 | 12.9 | - |
| 36 | 2036 | | | | - | | 4.4 | 8.4 | 0.4 | | | | 13.2 | 7.1 | 0.3 | 5.8 | 13.2 | - |
| 37 | 2037 | | | | - | | 4.5 | 8.6 | 0.4 | | | | 13.5 | 7.1 | 0.3 | 6.1 | 13.5 | - |

Note: 1) F.C. means foreign currency components and L.C. means local currency components.
2) 75% of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.
3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.
4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.
5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities.
6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

## Table S8: Rapport financier de marge brute d'autofinancement de financement pour la mise en place des projets (3/5)

**Timkit** **Unit: Million DH**

| Year in order | Year | Capital Cost F.C. | Capital Cost L.C. | Capital Cost Total (a) | Foreign Loan Accumulated 75% of (a) | A part of capital cost allocated by the Government | Cash Outflow: O & M cost Dam | O & M cost Irrigation | O & M cost Water sup. | Replace-ment cost | Repayment of Loan Interest | Repayment of Loan Capital | Total (b) | Cash Inflow: Irrigation water | Water supply | Government subsidy | Total (c) | Balance (c) - (b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | | | | | | | | | | - | | - | | | - | - | - |
| 2 | 2002 | | | | | | | | | | - | | - | | | - | - | - |
| 3 | 2003 | | | | | | | | | | - | | - | | | - | - | - |
| 4 | 2004 | | 4.8 | 4.8 | - | 4.8 | | | | | - | | - | | | - | - | - |
| 5 | 2005 | 24.5 | 25.5 | 50.0 | 37.7 | 12.3 | | | | | - | | - | | | - | - | - |
| 6 | 2006 | 48.6 | 49.1 | 97.7 | 114.3 | 21.1 | | | | | 0.8 | | 0.8 | | | 0.8 | 0.8 | - |
| 7 | 2007 | 91.9 | 98.3 | 190.2 | 257.0 | 47.5 | | | | | 2.5 | | 2.5 | | | 2.5 | 2.5 | - |
| 8 | 2008 | 69.8 | 71.4 | 141.2 | 362.9 | 35.3 | | | | | 5.7 | | 5.7 | | | 5.7 | 5.7 | - |
| 9 | 2009 | | | | 362.9 | | 1.2 | 1.8 | | | 8.0 | | 11.0 | 3.5 | | 7.5 | 11.0 | - |
| 10 | 2010 | | | | 362.9 | | 1.2 | 2.6 | | | 8.0 | | 11.8 | 4.8 | | 7.0 | 11.8 | - |
| 11 | 2011 | | | | 362.9 | | 1.2 | 3.1 | | | 8.0 | | 12.3 | 5.6 | | 6.7 | 12.3 | - |
| 12 | 2012 | | | | 362.9 | | 1.3 | 3.4 | | | 8.0 | | 12.7 | 6.0 | | 6.7 | 12.7 | - |
| 13 | 2013 | | | | 362.9 | | 1.3 | 3.6 | | | 8.0 | | 12.9 | 6.2 | | 6.7 | 12.9 | - |
| 14 | 2014 | | | | 362.9 | | 1.4 | 3.7 | | | 8.0 | | 13.1 | 6.2 | | 6.9 | 13.1 | - |
| 15 | 2015 | | | | 344.7 | | 1.4 | 3.8 | | | 8.0 | 18.2 | 31.4 | 6.2 | | 25.2 | 31.4 | - |
| 16 | 2016 | | | | 326.5 | | 1.4 | 4.0 | | | 7.6 | 18.2 | 31.2 | 6.2 | | 25.0 | 31.2 | - |
| 17 | 2017 | | | | 308.3 | | 1.5 | 4.1 | | | 7.2 | 18.2 | 31.0 | 6.2 | | 24.8 | 31.0 | - |
| 18 | 2018 | | | | 290.1 | | 1.5 | 4.2 | | | 6.8 | 18.2 | 30.7 | 6.2 | | 24.5 | 30.7 | - |
| 19 | 2019 | | | | 271.9 | | 1.6 | 4.3 | | | 6.4 | 18.2 | 30.5 | 6.2 | | 24.3 | 30.5 | - |
| 20 | 2020 | | | | 253.7 | | 1.6 | 4.5 | | | 6.0 | 18.2 | 30.3 | 6.2 | | 24.1 | 30.3 | - |
| 21 | 2021 | | | | 235.5 | | 1.7 | 4.6 | | | 5.6 | 18.2 | 30.1 | 6.2 | | 23.9 | 30.1 | - |
| 22 | 2022 | | | | 217.3 | | 1.7 | 4.7 | | | 5.2 | 18.2 | 29.8 | 6.2 | | 23.6 | 29.8 | - |
| 23 | 2023 | | | | 199.1 | | 1.8 | 4.9 | | | 4.8 | 18.2 | 29.7 | 6.2 | | 23.5 | 29.7 | - |
| 24 | 2024 | | | | 180.9 | | 1.8 | 5.0 | | | 4.4 | 18.2 | 29.4 | 6.2 | | 23.2 | 29.4 | - |
| 25 | 2025 | | | | 162.7 | | 1.9 | 5.2 | | | 4.0 | 18.2 | 29.3 | 6.2 | | 23.1 | 29.3 | - |
| 26 | 2026 | | | | 144.5 | | 1.9 | 5.3 | | | 3.6 | 18.2 | 29.0 | 6.2 | | 22.8 | 29.0 | - |
| 27 | 2027 | | | | 126.3 | | 2.0 | 5.5 | | | 3.2 | 18.2 | 28.9 | 6.2 | | 22.7 | 28.9 | - |
| 28 | 2028 | | | | 108.1 | | 2.0 | 5.7 | | | 2.8 | 18.2 | 28.7 | 6.2 | | 22.5 | 28.7 | - |
| 29 | 2029 | | | | 89.9 | | 2.1 | 5.8 | | | 2.4 | 18.2 | 28.5 | 6.2 | | 22.3 | 28.5 | - |
| 30 | 2030 | | | | 71.7 | | 2.2 | 6.0 | | | 2.0 | 18.2 | 28.4 | 6.2 | | 22.2 | 28.4 | - |
| 31 | 2031 | | | | 53.5 | | 2.2 | 6.2 | | | 1.6 | 18.2 | 28.2 | 6.2 | | 22.0 | 28.2 | - |
| 32 | 2032 | | | | 35.3 | | 2.3 | 6.4 | | | 1.2 | 18.2 | 28.1 | 6.2 | | 21.9 | 28.1 | - |
| 33 | 2033 | | | | 17.1 | | 2.4 | 6.6 | | | 0.8 | 18.2 | 28.0 | 6.2 | | 21.8 | 28.0 | - |
| 34 | 2034 | | | | - | | 2.4 | 6.8 | | 58.1 | 0.4 | 17.1 | 84.8 | 6.2 | | 78.6 | 84.8 | - |
| 35 | 2035 | | | | - | | 2.5 | 7.0 | | | | | 9.5 | 6.2 | | 3.3 | 9.5 | - |
| 36 | 2036 | | | | - | | 2.6 | 7.2 | | | | | 9.8 | 6.2 | | 3.6 | 9.8 | - |
| 37 | 2037 | | | | - | | 2.7 | 7.4 | | | | | 10.1 | 6.2 | | 3.9 | 10.1 | - |

Note: 1) F.C. means foreign currency components and L.C. means local currency components.
2) 75% of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.
3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.
4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.
5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities.
6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

## Table S8: Rapport financier de marge brute d'autofinancement de financement pour la mise en place des projets (4/5)

**Azghar** **Unit: Million DH**

| Year in order | Year | Capital Cost F.C. | Capital Cost L.C. | Capital Cost Total (a) | Foreign Loan Accumulated 75% of (a) | A part of capital cost allocated by the Government | Cash Outflow: O & M cost Dam | O & M cost Irrigation | O & M cost Water sup. | Replace-ment cost | Repayment of Loan Interest | Repayment of Loan Capital | Total (b) | Cash Inflow: Irrigation water | Water supply | Government subsidy | Total (c) | Balance (c) - (b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | | | | | | | | | | - | | - | | | - | - | - |
| 2 | 2002 | | | | | | | | | | - | | - | | | - | - | - |
| 3 | 2003 | | | | | | | | | | - | | - | | | - | - | - |
| 4 | 2004 | | 3.9 | 3.9 | - | 3.9 | | | | | - | | - | | | - | - | - |
| 5 | 2005 | 34.1 | 37.7 | 71.8 | 56.7 | 15.1 | | | | | - | | - | | | - | - | - |
| 6 | 2006 | 65.4 | 68.3 | 133.7 | 157.0 | 33.4 | | | | | 1.2 | | 1.2 | | | 1.2 | 1.2 | - |
| 7 | 2007 | 56.5 | 55.5 | 112.0 | 241.0 | 28.0 | | | | | 3.5 | | 3.5 | | | 3.5 | 3.5 | - |
| 8 | 2008 | | | | 241.0 | | 0.8 | 0.7 | | | 5.3 | | 6.8 | 1.4 | | 5.4 | 6.8 | - |
| 9 | 2009 | | | | 241.0 | | 0.8 | 1.2 | | | 5.3 | | 7.3 | 2.2 | | 5.1 | 7.3 | - |
| 10 | 2010 | | | | 241.0 | | 0.8 | 1.5 | | | 5.3 | | 7.6 | 2.8 | | 4.8 | 7.6 | - |
| 11 | 2011 | | | | 241.0 | | 0.9 | 2.0 | | | 5.3 | | 8.2 | 3.5 | | 4.7 | 8.2 | - |
| 12 | 2012 | | | | 241.0 | | 0.9 | 2.3 | | | 5.3 | | 8.5 | 4.0 | | 4.5 | 8.5 | - |
| 13 | 2013 | | | | 241.0 | | 0.9 | 2.4 | | | 5.3 | | 8.6 | 4.0 | | 4.6 | 8.6 | - |
| 14 | 2014 | | | | 241.0 | | 0.9 | 2.4 | | | 5.3 | | 8.6 | 4.0 | | 4.6 | 8.6 | - |
| 15 | 2015 | | | | 228.9 | | 1.0 | 2.5 | | | 5.3 | 12.1 | 20.9 | 4.0 | | 16.9 | 20.9 | - |
| 16 | 2016 | | | | 216.8 | | 1.0 | 2.6 | | | 5.0 | 12.1 | 20.7 | 4.0 | | 16.7 | 20.7 | - |
| 17 | 2017 | | | | 204.7 | | 1.0 | 2.7 | | | 4.8 | 12.1 | 20.6 | 4.0 | | 16.6 | 20.6 | - |
| 18 | 2018 | | | | 192.6 | | 1.1 | 2.7 | | | 4.5 | 12.1 | 20.4 | 4.0 | | 16.4 | 20.4 | - |
| 19 | 2019 | | | | 180.5 | | 1.1 | 2.8 | | | 4.2 | 12.1 | 20.2 | 4.0 | | 16.2 | 20.2 | - |
| 20 | 2020 | | | | 168.4 | | 1.1 | 2.9 | | | 4.0 | 12.1 | 20.1 | 4.0 | | 16.1 | 20.1 | - |
| 21 | 2021 | | | | 156.3 | | 1.2 | 3.0 | | | 3.7 | 12.1 | 20.0 | 4.0 | | 16.0 | 20.0 | - |
| 22 | 2022 | | | | 144.2 | | 1.2 | 3.1 | | | 3.4 | 12.1 | 19.8 | 4.0 | | 15.8 | 19.8 | - |
| 23 | 2023 | | | | 132.1 | | 1.2 | 3.2 | | | 3.2 | 12.1 | 19.7 | 4.0 | | 15.7 | 19.7 | - |
| 24 | 2024 | | | | 120.0 | | 1.3 | 3.3 | | | 2.9 | 12.1 | 19.6 | 4.0 | | 15.6 | 19.6 | - |
| 25 | 2025 | | | | 107.9 | | 1.3 | 3.4 | | | 2.6 | 12.1 | 19.4 | 4.0 | | 15.4 | 19.4 | - |
| 26 | 2026 | | | | 95.8 | | 1.3 | 3.5 | | | 2.4 | 12.1 | 19.3 | 4.0 | | 15.3 | 19.3 | - |
| 27 | 2027 | | | | 83.7 | | 1.4 | 3.6 | | | 2.1 | 12.1 | 19.2 | 4.0 | | 15.2 | 19.2 | - |
| 28 | 2028 | | | | 71.6 | | 1.4 | 3.7 | | | 1.8 | 12.1 | 19.0 | 4.0 | | 15.0 | 19.0 | - |
| 29 | 2029 | | | | 59.5 | | 1.5 | 3.8 | | | 1.6 | 12.1 | 19.0 | 4.0 | | 15.0 | 19.0 | - |
| 30 | 2030 | | | | 47.4 | | 1.5 | 3.9 | | | 1.3 | 12.1 | 18.8 | 4.0 | | 14.8 | 18.8 | - |
| 31 | 2031 | | | | 35.3 | | 1.5 | 4.0 | | | 1.0 | 12.1 | 18.6 | 4.0 | | 14.6 | 18.6 | - |
| 32 | 2032 | | | | 23.2 | | 1.6 | 4.2 | | | 0.8 | 12.1 | 18.7 | 4.0 | | 14.7 | 18.7 | - |
| 33 | 2033 | | | | 11.1 | | 1.6 | 4.3 | | 37.8 | 0.5 | 12.1 | 56.3 | 4.0 | | 52.3 | 56.3 | - |
| 34 | 2034 | | | | - | | 1.7 | 4.4 | | | 0.2 | 11.1 | 17.4 | 4.0 | | 13.4 | 17.4 | - |
| 35 | 2035 | | | | - | | 1.7 | 4.5 | | | | | 6.2 | 4.0 | | 2.2 | 6.2 | - |
| 36 | 2036 | | | | - | | 1.8 | 4.7 | | | | | 6.5 | 4.0 | | 2.5 | 6.5 | - |
| 37 | 2037 | | | | - | | 1.8 | 4.8 | | | | | 6.6 | 4.0 | | 2.6 | 6.6 | - |

Note: 1) F.C. means foreign currency components and L.C. means local currency components.
2) 75% of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.
3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.
4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.
5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities.
6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

## Table S8: Rapport financier de marge brute d'autofinancement de financement pour la mise en place des projets (5/5)

**Overall Plan** **Unit: Million DH**

| Year in order | Year | Capital Cost F.C. | Capital Cost L.C. | Capital Cost Total (a) | Foreign Loan Accumulated 75% of (a) | A part of capital cost allocated by the Government | Cash Outflow: O & M cost Dam | O & M cost Irrigation | O & M cost Water sup. | Replace-ment cost | Repayment of Loan Interest | Repayment of Loan Capital | Total (b) | Cash Inflow: Irrigation water | Water supply | Government subsidy | Total (c) | Balance (c) - (b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | | | | | | | | | | | | - | | | | - | - |
| 2 | 2002 | | | | | | | | | | | | - | | | | - | - |
| 3 | 2003 | - | 20.5 | 20.5 | - | 20.5 | | | | | | | - | | | | - | - |
| 4 | 2004 | 26.1 | 54.2 | 80.3 | 40.1 | 40.2 | | | | | | | - | | | | - | - |
| 5 | 2005 | 168.9 | 170.1 | 339.0 | 311.7 | 67.4 | | | | | 0.9 | | 0.9 | | | 0.9 | 0.9 | - |
| 6 | 2006 | 324.1 | 324.9 | 649.0 | 816.4 | 144.3 | | | | | 6.9 | | 6.9 | | | 6.9 | 6.9 | - |
| 7 | 2007 | 304.8 | 310.7 | 615.5 | 1,278.0 | 153.9 | | | | | 18.0 | | 18.0 | | | 18.0 | 18.0 | - |
| 8 | 2008 | 69.8 | 71.4 | 141.2 | 1,383.9 | 35.3 | 3.7 | 3.1 | 0.3 | | 28.1 | | 35.2 | 6.1 | 0.4 | 28.7 | 35.2 | - |
| 9 | 2009 | | | | 1,383.9 | | 5.0 | 6.4 | 0.3 | | 30.4 | | 42.1 | 12.0 | 0.4 | 29.7 | 42.1 | - |
| 10 | 2010 | | | | 1,383.9 | | 5.1 | 8.2 | 0.3 | | 30.4 | | 44.0 | 15.1 | 0.4 | 28.5 | 44.0 | - |
| 11 | 2011 | | | | 1,383.9 | | 5.3 | 9.7 | 0.3 | | 30.4 | | 45.7 | 17.3 | 0.4 | 28.0 | 45.7 | - |
| 12 | 2012 | | | | 1,383.9 | | 5.5 | 10.8 | 0.3 | | 30.4 | | 47.0 | 18.8 | 0.4 | 27.8 | 47.0 | - |
| 13 | 2013 | | | | 1,383.9 | | 5.6 | 11.3 | 0.3 | | 30.4 | | 47.6 | 19.0 | 0.4 | 28.2 | 47.6 | - |
| 14 | 2014 | | | | 1,356.5 | | 5.8 | 11.6 | 0.3 | | 30.4 | 27.4 | 75.5 | 19.1 | 0.4 | 56.0 | 75.5 | - |
| 15 | 2015 | | | | 1,287.1 | | 6.0 | 12.1 | 0.3 | | 29.8 | 69.4 | 117.6 | 19.3 | 0.4 | 97.9 | 117.6 | - |
| 16 | 2016 | | | | 1,217.7 | | 6.1 | 12.5 | 0.3 | | 28.3 | 69.4 | 116.6 | 19.3 | 0.4 | 96.9 | 116.6 | - |
| 17 | 2017 | | | | 1,148.3 | | 6.3 | 12.9 | 0.3 | | 26.8 | 69.4 | 115.7 | 19.3 | 0.4 | 96.0 | 115.7 | - |
| 18 | 2018 | | | | 1,078.9 | | 6.5 | 13.2 | 0.5 | | 25.3 | 69.4 | 114.9 | 19.3 | 0.4 | 95.1 | 114.9 | - |
| 19 | 2019 | | | | 1,009.5 | | 6.8 | 13.6 | 0.5 | | 23.7 | 69.4 | 114.0 | 19.3 | 0.4 | 94.3 | 114.0 | - |
| 20 | 2020 | | | | 940.1 | | 6.8 | 14.1 | 0.5 | | 22.2 | 69.4 | 113.0 | 19.3 | 0.4 | 93.3 | 113.0 | - |
| 21 | 2021 | | | | 870.7 | | 7.2 | 14.5 | 0.5 | | 20.7 | 69.4 | 112.3 | 19.3 | 0.4 | 92.5 | 112.3 | - |
| 22 | 2022 | | | | 801.3 | | 7.3 | 14.9 | 0.5 | | 19.2 | 69.4 | 111.3 | 19.3 | 0.4 | 91.5 | 111.3 | - |
| 23 | 2023 | | | | 731.9 | | 7.6 | 15.4 | 0.5 | | 17.6 | 69.4 | 110.5 | 19.3 | 0.4 | 90.8 | 110.5 | - |
| 24 | 2024 | | | | 662.5 | | 7.8 | 15.8 | 0.5 | | 16.1 | 69.4 | 109.6 | 19.3 | 0.4 | 89.9 | 109.6 | - |
| 25 | 2025 | | | | 593.1 | | 8.0 | 16.4 | 0.5 | | 14.6 | 69.4 | 108.9 | 19.3 | 0.4 | 89.1 | 108.9 | - |
| 26 | 2026 | | | | 523.7 | | 8.2 | 16.7 | 0.5 | | 13.0 | 69.4 | 107.8 | 19.3 | 0.4 | 88.1 | 107.8 | - |
| 27 | 2027 | | | | 454.3 | | 8.5 | 17.3 | 0.5 | | 11.5 | 69.4 | 107.2 | 19.3 | 0.4 | 87.5 | 107.2 | - |
| 28 | 2028 | | | | 384.9 | | 8.7 | 17.8 | 0.5 | | 10.0 | 69.4 | 106.4 | 19.3 | 0.4 | 86.7 | 106.4 | - |
| 29 | 2029 | | | | 315.5 | | 9.1 | 18.3 | 0.6 | | 8.5 | 69.4 | 105.9 | 19.3 | 0.4 | 86.1 | 105.9 | - |
| 30 | 2030 | | | | 246.1 | | 9.3 | 18.8 | 0.6 | | 6.9 | 69.4 | 105.0 | 19.3 | 0.4 | 85.3 | 105.0 | - |
| 31 | 2031 | | | | 176.7 | | 9.5 | 19.4 | 0.6 | | 5.4 | 69.4 | 104.3 | 19.3 | 0.4 | 84.6 | 104.3 | - |
| 32 | 2032 | | | | 107.3 | | 9.8 | 20.2 | 0.6 | | 3.9 | 69.4 | 103.9 | 19.3 | 0.4 | 84.1 | 103.9 | - |
| 33 | 2033 | | | | 38.4 | | 10.1 | 20.7 | 0.6 | 147.9 | 2.4 | 68.9 | 250.6 | 19.3 | 0.4 | 230.8 | 250.6 | - |
| 34 | 2034 | | | | - | | 10.4 | 21.3 | 0.6 | 58.1 | 0.8 | 38.4 | 129.6 | 19.3 | 0.4 | 109.9 | 129.6 | - |
| 35 | 2035 | | | | - | | 10.7 | 22.0 | 0.7 | | | | 33.4 | 19.3 | 0.4 | 13.7 | 33.4 | - |
| 36 | 2036 | | | | - | | 11.1 | 22.6 | 0.7 | | | | 34.4 | 19.3 | 0.4 | 14.7 | 34.4 | - |
| 37 | 2037 | | | | - | | 11.4 | 23.2 | 0.7 | | | | 35.3 | 19.3 | 0.4 | 15.6 | 35.3 | - |

Note: 1) F.C. means foreign currency components and L.C. means local currency components.
2) 75% of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.
3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.
4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.
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